

N-26 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, 2002

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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) COL DOUG ISLEIB  
 AIR ASW ASSAULT AND SPECIAL MISSION Assigned: June 29, 2001  
 PROGRAM, 21960 NICKLES RD, BLDG 3221 DSN 757-5534; COMM 301 757-5534  
 PATUXENT RIVER, MD 20670-1539 ISLEIBDR@NAVAIR.NAVY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:  
 PE 0603266N (Shared) (FY96) SUNK Project H2279  
 PE 0604245N Project H2419, H2419, H2279  
 PROCUREMENT:  
 APPN 1506 ICN 017800 (Navy)

5. References:

SAR Baseline (Development Estimate):

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

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated May 2, 2002.

CLEARED  
FOR OPEN PUBLICATION

MAR 20 2003 8

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY POLICY  
DEPARTMENT OF DEFENSE

No Security Objection  
to Open Publication  
(AS AMENDED)

03-C-0097  
MAR 20 2003

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

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03.C.0460

**6. Mission and Description:**

The mission of the AH-1Z 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-1Y 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 the AH-1W and UH-1N to the AH-1Z and UH-1Y, respectively. Major modifications include: a new four-bladed rotor system with semiautomatic blade fold of the new composite rotor blades, new performance matched transmissions, a new four-bladed tail rotor and drive system, upgraded landing gear, and pylon structural modifications. The H-1 Upgrades 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:**

After submission of the December 2001 SAR, the USMC H-1 Upgrades program received Nunn-McCurdy certification which included an increase in the overall program estimate which is reflected in the revised Acquisition Program Baseline (APB) of May 2, 2002. The program continues to perform satisfactorily to the new baseline. An Integrated Baseline Review (IBR) of the performance measurement baseline (PMB) was conducted in October 2002. The procurement profile has been adjusted to reflect the revised APB and adjusted procurement profile associated with the Nunn-McCurdy approved program.

There are five Engineering, Manufacturing and Development (EMD) aircraft (Zulu-1, Zulu-2, Zulu 3, Yankee-1 and Yankee-2) in flight test status. All five aircraft are in the second phase of combined contractor/developmental testing at Patuxent River, MD. Zulu-1 continues on envelope expansion, Stability Control Augmentation System (SCAS) tuning and autorotation profiles. Zulu-2 achieved first flight on October 4, 2002 and is in the process of instrumentation preparation for the temperature survey. Zulu-3 achieved first flight on August 26, 2002 and is in the process of avionics development flights. Yankee-1 continues on envelope expansion, SCAS tuning and autorotation profiles. Yankee-2 achieved first flight on September 20, 2002 and is finishing cooling and temperature surveys, and is completing night and Navigational Thermal Imaging System (NTIS) development tests.

The program currently projects to meet or exceed all Key Performance Parameters (KPPs). To date the program is exceeding performance expectations in the following areas: Max Air Speed, Cruise Speed, Altitude, and Weight Tested.

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	SEP 1996	SEP 1996	OCT 1996
Preliminary Design Review Complete	JUL 1997	JUL 1997	JUN 1997
Critical Design Review Complete	JUL 1998	JUL 1998	SEP 1998
OPEVAL Testing Complete (AH-1Z)	SEP 2003	FEB 2005	FEB 2005
Milestone III (SAE FRP Review - Navy)	FEB 2004	AUG 2005	AUG 2005
IOC (AH-1Z)	SEP 2006	MAR 2008	MAR 2008
Navy Support Date (AH-1Z)	SEP 2008	MAR 2012	MAR 2012 (Ch-1)
OPEVAL Testing Complete (UH-1Y)	MAY 2003	FEB 2005	FEB 2005
IOC (UH-1Y)	JUN 2005	MAR 2008	MAR 2008
Navy Support Date (UH-1Y)	SEP 2007	MAR 2012	MAR 2012 (Ch-1)
Integrated Testing Complete	N/A	JUN 2004	JUN 2004
DAB LRIP Review	DEC 2001	AUG 2003	AUG 2003
CAE LRIP #2 Review	N/A	AUG 2004	AUG 2004

b. Current Change Explanations --

(Ch-1) The Navy Support Date has been adjusted to reflect the revised APB and adjusted procurement profile associated with the Nunn-McCurdy approved program. The current change estimates are:

<u>Milestones</u>	<u>From</u>	<u>To</u>
Navy Support Date (AH-1Z)	MAR 2011	MAR 2012
Navy Support Date (UH-1Y)	MAR 2011	MAR 2012

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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>
4BW (AH-1W/AH-1Z)				
MFHBA (hrs)	35.0	35.0 / 24.0	TBD	35.0
MMH/FH (hrs)	3.6	3.6 / 4.3	TBD	2.5
Cruise Speed (kts)	165	165 / 140	TBD	142
Payload (Hot Day) (lbs)	3500	3500 / 2500	TBD	2996
Weapon Stations				
Universal Mounts	6	6 / 4	4	4
Precision Guided Munitions	16	16 / 12	16	16
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	-.4 to +2.8	-.5 to +2.5
Mission Radius (nm)	200 x 1	200 x 1 / 50 x 2	TBD	126nm x
(Aux Fuel)		(Aux / or 110 x Fuel) / 1		1
4BN (UH-1N/UH-1Y)				
MFHBA (hrs)	40.2	40.2 / 33.1	TBD	40.2
MMH/FH (hrs)	2.9	2.9 / 3.9	TBD	2.5
Cruise Speed (kts)	165	165 / 140	TBD	155
Payload (Hot Day) (lbs)	4500	4500 / 2800	TBD	3211
Weapon Stations	2 Univ. Mounts	2 Univ. / 2 Hard Mounts / Mounts	2 Hard Mounts	2 Hard Mounts
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	-0.4 to +2.7	-0.5 to +2.5
Mission Radius (nm)	200 x 1	200 x 1 / 50 x 2	TBD	115nm x
(Aux Fuel)		(Aux / or 110 x Fuel) / 1		1

Acronyms:

MFHBA - Mean Flight Hours Between Abort

MMH/FH - Maintenance Man Hours per Flight Hours

b. Current Change Explanations -- None

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	537.8	1041.2	1080.1
Procurement	2254.7	4588.6	4497.8
Flyaway	(1892.2)		(3720.4)
Non-Recurring			(26.2)
Total Flyaway	(1892.2)		(3746.6)
Other Wpn System Costs	(240.4)		(379.3)
Peculiar Support	(40.1)		(191.6)
Initial Spares	(82.0)		(180.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	<u>2792.5</u>	<u>5629.8</u>	<u>5577.9</u>
Escalation	755.0	1225.4	1143.3
Development (RDT&E)	(54.5)	(83.5)	(80.2)
Procurement	(700.5)	(1141.9)	(1063.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3547.5</u>	<u>6855.2</u>	<u>6721.2</u>
b. Quantity --			
Development (RDT&E)	4	4	4
Procurement	<u>280</u>	<u>280</u>	<u>280</u>
Total	<u>284</u>	<u>284</u>	<u>284</u>

There has been no LRIP to date.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (MAY 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	5629.8	5577.9	
(2) Quantity	284	284	
(3) Unit Cost	19.823	19.640	-0.92
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	4588.6	4497.8	
(2) Quantity	280	280	
(3) Unit Cost	16.388	16.064	-1.98

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	-22.9	-221.5	-	-244.4
Quantity	-	-	-	-
Schedule	-5.1	+123.4	-	+118.3
Engineering	+106.2	+324.5	-	+430.7
Estimating	+454.2	+1340.0	-	+1794.2
Other	-	-	-	-
Support	-	+588.3	-	+588.3
Subtotal	+532.4	+2154.7	-	+2687.1
Current Changes:				
Economic	-9.1	-137.0	-	-146.1
Quantity	-	-	-	-
Schedule	-	+78.8	-	+78.8
Engineering	-	+27.0	-	+27.0
Estimating	+44.7	+577.2	-	+621.9
Other	-	-	-	-
Support	-	-95.0	-	-95.0
Subtotal	+35.6	+451.0	-	+486.6
Total Changes	+568.0	+2605.7	-	+3173.7
Current Estimate	1160.3	5560.9	-	6721.2

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	537.8	2254.7	-	2792.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-4.8	+32.6	-	+27.8
Engineering	+96.3	+263.7	-	+360.0
Estimating	+411.9	+1068.7	-	+1480.6
Other	-	-	-	-
Support	-	+482.3	-	+482.3
Subtotal	+503.4	+1847.3	-	+2350.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+5.3	-	+5.3
Engineering	-	+21.4	-	+21.4
Estimating	+38.9	+462.7	-	+501.6
Other	-	-	-	-
Support	-	-93.6	-	-93.6
Subtotal	+38.9	+395.8	-	+434.7
Total Changes	+542.3	+2243.1	-	+2785.4
Current Estimate	1080.1	4497.8	-	5577.9

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-9.1
Adjustment for Current and Prior Inflation. (Estimating)	-1.4	-1.4
Increase in estimate for Software Engineering, Component Fatigue testing, and to address results of operational testing. (Estimating)	+40.3	+46.1
RDT&E Subtotal	+38.9	+35.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-137.4
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Increase to program schedule of one year and inflation impact due to reduction in annual procurement quantities in the FYDP. (Schedule)	0.0	+75.0
Additional Schedule Variance. (Schedule)	+5.3	+3.8
Integration of Top Owl HMD in UH-1Y aircraft. (Engineering)	+21.4	+27.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1

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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>
Refinement of estimate to reflect an increase in prototype labor actuals. (Estimating)	+304.4	+367.8
Increase in contractor labor and overhead rates. (Estimating)	+115.0	+145.5
Refinement of estimate to reflect updated GFE pricing. (Estimating)	+43.2	+63.8
Decrease in initial sparing funds required due to reduction in number of aircraft procured by Material Support Date. (Support)	-182.8	-209.5
Increase in simulator peculiar support equipment to include composite maintenance trainers and to reflect total quantity of simulators under the USMC Simulator Master Plan. (Support)	+51.6	+63.2
Refinement of support cost estimates due to extension of program schedule. (Support)	+37.6	+51.3
Procurement Subtotal	<u>+395.8</u>	<u>+451.0</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	
12.49	-1.38	+0.001	+0.694	+1.61	+8.51	--	+1.74	+11.18	23.67

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	-1.28	-0.006	+0.722	+1.26	+6.85	--	+1.76	+9.31	19.86

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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	SEP 1996	N/A	OCT 1996
Milestone III	N/A	FEB 2004	N/A	AUG 2005
IOC	N/A	SEP 2006	N/A	MAR 2008
Total Cost	N/A	3547.5	N/A	6721.2
Total Quantity	N/A	284	N/A	284
Prog Acq Unit Cost	N/A	12.5	N/A	23.7

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		Qty
	Target	Ceiling	
	\$498.0	N/A	4

Current Contract Price		
Target	Ceiling	Qty
\$564.0	N/A	4

Estimated Price At Completion	
Contractor	Program Manager
\$899.8	\$899.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-29.3	\$-17.2
Cumulative Variances To Date (12/31/02)	\$7.2	\$-1.3
Net Change	\$36.5	\$15.9

Explanation of Change:

The net changes are attributed to the contractor's performance from November 2001 to November 2002. The contract is 79.6 percent complete.

The net variance changes reflect rebaseline actions taken as a result of the May 2, 2002 Nunn-McCurdy certification. Upon completion of the over-target-baseline (OTB) on June 28, 2002, all existing variances were eliminated. Performance measurement to the revised baseline began with July 2002 activity. Since July 2002, the cumulative schedule variance has declined slightly while the cumulative cost variance remains positive. These variances are reflected as the cumulative variances to date.

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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</u> (FY97-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-14)	<u>Total</u>
RDT&E	981.7	90.6	61.2	26.8	1160.3
Procurement	6.0	330.9	211.5	5012.5	5560.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
<b>Total</b>	<b>987.7</b>	<b>421.5</b>	<b>272.7</b>	<b>5039.3</b>	<b>6721.2</b>

b. Annual Summary -- H-1 Upgrades

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1996 Dollars Nonrec</u>	<u>Flyaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997				66.6	68.1
1998				78.9	81.3
1999				111.9	116.7
2000				168.8	178.6
2001				124.3	133.3
2002				155.0	167.7
2003				215.7	236.0
2004				81.6	90.6
2005				54.3	61.2
2006				9.8	11.2
2007				6.9	8.0
2008				3.2	3.8
2009				3.1	3.8
<b>Subtotal</b>	<b>4</b>			<b>1080.1</b>	<b>1160.3</b>

Excludes FY96 funds which were used for studies and analyses.

Appropriation: 1506 - Aircraft Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1996 Dollars Nonrec</u>	<u>Flyaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2001		5.5		5.6	6.0
2002					
2003					
2004	9	15.3	183.4	294.2	330.9
2005	7	3.6	120.4	185.0	211.5
2006	14		219.4	305.6	355.3

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

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007	23		337.2	449.8	532.3
2008	23		319.9	458.8	552.8
2009	24	1.8	321.6	386.6	474.2
2010	44		573.7	614.5	767.2
2011	44		551.9	596.9	758.7
2012	42		512.3	570.1	737.7
2013	38		442.7	482.9	636.1
2014	12		137.9	147.8	198.2
Subtotal	280	26.2	3720.4	4497.8	5560.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	284	26.2	3720.4	5577.9	6721.2

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): \$ 734.2

Percent Total Program Expended: 10.9%

Five EMD aircraft have been delivered to flight test and will be transferred to the government prior to OPEVAL.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Squadrons are composed of 18 AH-1Z's and 9 UH-1Y's.

Life Cycle is Phase-in + 20 years operation per aircraft.

Attrition rates are 1.24% for the AH-1Z and 1.05% for the UH-1Y.

Pipeline rates are 11% for the AH-1Z and 15% for the UH-1Y.

Manning (fleet squadron) estimated at 90%.

- 45 officers for the AH-1Z and 23 officers for the UH-1Y.

- 184/60 Squadron/Marine Air Logistics Squadron, Augmented (SQD/MALS AUG)

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

enlisted for the AH-1Z; 108/30 for the UH-1Y, totaling 68 officers.  
164 AH-1Z's are required; 82 UH-1Y's are required.  
Each aircraft has a service life of 10,000 hours per aircraft.  
Operating and support cost estimations are based on the organic three-levels of maintenance concept and have additional Total Ownership Cost applied.  
Aircraft will fly 23 flight hours per month.  
The Operating and Support cost estimate is dated January 2002.  
There is no antecedent system for the H-1 Upgrades Program.

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

Cost Element	H-1 Upgrades Total O&S Cost	No Antecedent System
Mission Pay & Allowances	2111.0	N/A
Unit Level Consumption	2073.0	N/A
Intermediate Maintenance	725.0	N/A
Depot Maintenance	1129.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	372.0	N/A
Indirect Costs	138.0	N/A
Demil & Disposal	0.0	N/A
	N/A	N/A
Total	6548.0	N/A

Total O&S Cost	H-1 Upgrades	No Antecedent System
BYS (In Millions)	6548.0	N/A
TY\$ (In Millions)	13148.0	N/A

Report Creation Date: 03/19/2003 11:16:34 AM

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SELECTED ACQUISITION REPORT (RCS) ~~DIRECTORATE FOR FREEDOM OF INFORMATION~~  
PROGRAM: PATRIOT PAC-3 AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

AS OF DATE: December 31, 2002

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

2. (U) DoD Component: MDA

Joint Participants:  
Missile Defense Agency

3. (U) Responsible Office and Telephone Number:

Project Manager	COL Tommie E. Newberry
Lower Tier Project Office	Assigned: December 20, 2000
PO Box 1500	DSN 645-3240; COMM (256) 955-3240
Huntsville, AL 35807-3801	tommie.newberry@lowertier.redstone.army.mil

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

RDT&E:

- (U) PE 0203801A Project 036
- (U) PE 0603216C (Shared) Project 2208, 2207
- (U) PE 0604225C (Shared) Project 2207
- (U) PE 0604865A Project 01C
- (U) PE 0604865C Project 2207, 2014, 2257
- (U) PE 0604866C Project 2257

PROCUREMENT:

- (U) APPN 0300 ICN 0208060C (DoD) (Shared)
- (U) APPN 0300 ICN 0208865C (DoD)

~~Classified by: PATRIOT Security Classification Guide dated 6 Jun 00  
Downgrade instructions: Regraded UNCLASS when separated from CLASS sections  
Declassify on: Originating Agency Determination Required (OADR)~~

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PATRIOT PAC-3, December 31, 2002

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

- (U) APPN 2032 ICN C49200 (Army)
- (U) APPN 2032 ICN C50700 (Army)
- (U) APPN 2032 ICN CA0267 (Army)

5. (U) References:

FIRE UNIT

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 / Production Estimate (PdE):

(U) DAE Approved Acquisition Program Baseline (APB) dated December 2, 2002.

MISSILE SEGMENT

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 / Production Estimate (PdE):

(U) DAE Approved Acquisition Program Baseline (APB) dated December 2, 2002.

6. (U) Mission and Description:

(U) PATRIOT, the centerpiece of the Army's air defense forces, is an extremely capable high-to-low altitude, air defense missile system which provides air defense of ground combat forces and high-value assets. 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. 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

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

element of the FU during air battle, the ECS, provides the human interface for control of automated operations.

The PAC-3 program is the result of a series of integrated, phased system improvements fielded in combination with the PAC-3 missile (formerly Extended Range Interceptor (ERINT)). The PAC-3 missile is a high velocity hit-to-kill, surface-to-air missile capable of intercepting and destroying tactical missiles and air breathing threats. The PAC-3 missile provides the range, accuracy, and lethality to effectively defend against tactical missiles with 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 Initial Operational Test and Evaluation (IOT&E) phase of the PAC-3 program commenced in January 2002 and completed in May 2002. The IOT&E phase of the program consisted of four flight tests against threat representative targets using trained troops. Ground System IOT&E regression testing to demonstrate fixes to system software problems uncovered during IOT&E flight tests was completed in August 2002. System performance assessments were provided in the Army Test and Evaluation Command (ATEC) PAC-3 System Evaluation Report (SER) and the Director, Operational Test and Evaluation (DOTE) Beyond Low Rate Initial Production Report that supported continued missile segment production.

A Defense Acquisition Board (DAB) was conducted on October 31, 2002 and approved the PAC-3 Block 2002 Production Decision. On December 2, 2002, the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) signed the Acquisition Decision Memorandum documenting the DAB decisions and approved the Acquisition Strategy and Acquisition Program Baseline (APB). The ADM approved the production of 100 PAC-3 missiles in Fiscal Year (FY) 2003 and 108 PAC-3 missiles in FY 2004, and supported the transfer of responsibility for all aspects of the PAC-3 program from the Missile Defense Agency to the Army.

The Low Rate Initial Production-3 (LRIP-3) contract was awarded to Lockheed Martin Missiles and Fire Control (LMMFC) on March 20, 2002, for 72 PAC-3 missiles bringing the LRIP quantity to 164. The Initial Production Facilities-2 (IPF-2) contract was awarded to LMMFC on May 7, 2002. The IPF-2 contract provides additional production capability for the PAC-3 missile segment.

The FY 2003 missile procurement for 88 PAC-3 missiles was awarded to LMMFC on December 30, 2002, as a Fixed Price Incentive with Successive Targets contract. Contract performance data is expected in April 2003; therefore, reporting for this contract will be included in the next SAR.

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

The Congressional reprogramming action of \$104M to procure 12 additional missiles in the FY 2003 and to accelerate the LRIP-2 and LRIP-3 contracts was approved via the Consolidated Appropriations Resolution, 2003 (Conference Report 108-10). The resolution which authorized the reprogramming was signed by the President on February 20, 2003. This action increased the FY 2003 missile procurement from 88 to 100 to be in consonance with the October 31, 2002 DAB decision.

On December 30, 2002, the USD(AT&L) notified the chairmen of the Congressional defense committees of his intent to transfer the PAC-3 program to the Secretary of the Army, to include the responsibility for Research, Development, Test, and Evaluation (RDT&E) related to Army requirements.

The PAC-3 program has implemented an evolutionary development program to develop and test solutions addressing capability shortfalls and improve system capability against emerging and reactive threats. Design changes to the missile are being made in the interest of cost reduction and producibility improvements. The evolutionary development program will incorporate enhanced capabilities to the missile and ground equipment that will be fielded in subsequent blocks (Block 2004, Block 2006, etc.). Additional flight tests are planned to meet the remaining IOT&E flight test data requirements as listed in the ATEC SER. The next flight test is scheduled for August 2003. Two Developmental/Operational Tests are scheduled for the third and fourth quarters of FY 2004.

8. (U) Threshold Breaches:

FIRE UNIT

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

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

MISSILE SEGMENT

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:

FIRE UNIT

a. Milestones --

	Development Estimate (SAR)	Approved Program;PdE	Current Estimate
	MAR 1995	MAR 1995	MAY 1995
Configuration 1 Production			
Confirmatory Test			
Configuration 1 First Unit Equipped	JUN 1995	JUN 1995	DEC 1995
Configuration 2 Follow On Test	DEC 1995	DEC 1995	MAY 1996
Configuration 2 First Unit Equipped	JUN 1996	JUN 1996	DEC 1996
Configuration 3 Follow On Test	JUN 1998	APR 2000	APR 2000
Configuration 3 First Unit Equipped	SEP 1998	JUN 2000	DEC 2000

b. Current Change Explanations -- None

MISSILE SEGMENT

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

MISSILE SEGMENT

a. Milestones --

	<u>Development</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate (SAR)</u>	<u>Program;PdE</u>	<u>Estimate</u>
Milestone II (Missile) (DAB)	MAY 1994	MAY 1994	MAY 1994
Development Contract Award	SEP 1994	SEP 1994	OCT 1994
Preliminary Design Review Complete	SEP 1995	SEP 1995	OCT 1995
Critical Design Review Complete	MAR 1996	MAR 1996	MAR 1996
Service Final DT&E			
Start	JAN 1997	APR 1997	SEP 1997
Complete	DEC 1997	OCT 2001	OCT 2001
Low Rate Initial Production	JUN 1997	OCT 1999	OCT 1999
Decision			
Low Rate Initial Production	JUL 1997	NOV 1999	DEC 1999
Contract Award			
Low Rate Production First	MAY 1998	MAY 2001	SEP 2001
Delivery			
First Unit Equipped	SEP 1998	SEP 2001	SEP 2001
IOT&E			
Start	JAN 1998	JAN 2002	JAN 2002
Complete	JUN 1998	SEP 2002	SEP 2002
Milestone III Production Decision	AUG 1998	N/A	N/A (Ch-1)
Full Rate Production Contract	AUG 1998	N/A	N/A (Ch-1)
Award			
Service Depot Support	SEP 2001	N/A	N/A (Ch-1)
Initial Operational Capability	NOV 1999	SEP 2005	SEP 2005
Block 2002 Production Decision	N/A	OCT 2002	OCT 2002 (Ch-1)
Block 2002 Production Contract Award	N/A	DEC 2002	DEC 2002 (Ch-1)
Block 2004 Production Decision	N/A	SEP 2004	SEP 2004 (Ch-1)
Block 2004 Production Contract Award	N/A	DEC 2004	DEC 2004 (Ch-1)
Block 2006 Production Decision	N/A	SEP 2007	SEP 2007 (Ch-1)
Block 2006 Production Contract Award	N/A	DEC 2007	DEC 2007 (Ch-1)
Block 2008 Production Decision	N/A	SEP 2009	SEP 2009 (Ch-1)
Block 2008 Production Contract Award	N/A	DEC 2009	DEC 2009 (Ch-1)

(U) PAC-3 missile 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) Milestone III, Full Rate Production Contract Award and Service Depot Support were deleted in the December 2, 2002 Acquisition Program Baseline (APB) due to a redefinition of milestones. The Block 2002, 2004, 2006 and 2008 Production Decision and Contract Award milestones reflect the program approved at the October 31, 2002 DAB.

The Block 2002 Production Decision was achieved on October 31, 2002 at the favorable PAC-3 Defense Acquisition Board (DAB) review.

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

The Block 2002 Production Contract Award was achieved on December 30, 2002 with the award of the FY 2003 missile procurement for 88 PAC-3 missiles.

10. (U) Performance Characteristics:

FIRE UNIT

a. Performance --

	Development Estimate (SAR)	Approved Program; PdE Obj/Threshold	Demonstrated Perf	Current Estimate
(b)(1)	(b)(1)			
Keepout Range (km)	(b)(1)	N/A / N/A	N/A	N/A
Missile Threat Ranges (km)	(b)(1)	N/A / N/A	N/A	N/A
Air Breathing Threats (ABTs)	(b)(1)			
First Intercept Capability (km)	(b)(1)	N/A / N/A	N/A	N/A
Altitude	(b)(1)			
TBMs (Keepout) (km)	(b)(1)	N/A / N/A	N/A	N/A
ABTs (above ground level, given line of sight)	(b)(1)			
Altitude (Min) (meters)	(b)(1)	N/A / N/A	N/A	N/A
Altitude (Max) (km)	(b)(1)	N/A / N/A	N/A	N/A
Single Shot Engagement Kill Probability (SSEKP)	(b)(1)			
TBMs	(b)(1)	N/A / N/A	N/A	N/A
ABTs	(b)(1)	N/A / N/A	N/A	N/A
Multiple Simultaneous Engagements	(b)(1)			
TBMs (arriving within 10 seconds)	(b)(1)	N/A / N/A	N/A	N/A
ABTs (within 1 second while doing a TBM mission)	(b)(1)	N/A / N/A	N/A	N/A
System Effectiveness	(b)(1)			
TBMs (two shots)	(b)(1)	N/A / N/A	N/A	N/A
ABTs (one shot)	(b)(1)	N/A / N/A	N/A	N/A

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

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	Development	Approved Program; PdE	Demonstrated	Current
	(b)(1) (AR)	Obj/Threshold	Perf	Estimate
(S) Missile Reliability (launch and flight to TBM intercept)	(b)(1)	(b)(1)	(b)(1)	
(S) Operational Availability (Ao)			(b)(1)	
(S) Fire Unit Mean Time Between Failure (hrs)				
(S) Nuclear Hardening (EMP) missile in				

(b)(1)

(S) Theater Ballistic Missiles (TBMs)	N/A
(S) TBM Threat Range	N/A
(S) TBM Keep-Out Altitude	N/A

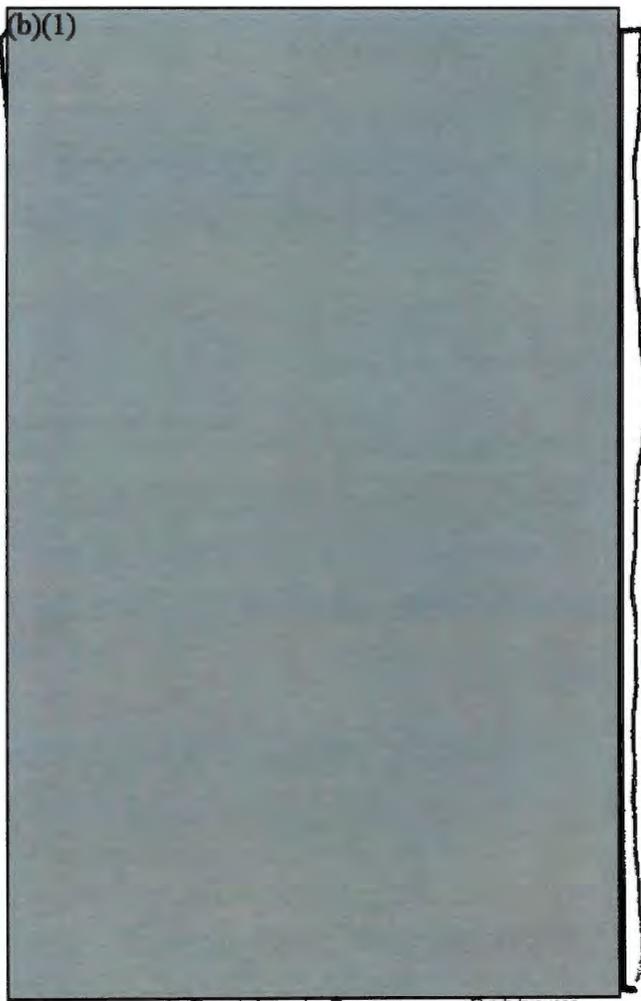
(b)(1)

(S) Battlespace (Non-TBMs) First Intercept Capability (given line of sight for sufficient time to support intercept)	N/A
--	-----

AS AMENDED

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program; PdE Obj/Threshold clutter / clutter and ECM / and ECM</u>	<u>Demonstrated Perf</u>	<u>Current Estimate clutter and ECM</u>
Single Shot Engagement Kill Probability (SSEKP)				
TBM	N/A			
Non-TBM (Destroyed or out of control within 30 sec of intercept)	N/A			
Mass Attack (Defend any single critical asset within its defended area)				
TBM	N/A			
Non-TBM	N/A			
System Effectiveness (TBM)	N/A			
Joint Interoperability	N/A			



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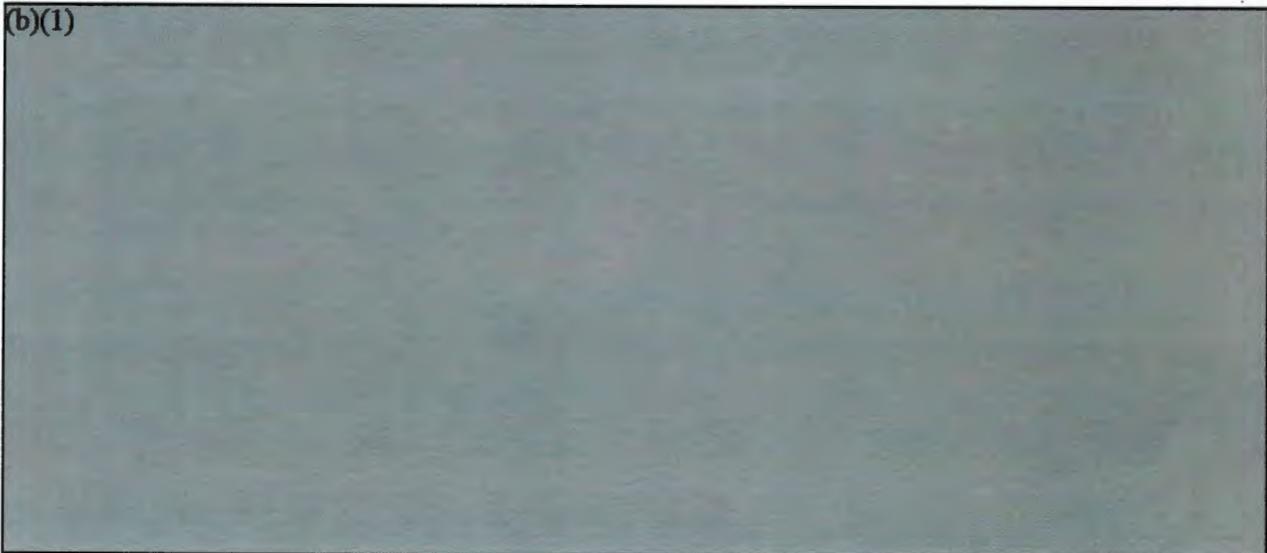
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10a. ~~(S)~~ Performance Characteristics (Cont'd):  
FIRE UNIT

<u>Development Estimate (SAR)</u>	<u>Approved Program; PdE Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	integrated / protocol into a / for joint / receiving, pro- compos- / cessing, ite / and tracking / trans- network / mitting / jointly / approved / tactical / Air / Missile / Defense / (AMD) / specific / messages	and Roving Sands	integrating into a joint compos- ite tracking network

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

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(U) System Effectiveness = P(DET) x [1-(1-P(SSK))^n], where n=number of shots, and SSK=Single Shot Kill  
 (U) Missile Reliability is based on the Reliability Growth Curve. This is a technical parameter which supports the key Joint Requirements Oversight

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**10a. ~~(S)~~ Performance Characteristics (Cont'd):**  
FIRE UNIT

Council (JROC) validated characteristics.  
(U) The Fire Unit Mean Time Between Failure parameter supports the key JROC validated characteristics.

ACRONYM LIST

ABT - Air Breathing Threat  
ECM - Electronic Counter Measures  
EMP - Electromagnetic Pulse  
TBM - Theater Ballistic Missile

b. Current Change Explanations -- None

MISSILE SEGMENT

No data entered.

(U) All performance parameters for the PAC-3 program are associated with the Fire Unit end-item.

b. Current Change Explanations -- None

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

FIRE UNIT

a. (U) Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE</u>	<u>Current Estimate</u>
Development (RDT&E)	503.2	907.3	900.3
Procurement	1762.6	2606.7	2591.8
Recurring Flyaway	(1102.4)		(907.6)
Nonrecurring Flyaway	(605.7)		(1417.5)
Total Flyaway	(1708.1)		(2325.1)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(54.5)		(266.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	<u>2265.8</u>	<u>3514.0</u>	<u>3492.1</u>
Escalation	-120.4	-112.8	-104.7
Development (RDT&E)	(-50.5)	(-70.8)	(-65.7)
Procurement	(-69.9)	(-42.0)	(-39.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2145.4</u>	<u>3401.2</u>	<u>3387.4</u>
b. (U) Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>54</u>	<u>40</u>	<u>40</u>
Total	54	40	40

(U) A Fire Unit consists of a Radar Set, an Engagement Control Station, an Electric Power Plant, and up to eight Launching Stations.

The Fire Unit procurement quantity reflects the number of existing PATRIOT systems modified to PAC-3 capability; therefore, there is no Low Rate Initial Production quantity for this end item. The Fire Unit end item quantity includes Table of Organization and Equipment requirements for seven Battalions consisting of five Fire Units per Battalion and five forward positioned assets in Southwest Asia.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

MISSILE SEGMENT

	Development Estimate (SAR)	Approved Program;PdE	Current Estimate
a. (U) Cost --			
Development (RDT&E)	2262.8	3578.2	3547.6
Procurement	2056.8	5505.8	5602.5
Recurring Flyaway	(2002.5)		(5045.2)
Nonrecurring Flyaway	(54.3)		(557.3)
Total Flyaway	(2056.8)		(5602.5)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	<u>4319.6</u>	<u>9084.0</u>	<u>9150.1</u>
Escalation	-83.4	121.8	109.9
Development (RDT&E)	(-279.7)	(-276.1)	(-255.1)
Procurement	(196.3)	(397.9)	(365.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>4236.2</u>	<u>9205.8</u>	<u>9260.0</u>
b. (U) Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	<u>1200</u>	<u>1159</u>	<u>1259</u>
Total	1200	1159	1259

(U) The Low Rate Initial Production (LRIP) quantity for the PAC-3 missile was 90 as established by the July 7, 1994, Milestone IV/II Acquisition Decision Memorandum. The LRIP quantity was increased to 164 PAC-3 missiles in the Acquisition Strategy approved by the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on October 20, 2001. The LRIP missile quantity exceeds the 10% limit of the total planned production quantity of 1259. This was the minimal LRIP quantity needed to avoid a production break.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

FIRE UNIT

	UCR Baseline (DEC 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	3514.0	3492.1	
(2) Quantity	40	40	
(3) Unit Cost	87.850	87.303	-0.62
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	2606.7	2591.8	
(2) Quantity	40	40	
(3) Unit Cost	65.167	64.795	-0.57

MISSILE SEGMENT

	UCR Baseline (DEC 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	9084.0	9150.1	
(2) Quantity	1159	1259	
(3) Unit Cost	7.838	7.268	-7.27
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	5505.8	5602.5	
(2) Quantity	1159	1259	
(3) Unit Cost	4.750	4.450	-6.32

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

**FIRE UNIT**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	452.7	1692.7	-	2145.4
Previous Changes:				
Economic	-27.0	-26.2	-	-53.2
Quantity	-	-294.0	-	-294.0
Schedule	-	+53.2	-	+53.2
Engineering	+93.4	+445.9	-	+539.3
Estimating	+293.1	+410.8	-	+703.9
Other	-	-	-	-
Support	-	+216.4	-	+216.4
Subtotal	+359.5	+806.1	-	+1165.6
Current Changes:				
Economic	+4.5	+3.0	-	+7.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+20.3	-	-	+20.3
Estimating	-2.4	+55.2	-	+52.8
Other	-	-	-	-
Support	-	-4.2	-	-4.2
Subtotal	+22.4	+54.0	-	+76.4
Total Changes	+381.9	+860.1	-	+1242.0
Current Estimate	834.6	2552.8	-	3387.4

(U) Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	503.2	1762.6	-	2265.8
Previous Changes:				
Quantity	-	-229.2	-	-229.2
Schedule	-	-	-	-
Engineering	+89.7	+430.6	-	+520.3
Estimating	+291.4	+373.3	-	+664.7
Other	-	-	-	-
Support	-	+215.9	-	+215.9
Subtotal	+381.1	+790.6	-	+1171.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+19.4	-	-	+19.4
Estimating	-3.4	+42.3	-	+38.9
Other	-	-	-	-
Support	-	-3.7	-	-3.7
Subtotal	+16.0	+38.6	-	+54.6
Total Changes	+397.1	+829.2	-	+1226.3
Current Estimate	900.3	2591.8	-	3492.1

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	+4.5
	Software enhancements in FY 2003-2005 for Single Integrated Air Picture (SIAP). (Engineering)	+15.2	+16.0
	Enhancements to ground support equipment in FY 2003 for increased capability. (Engineering)	+4.2	+4.3
	Adjustment for Current and Prior Inflation. (Estimating)	-6.5	-6.0
	Revised estimate in FY 2008-2009 for Army inflation adjustments. (Estimating)	+3.5	+4.0
	Reductions for Small Business Innovative Research (SBIR). (Estimating)	-0.4	-0.4
	RDT&E Subtotal	<u>+16.0</u>	<u>+22.4</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+3.0
	Adjustment for Current and Prior Inflation. (Estimating)	-11.7	-11.0
	Army adjustments in FY 2008-2012 for future modifications to the ground support equipment. (Estimating)	+81.6	+95.4
	Refinement of estimate to reflect actuals for FY 2001. (Estimating)	+1.4	+1.4
	Decrement in FY 2004 to the PAC-3 program for Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM). (Estimating)	-15.4	-16.2
	Revised estimate for Department inflation adjustments. (Estimating)	-13.6	-14.4
	Adjustment for Current and Prior Inflation. (Support)	-1.0	-0.8
	Change in Initial Spares due to Department inflation reductions. (Support)	-2.7	-3.4
	Procurement Subtotal	<u>+38.6</u>	<u>+54.0</u>

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

MISSILE SEGMENT

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1983.1	2253.1	-	4236.2
Previous Changes:				
Economic	-0.9	-169.9	-	-170.8
Quantity	-	+795.0	-	+795.0
Schedule	+296.6	+129.3	-	+425.9
Engineering	+29.9	+181.2	-	+211.1
Estimating	+597.2	+2400.2	-	+2997.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+922.8	+3335.8	-	+4258.6
Current Changes:				
Economic	+23.1	-58.7	-	-35.6
Quantity	-	+182.3	-	+182.3
Schedule	-	+102.6	-	+102.6
Engineering	+290.6	+28.1	-	+318.7
Estimating	+72.9	+124.3	-	+197.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+386.6	+378.6	-	+765.2
Total Changes	+1309.4	+3714.4	-	+5023.8
Current Estimate	3292.5	5967.5	-	9260.0

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

(U) Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2262.8	2056.8	-	4319.6
Previous Changes:				
Quantity	-	+1122.3	-	+1122.3
Schedule	+300.1	-712.5	-	-412.4
Engineering	+31.4	+138.9	-	+170.3
Estimating	+605.5	+2581.5	-	+3187.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+937.0	+3130.2	-	+4067.2
Current Changes:				
Quantity	-	+177.8	-	+177.8
Schedule	-	-76.7	-	-76.7
Engineering	+280.9	+28.4	-	+309.3
Estimating	+66.9	+286.0	-	+352.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+347.8	+415.5	-	+763.3
Total Changes	+1284.8	+3545.7	-	+4830.5
Current Estimate	3547.6	5602.5	-	9150.1

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	+23.1
Missile Segment enhancements in FY 2003-2006 for increased capability. (Engineering)	+271.0	+280.6
Revised estimate for FY 2002 for Common Launcher. (Engineering)	+9.9	+10.0
Adjustment for Current and Prior Inflation. (Estimating)	-25.4	-23.3
Revised estimate in FY 2003-2007 for Evolutionary Development program. (Estimating)	+70.5	+73.8
FY 2003 Congressional increase for additional flight testing. (Estimating)	+29.4	+30.0
Revised estimate for Congressional inflation reductions in FY 2002. (Estimating)	-2.9	-2.9
Reductions for Small Business Innovative Research (SBIR). (Estimating)	-2.7	-2.7
Revised estimate due to Army reductions in FY 2002 for unfunded requirements. (Estimating)	-2.0	-2.0
RDT&E Subtotal	+347.8	+386.6

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-58.7
	Total Quantity Variance associated with increase of 100 PAC-3 missiles from 1159 to 1259.	+530.8	+556.1
	Quantity increase of 100 PAC-3 missiles. (Quantity)	+177.8	+182.3
	Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	-145.6	+20.1
	Allocation to Engineering variance resulting from Quantity Change. (QR)(Engineering)	+28.4	+28.1
	Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	+470.2	+325.6
	Stretchout of annual procurement buy profile. (Schedule)	0.0	+12.5
	Additional Schedule Variance to accelerate Low Rate Initial Production (LRIP)-2, LRIP-3 and Initial Production Facilitization-2 contracts. (Schedule)	+68.9	+70.0
	Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.8
	Revised estimate for Army realignment of funding. (Estimating)	-107.2	-116.4
	Department inflation adjustment in FY 2004-2009. (Estimating)	-74.3	-82.3
	Congressional reduction in FY 2003. (Estimating)	-3.3	-3.4
	Procurement Subtotal	<u>+415.5</u>	<u>+378.6</u>

QR = Quantity related changes.

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PATRIOT PAC-3, December 31, 2002

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

FIRE UNIT

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	
39.73	-1.14	+6.55	+1.33	+13.99	+18.92	--	+5.31	+44.96	84.69

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	
31.35	-0.580	+3.61	+1.33	+11.15	+11.65	--	+5.31	+32.47	63.82

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	DELETE	N/A	N/A
Milestone III	N/A	DELETE	N/A	N/A
FUE	N/A	SEP 1998	N/A	DEC 2000
Total Cost	N/A	2145.4	N/A	3387.4
Total Quantity	N/A	54	N/A	40
Prog Acq Unit Cost	N/A	39.7	N/A	84.7

MISSILE SEGMENT

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	
3.53	-0.164	+0.608	+0.420	+0.421	+2.54	--	--	+3.82	7.36

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PATRIOT PAC-3, December 31, 2002

**14b. (U) Unit Cost and Other History (Cont'd):**  
**MISSILE SEGMENT**

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	
1.88	-0.182	+0.684	+0.184	+0.166	+2.01	--	--	+2.86	4.74

(U) The PAC-3 Milestone III was redefined as Block 2002 Production Decision to reflect the evolutionary development acquisition approach approved at the October 31, 2002 Defense Acquisition Board.

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 1994	N/A	MAY 1994
Milestone III	N/A	AUG 1998	N/A	OCT 2002
IOC	N/A	NOV 1999	N/A	SEP 2005
Total Cost	N/A	4236.2	N/A	9260.0
Total Quantity	N/A	1200	N/A	1259
Prog Acq Unit Cost	N/A	3.5	N/A	7.4

(U) The PAC-3 Milestone III was redefined as Block 2002 Production Decision to reflect the evolutionary development acquisition approach approved at the October 31, 2002 Defense Acquisition Board.

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

a. RDT&E --	Initial Contract Price		
(U) PAC-3 MISSILE EMD:	Target	Ceiling	Qty
LOCKHEED, DALLAS, TX			
DAAH01-95-C-0021, CPIF/AF	\$515.8	N/A	0
Award: October 26, 1994			
Definitized: November 7, 1995			
	Estimated Price At Completion		
Current Contract Price	Contractor	Program Manager	
Target			
\$747.9	\$996.8	\$997.0	
Ceiling			
N/A			
Qty			
0			

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-175.6	\$-35.5
Cumulative Variances To Date (12/26/02)	<u>\$-181.6</u>	<u>\$-32.8</u>
Net Change	\$-6.0	\$2.7

Explanation of Change:

(U) There are no significant changes in cost and schedule performance trends since the December 31, 2001 report. Cost variance worsened due to greater than anticipated effort expended in supporting missions and analyzing data from the operational flight tests. The flight test program completed in May 2002 and resultant data supported favorable test agency assessments culminating in the Defense Acquisition Board approval of the Block 2002 missile production decision.

Contract effort is 99% complete and significant program effort is complete, therefore this is the final submission for this contract.

(U) Contract Comments:

The initial Contract Price increased from \$515.8M to the Current Price of \$747.9M due to several contract changes that added scope or reduced schedule risk in the program. The major contract changes include: risk abatement/mitigation modifications of \$153.2M in 3rd Quarter FY 1996, two additional flight tests for \$18.2M in 4th Quarter FY 1996, Security Classification Guide update for \$3.4M in 4th Quarter FY 1997, special inspection and test equipment for \$8.1M in 1st Quarter FY 1998, engage-on-remote feasibility study and implementation for \$3.0M in 2nd Quarter FY 1999, seeker design verification testing for \$25.5M in 3rd Quarter FY 1999, approximately \$11M in FY 2000 and FY 2001 for Cost Reduction Initiatives, and \$8.7M issued in November 2001 for contractor test and evaluation support for operational tests. Several other smaller contract modifications were implemented for efforts such as canister stacking, missile assembly building, and enhanced launcher electronics system hardware. The cost growth in the EMD effort is attributed primarily to missile seeker software development and integration complexity, missile simulation testing, missile seeker rework, and range and target availability.

(U) <u>PAC-3 MSL INTEGRATION:</u>	<u>Initial Contract Price</u>		
	<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			
<u>Current Contract Price</u>		<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$184.5	N/A	\$176.1	\$176.1
		0	

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.8	\$0.0
Cumulative Variances To Date (09/30/02)	\$3.5	\$0.0
Net Change	\$1.7	\$0.0

Explanation of Change:

(U) The favorable cost variance is attributable to completion of the PAC-3 Development and Operational test flights, delivery of the Initial Operational Test & Evaluation (IOT&E) software build, and completion of the contract with many tasks costing less than planned. The zero schedule variance represents completion of the contract on September 30, 2002.

The contract period-of-performance expired on September 30, 2002, therefore this is the final submission for this contract.

(U) Contract Comments:

The initial Contract Price increased from \$104.8M to the Current Price of \$184.5M due to contract changes that added/reduced scope and/or reduced schedule risk in the program. The major contract changes include risk abatement/mitigation modification for \$31.3M in 4th Quarter FY 1996, extension of the program period-of-performance through 3rd Quarter FY 2001 for \$46.2M in 1st Quarter FY 2000, extension of program period-of-performance through 4th Quarter FY 2002 for \$11.2M in 4th Quarter FY 2001, and de-scoping of the Tracking Improvements Build 2 software task for \$-8.4M in 4th Quarter FY 2002.

The decrease from \$193.3M to \$184.5M in the Current Target Contract Price is attributed to two contract modifications. The first modification was implemented on June 12, 2002 to definitize scope for support of an air breathing target (ABT) pilot test at White Sands Missile Range (WSMR). The second modification was implemented on September 30, 2002 to de-scope the Tracking Improvements Build 2 software task. Changes to the Contractor and Program Manager Estimated Price at Completion are due to the change in the target price and actual underrun of the contract.

		Initial Contract Price		
		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
b. Procurement --	(U) <u>RADAR ENH PH3 MOD KITS:</u>			
Raytheon, Co., Bedford, MA	DAAH01-95-C-0446, FFP	\$201.3	N/A	22
Award: September 29, 1995	Definitized: December 6, 1996			
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$549.8	N/A	\$549.8	\$549.8	
			44	

Explanation of Change:

(U) The Current Contract Price and Estimated Prices at Completion increased

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

\$48.7M due to the FY 2002 procurement of four additional modification kits and spares.

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

(U) Contract Comments:

The Radar Enhancement Phase 3 (REP-3) Modification Kits contract was initially awarded for modification kits and spares to retrofit PATRIOT Fire Unit radars. The contract was modified in June 1998, to include procurement of Classification, Discrimination, and Identification Phase 3 (CDI-3) modification kits and spares.

(U) <u>PAC-3 LRIP:</u> LOCKHEED, DALLAS, TX DAAH01-98-C-0062, CPIF Award: December 12, 1997 Definitized: September 29, 1998	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$39.5	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>
\$531.1	N/A	92	\$556.6	\$558.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-14.6	\$4.0
Cumulative Variances To Date (12/31/02)	\$-0.7	\$-6.6
Net Change	\$13.9	\$-10.6

Explanation of Change:

(U) The cost and schedule variance changes are the summary of performance on four separate Low Rate Initial Production (LRIP) efforts, of which three are complete and the remaining effort is projected to meet delivery schedule. The favorable cost variance is attributed to better than planned performance in the PATRIOT Test Facility and greater than planned efficiency in release of final software requirements. Early LRIP performance was adversely impacted by excessive rework, higher material scrap rates, hardware shortages, and engineering changes. These issues have been overcome and production deliveries are on schedule.

(U) Contract Comments:

The PAC-3 LRIP contract was awarded as the PAC-3 Long Lead Time Item (LLTI) for LRIP contract in December 1997 to procure materials for the first 20 missiles. The contractor's original proposal in October 1997, was for \$39.5M, but subsequent to the contract award, the contractor submitted a firm proposal in May 1997, for \$56.7M. The LLTI contract was modified in December 1999, May 2000 and December 2000 for additional LRIP effort. The contract changes include: LRIP Basic, awarded December 3, 1999, for

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

\$48.4M, for assembly of the first 20 PAC-3; Special Configuration Test Hardware, awarded December 8, 1999, for \$17.6M, for three additional EMD test missiles; LLTI for LRIP-1, awarded December 20, 1999, for \$78.0M, for long lead components for the LRIP 1 procurement; LRIP 1, awarded May 19, 2000, for \$208.0, for assembly of 32 missiles; and LRIP 2, awarded December 20, 2000, for assembly of 40 additional missiles.

The difference between the Current Contract Price and the Estimated Prices at Completion includes the Over-Target Baseline for the overrun in the original LLTI effort and cost growth in the LRIP Basic effort.

(U) <u>LRIP-3:</u>	Initial Contract Price		
LOCKHEED, DALLAS, TX	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-02-C-0050, FPI/S	\$326.6	\$375.0	72
Award: March 20, 2002			
Definitized: March 20, 2002			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$326.6	\$375.0	\$330.1	\$330.1
		<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances		N/A	N/A
Cumulative Variances To Date (12/31/02)		\$2.6	\$3.3
Net Change		\$2.6	\$3.3

Explanation of Change:

(U) This is the initial report for the PAC-3 Low Rate Initial Production-3 (LRIP-3) contract.

Favorable contract cost and schedule variances are on track with first delivery scheduled for April 2004.

(U) Contract Comments:

The LRIP-3 contract was awarded March 20, 2002. The contract is Fixed Price Incentive with Successive Targets which permits the government to convert to a Firm Fixed Price contract and reinvest savings into the program based on demonstrated performance.

(U) <u>IPF-2:</u>	Initial Contract Price		
LOCKHEED, DALLAS, TX	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-02-C-0075, CPIF	\$145.0	N/A	0
Award: May 7, 2002			
Definitized: N/A			

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

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

\$145.0	N/A	0	\$145.0	\$145.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date (12/31/02)			\$0.0	\$0.0
Net Change			\$0.0	\$0.0

Explanation of Change:

(U) This is the initial report for the Initial Production Facilities-2 (IPF-2) contract.

(U) Contract Comments:

The contract for the Initial Production Facilities-2 (IPF-2) was awarded on May 7, 2002. The IPF-2 provides supplies and services required for the contractor to support the PAC-3 missile and Command Launch System production program. The IPF-2 builds on existing production capability established during the PAC-3 missile Engineering and Manufacturing Development and IPF-1. Definitization is expected by April 2003.

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> (FY83-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-12)	<u>Total</u>
RDT&E	3733.6	190.0	91.0	112.5	4127.1
Procurement	4142.2	756.3	554.1	3067.7	8520.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7875.8	946.3	645.1	3180.2	12647.4

FIRE UNIT

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

<u>Appropriation</u>	<u>Prior Years</u> (FY89-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-12)	<u>Total</u>
RDT&E	731.6	15.5	12.6	74.9	834.6
Procurement	1927.9	194.7	63.3	366.9	2552.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2659.5	210.2	75.9	441.8	3387.4

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PATRIOT PAC-3, December 31, 2002

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

MISSILE SEGMENT

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

<u>Appropriation</u>	<u>Prior Years</u> (FY83-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-11)	<u>Total</u>
RDT&E	3002.0	174.5	78.4	37.6	3292.5
Procurement	2214.3	561.6	490.8	2700.8	5967.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5216.3	736.1	569.2	2738.4	9260.0

b. Annual Summary -- FIRE UNIT

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991				22.4	19.0
1992				77.0	67.0
1993				32.9	29.3
1994				24.3	22.1
1995				74.9	69.3
1996				68.4	64.3
1997				57.4	54.7
1998				9.0	8.6
Subtotal				366.3	334.3

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1989				29.6	23.4
1990				39.1	32.1
1991				53.9	45.9
1992				43.5	37.9
1993				51.4	45.8
1994				42.1	38.2
1995				24.7	22.9
1996				45.7	43.1
1997				47.1	44.9
1998				21.9	21.0
1999				9.1	8.8
2000				7.6	7.5
2001				6.4	6.4

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PATRIOT PAC-3, December 31, 2002

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

FIRE UNIT

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

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				4.1	4.1
2003				15.0	15.3
2004				15.0	15.5
2005				12.0	12.6
2006				7.4	7.9
2007				7.3	8.0
2008				9.3	10.3
2009				9.5	10.7
2010				7.8	9.0
2011				8.1	9.5
2012				16.4	19.5
Subtotal				534.0	500.3

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992		28.0		28.0	24.9
1993		82.8		82.8	75.2
1994		130.6		130.6	120.1
1995	6	22.6	245.2	267.8	251.1
1996	6		301.3	301.3	285.1
1997	6		91.9	119.0	113.9
1998	6		97.8	138.4	133.5
1999	6		74.8	106.5	104.0
2000	6		48.0	68.2	67.6
2001	4		48.6	65.8	65.9
2002		64.8		80.9	81.9
Subtotal	40	328.8	907.6	1389.3	1323.2

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990		22.4		22.4	19.1
1991		171.5		171.5	149.6
1992		54.2		54.2	48.3
1993		18.6		19.5	17.7
1994		20.2		27.4	25.4

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PATRIOT PAC-3, December 31, 2002

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

FIRE UNIT

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		27.6		34.3	32.3
1996		7.1		10.7	10.2
1997		24.3		29.7	28.5
1998		8.0		10.7	10.4
1999		14.3		19.3	19.0
2000		49.9		53.4	53.2
2001		23.9		26.5	26.7
2002		24.3		25.0	25.5
2003		118.1		134.2	138.8
2004		168.0		185.5	194.7
2005		49.2		59.3	63.3
2006		27.6		37.6	40.8
2007		43.3		48.2	53.3
2008		45.3		49.6	55.8
2009		23.9		27.3	31.3
2010		43.2		48.0	55.9
2011		44.2		46.4	55.1
2012		59.6		61.8	74.7
Subtotal		1088.7		1202.5	1229.6

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	40	328.8	907.6	1755.6	1657.5
Army		1088.7		1736.5	1729.9
Grand Total	40	1417.5	907.6	3492.1	3387.4

b. Annual Summary -- MISSILE SEGMENT

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983				51.7	33.3
1984				36.0	24.1
1985				29.7	20.4
1986				21.3	15.1
1987				41.5	30.2
1988				23.9	18.0
1989				82.9	65.2

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PATRIOT PAC-3, December 31, 2002

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

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				47.0	38.3
1991				150.5	127.5
1992				274.6	239.0
1993				224.9	200.2
1994				213.8	194.1
1995				298.3	276.1
1996				331.2	311.6
1997				344.6	328.1
1998				244.1	234.1
1999				244.7	237.3
2000				224.1	220.7
2001				82.1	81.9
2002				129.8	130.6
2003				173.1	176.2
Subtotal				3269.8	3002.0

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

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				168.4	174.5
2005				74.5	78.4
2006				20.2	21.6
2007				14.7	16.0
Subtotal				277.8	290.5

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997		109.8		109.8	105.1
1998	20		190.1	190.1	183.3
1999		89.9		89.9	87.8
2000	32		309.6	309.6	306.7
2001	40		290.9	290.9	291.5
2002	72	157.1	537.3	694.4	702.8
2003	100	11.3	512.5	523.8	537.1
Subtotal	264	368.1	1840.4	2208.5	2214.3

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

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	108	42.9	492.3	535.2	561.6
2005	131		460.0	460.0	490.8
2006	144		452.2	452.2	490.9
2007	144		444.2	444.2	490.8
2008	184		551.6	551.6	620.5
2009	184		547.2	547.2	626.6
2010	100	73.8	257.3	331.1	386.0
2011		72.5		72.5	86.0
Subtotal	995	189.2	3204.8	3394.0	3753.2

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	264	368.1	1840.4	5478.3	5216.3
Army	995	189.2	3204.8	3671.8	4043.7
Grand Total	1259	557.3	5045.2	9150.1	9260.0

17. (U) Delivery/Expenditure Information:

FIRE UNIT

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	26	26

(U) Percent Total Program Quantities Delivered: 65.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2304

(U) Percent Total Program Expended: 68.0%

(U) The Fire Unit delivery quantities represent the number of PATRIOT radar sets modified to PAC-3 capability.

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

MISSILE SEGMENT

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	56	56

(U) Percent Total Program Quantities Delivered: 4.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3641

(U) Percent Total Program Expended: 39.3%

18. (U) Operating and Support Costs:  
FIRE UNIT

a. (U) Assumptions and Ground Rules --  
The O&S assumptions and costs are based the PATRIOT O&S Cost Estimate dated September 2002.

The concept of operation is 54 tactical Fire Units (FUs) of which 40 are being upgraded to PAC-3 capability. The costs are the 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. 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 to 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. There is no antecedent system.

b. (U) Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	FIRE UNIT Avg Annual Cost Per PAC-3 Fire Unit	ANTECEDENT SYSTEM Avg Annual Cost Per Antecedent System
Mission Pay & Allowances	4.4	N/A
Unit Level Consumption	1.6	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.8	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.3	N/A
Indirect Costs	2.3	N/A
Total	9.4	N/A

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

FIRE UNIT

Total O&S Cost	FIRE UNIT	ANTECEDENT SYSTEM
BY\$ (In Millions)	25513.3	N/A
TY\$ (In Millions)	33851.8	N/A

MISSILE SEGMENT

a. (U) Assumptions and Ground Rules --

Same assumptions and ground rules as Fire Unit. As stated in the Acquisition Program Baseline, the missile O&S cost are for all missile configurations in the PATRIOT system.

b. (U) Costs -- (FY 2002 Constant (Base-Year) Dollars in Thousands)

Cost Element	MISSILE SEGMENT Avg Annual Cost Per PAC-3 Missile	ANTECEDENT SYSTEM Avg Annual Cost Per Antecedent System
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	10.4	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	30.3	N/A
Contractor Support	0.0	N/A
Sustaining Support	5.7	N/A
Indirect Costs	14.6	N/A
	N/A	N/A
Total	61.0	N/A

Total O&S Cost	MISSILE SEGMENT	ANTECEDENT SYSTEM
BY\$ (In Millions)	3534.5	N/A
TY\$ (In Millions)	4687.6	N/A

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5. (U) References:

CVN-76

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline (APB) dated February 17, 1988.

Approved Program:

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

CVN-77

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline (APB) dated June 25, 1993.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated April 28, 1999.

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 trials of each CVN-68 Class carrier. 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.

Construction of the CVN 68 Class aircraft carriers began in October 1967 with the start of the NIMITZ (CVN 68). To date eight 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), USS JOHN C. STENNIS (CVN 74), and USS HARRY S. TRUMAN (CVN 75) were delivered in 1975, 1977, 1982, 1986, 1989, 1992, 1995, and 1998 respectively. Two new ships, the RONALD REAGAN (CVN 76), and the GEORGE H.W. BUSH (CVN 77) are targeted for delivery in April 2003 and March 2008, respectively.

7. (U) Executive Summary:

(U) CVN 76 contract Delivery date remains March 28, 2003. However, due to production concerns, the schedule for ship trials and Delivery is under review. Cost, schedule and performance are within APB parameters.

At the request of the Program Manager, the Contracting Officer stopped work on the CVN 77 Integrated Warfare System (IWS) while modifications were made to the contract in preparation for a subsequently released RFP on November 18, 2002

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

moving the CVN 77 warfare system from CFE to GFE.

The Fiscal Year 2003 Defense Appropriations Act included an SCN plus-up for the CVN 77 IWS specifying its use toward transformational technologies as the ship is being constructed. The program office screened candidates for consideration of bringing potentially transformational technologies to the CVN 77 as it is constructed as well as laying a cornerstone for risk and cost reduction on the CVN 21 program previously referred to as the CVN(X) program. Detailed program plans for recommended technologies are in progress.

Also noteworthy is the status of Multi-Function (MFR) and Volume Search (VSR) radar suite for CVN 77. Given the initial delay in down select of DD-21 program and subsequent restructuring of the program to DD(X), the Future Carrier Program Office, in consultation with senior Navy acquisition officials, determined that the VSR is no longer a viable option for CVN 77 during construction. VSR will be replaced with a legacy radar solution. However, the CVN 77 island will be designed to accommodate the backfit of a VSR during its service life.

8. (U) Threshold Breaches:

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

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

CVN-77

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- 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:

Cost breach in RDT&E is a result of a requirement for a new Integrated Warfare System and subsequent increased funding in the FY2002 and FY2003 President's Budget.

9. (U) Schedule:

CVN-76

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CVN-76			
Contract Award	JUN 1995	JUN 1995	DEC 1994
Start Production	NOV 1995	NOV 1995	MAY 1995
Lay Keel	DEC 1997	DEC 1997	FEB 1998
Launch	DEC 2000	DEC 2000	MAR 2001
Delivery	DEC 2002	DEC 2002	MAR 2003

(U) (Note that contract Delivery of Mar 2003 is under review due to production progress concerns.)

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

b. Current Change Explanations -- None

CVN-77

a. Milestones --

CVN 77	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Definitization of Contracts	DEC 2000	JUN 2001	JAN 2001
Start Production	NOV 2001	NOV 2001	MAR 2001
Lay Keel	DEC 2003	DEC 2003	MAY 2003
Launch	DEC 2006	DEC 2006	MAR 2006
Delivery	DEC 2008	DEC 2008	MAR 2008 (Ch-1)

b. Current Change Explanations --

(U) (Ch-1) Delivery date schedule milestone date changed from Jan 2008 to Mar 2008 to correct error in past SARs.

10. (U) Performance Characteristics:

CVN-76

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Length Overall	1092	1092 / 1092	1092	1092
Beam	134	134 / 134	134	134
Maximum Width	252	252 / 252	252	252
Draft (Combat Load) (ft)	38.4	39.0 / 40.4	40.4	38.9
Displacement (tons)	96300	99000 / 102500	102500 1/	97337
Propulsion	NUCLEAR	NUCLEAR / NUCLEAR	NUCLEAR	NUCLEAR
Shaft Horsepower	(b)(1)			
Trial Speed (kts)	(b)(1)			
Endurance (at 20 kts)	(b)(1)			
Stores (days)	75	75 / 75	75	75
Close In Weapon Systems	4	4 / 4	4	4
NATO Sea Sparrow Missile Systems	3	3 / 3	3	3
Aviation Strike Ordnance (long tons)	2400	2400 / 2400	2451	2451
Ave. fuel (gals)	(b)(1)			

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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. Contract award was April 98.  
 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.

b. Current Change Explanations -- None

CVN-77

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Length Overall	1092	1092	/ 1092	1092	1092
Beam	134	134	/ 134	134	134
Maximum Width	252	252	/ 252	252	252
Draft (Combat Load) (ft)	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)	(b)(1)				
Endurance (at 20 kts)	(b)(1)				
Store (days)	75	75	/ 75	75	75
Close in Weapons Systems	4	4	/ 4	4	4
NATO Sea Sparrow Missile Systems	3	3	/ 3	3	3
Aviation Strike Ordnance (Long Tons)	2451	2400	/ 2400	2451	2451
Average Fuel (gals)	(b)(1)				

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Operational Number of Aircraft (Deck Multiple in A4 Equivalent)	151	151 / 151	151 3/	151
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 is currently undergoing a Refueling Complex Overhaul (RCOH). Contract award was April 98.

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

b. Current Change Explanations -- None

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CVN-68 Class, December 31, 2002

11. (U) Total Program Cost and Quantity (Dollars in Millions):  
CVN-76

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	48.1	48.1	38.2
Procurement	3862.7	4488.6	4555.1
Basic	(2458.7)		(2694.9)
Government Furnished Eq	(1311.7)		(1165.2)
Other	(18.6)		(600.6)
OF/PD	(73.7)		(94.4)
Unknown			(0.0)
Total Sailaway	(3862.7)		(4555.1)
Total Other Wpn Sys	(0.0)		(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	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1995 Base-Year \$	3910.8	4536.7	4593.3
 Escalation	 386.4	 433.2	 151.1
Development (RDT&E)	(-1.1)	(-1.1)	(-0.8)
Procurement	(387.5)	(434.3)	(151.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	4297.2	4969.9	4744.4
 b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
Total	1	1	1

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs --  
\$851.9M

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CVN-68 Class, December 31, 2002

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

CVN-77

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	0.0	215.5	308.4
Procurement	4557.1	4719.2	4671.0
Basic	(2901.1)		(3234.9)
Government Furnished Eq	(1547.8)		(1032.4)
Other Costs	(21.9)		(257.6)
OF/PD	(86.3)		(146.1)
Unknown			(0.0)
Total Sailaway	(4557.1)		(4671.0)
Total Other Wpn Sys	(0.0)		(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	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1995 Base-Year \$	4557.1	4934.7	4979.4
Escalation	983.7	1039.0	564.5
Development (RDT&E)	(0.0)	(19.3)	(29.5)
Procurement	(983.7)	(1019.7)	(535.0)
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 \$	5540.8	5973.7	5543.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
Total	1	1	1

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs --

\$695.4M (Spare reactor components were used as free assets for this program)

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12. (U) Unit Cost Summary:

CVN-76

	UCR Baseline (OCT 1992 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	4536.7	4593.3	
(2) Quantity	1	1	
(3) Unit Cost	4536.700	4593.300	+1.25
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	4488.6	4555.1	
(2) Quantity	1	1	
(3) Unit Cost	4488.600	4555.100	+1.48

CVN-77

	UCR Baseline (OCT 1992 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	4934.7	4979.4	
(2) Quantity	1	1	
(3) Unit Cost	4934.700	4979.400	+0.91
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	4719.2	4671.0	
(2) Quantity	1	1	
(3) Unit Cost	4719.200	4671.000	-1.02

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13. (U) Cost Variance Analysis:

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	+10.8	-283.8	-	-283.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+35.6	-	+35.6
Estimating	-10.4	+608.0	-	+597.6
Other	-	+139.1	-	+139.1
Support	-	-	-	-
Subtotal	-9.6	+498.9	-	+489.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-42.1	-	-42.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-42.1	-	-42.1
Total Changes	-9.6	+456.8	-	+447.2
Current Estimate	37.4	4707.0	-	4744.4

(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	-	+34.5	-	+34.5
Estimating	-9.9	+585.7	-	+575.8
Other	-	+125.2	-	+125.2
Support	-	-	-	-
Subtotal	-9.9	+745.4	-	+735.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-53.0	-	-53.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-53.0	-	-53.0
Total Changes	-9.9	+692.4	-	+682.5
Current Estimate	38.2	4555.1	-	4593.3

(U) The calculate economic variance was \$0.

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

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) Procurement

Revised estimate due to reduced cost for  
required Government Furnished Equipment  
(GFE) (Estimating) -53.0 -42.1

Procurement Subtotal -53.0 -42.1

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	-6.8	-415.1	-	-421.9
Quantity	-	-	-	-
Schedule	-	-141.4	-	-141.4
Engineering	+157.3	-223.0	-	-65.7
Estimating	+231.9	+107.8	-	+339.7
Other	-	+127.0	-	+127.0
Support	-	-	-	-
Subtotal	+382.4	-544.7	-	-162.3
Current Changes:				
Economic	-2.2	-53.7	-	-55.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-42.3	+263.6	-	+221.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-44.5	+209.9	-	+165.4
Total Changes	+337.9	-334.8	-	+3.1
Current Estimate	337.9	5206.0	-	5543.9

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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	-	-138.9	-	-138.9
Engineering	+141.2	-146.5	-	-5.3
Estimating	+204.7	+53.4	-	+258.1
Other	-	+114.7	-	+114.7
Support	-	-	-	-
Subtotal	+345.9	-117.3	-	+228.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-37.5	+231.2	-	+193.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-37.5	+231.2	-	+193.7
Total Changes	+308.4	+113.9	-	+422.3
Current Estimate	308.4	4671.0	-	4979.4

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-3.3
Economic adjustment for negative program change. (Economic)	N/A	+1.1
Adjustment for Current and Prior Inflation. (Estimating)	+2.2	+2.5
Revised estimate due to procurement of legacy radar instead of development of new phased array (Estimating)	-39.7	-44.8
RDT&E Subtotal	-37.5	-44.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-53.7
Adjustment for Current and Prior Inflation. (Estimating)	+48.2	+53.7
Increased procurement due to inclusion of all Outfitting and Post Delivery costs and Congressionally added funds for transformational technologies and initiatives for the CVN 77 IWS (Estimating)	+183.0	+209.9

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CVN-68 Class, December 31, 2002

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>
Procurement Subtotal	+231.2	+209.9

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):  
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	-283.00	--	--	+35.60	+555.50	+139.10	--	+447.20	4744.40

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	-283.80	--	--	+35.60	+565.90	+139.10	--	+456.80	4707.00

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
IOC	N/A	N/A	DEC 2002	APR 2003
Total Cost	N/A	N/A	4297.2	4744.4
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	4297.2	4744.4

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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	-477.80	--	-141.40	-65.70	+561.00	+127.00	--	+3.10	5543.90

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	-468.80	--	-141.40	-223.00	+371.40	+127.00	--	-334.80	5206.00

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
IOC	N/A	N/A	DEC 2008	JAN 2008
Total Cost	N/A	N/A	5540.8	5543.9
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	5540.8	5543.9

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

a. RDT&E --	Initial Contract Price		
(U) Warfare Sys Development:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NGNN, Newport News, VA			
N00024-98-C-2104, CPAF - CLIN 15	\$102.0	N/A	0
Award: January 26, 2001			
Definitized: January 26, 2001			
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$102.0	\$102.0	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$102.0	N/A	0

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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	<u>N/A</u>	<u>N/A</u>
Net Change	N/A	N/A

Explanation of Change:

(U) EVMS is not a CDRL item contracted for.

b. Procurement --

(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>
\$2784.2	\$3019.3	1	\$2952.0	\$2952.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-186.5	\$-42.2
Cumulative Variances To Date (10/22/02)	<u>\$-271.6</u>	<u>\$-56.1</u>
Net Change	\$-85.1	\$-13.9

Explanation of Change:

(U) The unfavorable net cost variances increased due to a net increase in man-hour variance, and an increase in material estimates due to leased labor projections and revised material costs.

The unfavorable net schedule variances are based on a 28 Mar 2003 delivery date and increased because scheduled construction events were not completed due to manpower shortages in specific trades.

(U) Contract Comments:

The change in Initial Contract Target Price to Current Contract Target Price is the result of an Apr 1999 rebaselining and target increases associated with change order contract modifications.

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

(U) <u>Nuclear Components:</u> DEPARTMENT OF ENERGY, WASHINGTON DC N00024-67-F-5110, FFP/CPEF 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 <u>Target</u> <u>Ceiling</u> <u>Qty</u>	Estimated Price At Completion <u>Contractor</u> <u>Program Manager</u>
\$859.2              N/A              0	\$859.2              \$859.2

	<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) EVMS is not a CDRL item contracted for.

(U) Contract Comments:

The contract amounts include funding for CVN 74/75 and CVN 76.

(U) <u>CVN 77 Construction:</u> NGNN, Newport News, VA N00024-98-C-2104, FPIF Award: January 26, 2001 Definitized: January 26, 2001	Initial Contract Price <u>Target</u> <u>Ceiling</u> <u>Qty</u>
	\$3152.0      \$3693.0      1

Current Contract Price <u>Target</u> <u>Ceiling</u> <u>Qty</u>	Estimated Price At Completion <u>Contractor</u> <u>Program Manager</u>
\$3157.3      \$3698.9      1	\$3619.0      \$3706.0

	<u>Cost Variance</u> <u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0              \$0.0
Cumulative Variances To Date (12/31/02)	<u>\$-47.5</u> <u>\$-93.1</u>
Net Change	\$-47.5              \$-93.1

Explanation of Change:

(U) The unfavorable net schedule variance is due to labor resource issues, selected material delinquencies and transitioning to a new planning process.

The unfavorable net cost variance is due to decreases in projected collectable escalation and Estimate at Completion labor and overhead rates



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

CVN-76

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

<u>Appropriation</u>	<u>Prior Years</u> (FY91-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	37.4	-	-	-	37.4
Procurement	4704.1	2.9	-	-	4707.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4741.5	2.9	-	-	4744.4

CVN-77

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

<u>Appropriation</u>	<u>Prior Years</u> (FY98-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-09)	<u>Total</u>
RDT&E	276.9	28.7	25.6	6.7	337.9
Procurement	5023.6	-	7.6	174.8	5206.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5300.5	28.7	33.2	181.5	5543.9

b. Annual Summary -- CVN-76

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

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 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	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993			754.4	754.4	750.8
1994					
1995	1		3334.6	3334.6	3436.6

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16b. (U) Program Funding Summary (Cont'd):  
CVN-76

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996					
1997					
1998					
1999			116.3	116.3	125.8
2000			6.3	6.3	6.9
2001			114.9	114.9	127.9
2002			181.9	181.9	205.4
2003			44.2	44.2	50.7
2004			2.5	2.5	2.9
Subtotal	1		4555.1	4555.1	4707.0

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		4555.1	4593.3	4744.4

b. Annual Summary -- CVN-77

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

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				31.3	32.9
1999				46.2	49.1
2000				49.7	53.6
2001				37.0	40.5
2002				46.8	51.6
2003				44.1	49.2
2004				25.3	28.7
2005				22.3	25.6
2006				5.0	5.9
2007				0.7	0.8
Subtotal				308.4	337.9

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CVN-68 Class, December 31, 2002

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

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998			45.5	45.5	48.7
1999			113.6	113.6	122.9
2000			681.0	681.0	747.5
2001	1		3608.0	3608.0	4016.4
2002					
2003			76.8	76.8	88.1
2004					
2005			6.4	6.4	7.6
2006			22.2	22.2	26.8
2007			9.0	9.0	11.1
2008			53.0	53.0	66.3
2009			55.5	55.5	70.6
Subtotal	1		4671.0	4671.0	5206.0

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		4671.0	4979.4	5543.9

17. (U) Delivery/Expenditure Information:

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): \$ 4410.4

(U) Percent Total Program Expended: 93.0%

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

CVN-77

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): \$ 940.3

(U) Percent Total Program Expended: 17.0%

18. (U) Operating and Support Costs:

CVN-76

a. (U) Assumptions and Ground Rules --

These costs are based on the operating costs for supplies, equipage, and pier side support when deployed. This O&S estimate assumes carrier life cycle is 50 years vice the 48 years in previous estimates. The personnel indirect support costs have been included as part of the Indirect Costs. These assumptions are carried over from the CVN 74/75. There is no antecedent for this program.

Date of cost estimate: Feb 2002.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	CVN-76 Avg Annual Cost Per CVN	No Antecedent System
Mission Pay & Allowances	134.5	N/A
Unit Level Consumption	30.1	N/A
Intermediate Maintenance	1.2	N/A
Depot Maintenance	106.7	N/A
Contractor Support	0.0	N/A
Sustaining Support	14.1	N/A
Indirect Costs	111.9	N/A
Total	398.5	N/A

Total O&S Cost	CVN-76	No Antecedent System
BY\$ (In Millions)	19.9	N/A
TY\$ (In Millions)	56.4	N/A

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CVN-68 Class, December 31, 2002

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

CVN-77

a. (U) Assumptions and Ground Rules --  
Same as CVN 76 above.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	CVN-77 Avg Annual Cost Per CVN	No Antecedent System
Mission Pay & Allowances	132.4	N/A
Unit Level Consumption	29.0	N/A
Intermediate Maintenance	1.1	N/A
Depot Maintenance	101.7	N/A
Contractor Support	0.0	N/A
Sustaining Support	14.0	N/A
Indirect Costs	110.0	N/A
Total	388.2	N/A

Total O&S Cost	CVN-77	No Antecedent System
BY\$ (In Millions)	19.4	N/A
TY\$ (In Millions)	64.1	N/A

Report Creation Date: 03/23/2003 2:21:33 PM

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# AF-20 NAVSTAR GPS

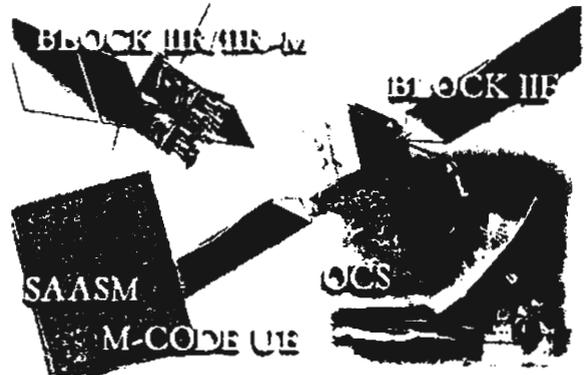
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: Navstar GPS

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Navstar Global Positioning System (GPS)

2. DoD Component: USAF

Joint Participants:

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

3. Responsible Office and Telephone Number:

Navstar GPS Joint Program Office	COL WESLEY A. BALLENGER, JR.
Space and Missile Systems Center	Assigned: October 31, 2002
2435 Vela Way, Suite 1613	DSN 833-1526; COMM (310) 363-1526
El Segundo, CA 90245-5500	WESLEY.BALLENGER@LOSANGELES.AF.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0305164F

PE 0305165F

PROCUREMENT:

APPN 3010 ICN 000000 (Air Force)

APPN 3080 ICN 836730 (Air Force)

APPN 3080 ICN 836790 (Air Force)

APPN 3080 ICN 86190A (Air Force)

APPN 3020 ICN MGPS00 (Air Force)

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DEPARTMENT OF DEFENSE

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03-C-0295

**5. References:**

Modernized Space & OCS

SAR Baseline (Production Estimate):

USecAF Approved Acquisition Program Baseline dated February 26, 2002.

Approved Program:

USecAF Approved Acquisition Program Baseline (APB) dated February 14, 2003.

Modernized User Equipment

SAR Baseline (Production Estimate):

USecAF Approved Acquisition Program Baseline dated February 26, 2002.

Approved Program:

USecAF Approved Acquisition Program Baseline (APB) dated February 14, 2003.

**6. Mission and Description:**

The Navstar Global Positioning System (GPS) is a space-based radio positioning, navigation, and time distribution system. 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, counter-air and aerospace defense, theater and tactical command, control, communications and intelligence, precision munitions guidance, and ground/sea warfare. GPS also 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.

**7. Executive Summary:**

Overview:

(U) This report is organized to cover Space and Control and User Equipment. Space and Control consists of Block IIR/IIR-M and IIF satellites and Control Segment systems. User Equipment consists of technologies and solutions for GPS receiver systems, which the JPO designs or procures to interface with the Space and Control Systems. Our separate ACAT III efforts: the Defense Advanced GPS Receiver (DAGR) and Miniaturized Airborne GPS Receiver 2000 (MAGR-2K), are not included in the SAR.

(U) GPS Satellites

7. Executive Summary (Cont'd):

(U) Full-scale development of the Navstar GPS satellite program began in June 1979 with Block I satellites. Acquisition of follow-on satellites include Block II/IIA, Block IIR, Block IIR-M, and Block IIF satellites.

(U) There are currently 20 Block II/IIA satellites on orbit. The final Block II/IIA satellite was launched November 5, 1997.

(U) There are currently seven Block IIR satellites on orbit, including the one successfully launched on January 29, 2003. Block IIR satellites boast dramatic improvements over those previous blocks, such as reprogrammable satellite processors that enable problem fixes and upgrades in flight, increased satellite autonomy, and radiation hardness. Thirteen Block IIR Satellites remain to be launched.

(U) In August 2000, Congress approved modernizing up to 12 Block IIR satellites (designated as Block IIR-Ms) and all Block IIF satellites. The Defense Review Board (DRB) approved a plan to modify up to twelve Block IIR satellites with a second civil signal (L2C) and a new earth coverage military signal (M-Code). The DRB also approved modernization of the first six Block IIF satellites with these same capabilities plus an additional third civil signal (L5). However, due to funding and schedule issues, eight (rather than 12) Block IIR satellites are being modified to radiate the new military signal (M-Code) on both the L1 and L2 channels as well as the more robust civil signal (L2C) on the L2 channel. The M-Code signal is a more robust and capable signal architecture. The first launch of the Modernized Block IIR Satellite (re-designated as Block IIR-M) is scheduled in 2004. Block IIR-M has successfully completed its Preliminary Design and Critical Design Reviews.

(U) Block IIF satellites are the next generation (beyond IIR-M) of GPS Space Vehicles (SVs). Block IIF satellites provide all the capabilities of the previous blocks with some additional capabilities as well. Improvements include an extended design life of 12 years, faster processors with more memory, and a new civil signal on a third frequency for safety-of-flight applications, called L5. These parameters will better support the warfighter in today's evolving threat environment and provide better support to civil GPS customers worldwide. The advent of the L5 civil signal represents another step in our commitment to continue GPS as a dual-use system.

(U) All major milestones for the Block IIF satellites were realigned to meet the modernized schedule. The modernized IIF Preliminary Design Review and the Critical Design Review have now been successfully completed. The first Block IIF satellite is scheduled to launch in 2006.

(U) The FY03 PB included funds to accelerate putting a higher power GPS service on orbit. The implementation approach for adding a "Flexible Power" capability to both the IIR-M and IIF satellites involves swapping power between the legacy P (Y) and new M-Code military signal as needed in a jamming environment, to increase the overall signal strength of one or the other signal. Further modifications are required to both the IIR-M and IIF satellites, along with the Control Segment, to incorporate this additional military capability.

7. Executive Summary (Cont'd):

(U) The program office sponsored two studies to implement Flexible Power capability onto the GPS IIR-M and IIF programs. These Lockheed Martin and Boeing studies will identify technical options & requirements and associated cost impacts to the satellites and Control Segment, and facilitate development of operational concepts. The studies are in progress with final results due the end of March 2003. Initial findings indicate greater than expected technical and cost challenges for Flexible Power implementation. However, the Air Force is still committed to Flexible Power implementation and is diligently working with Lockheed Martin and Boeing on plans for integration as soon as possible.

(U) GPS Control Segment

(U) The Operational Control Segment (OCS) consists of a Master Control Station (MCS) at Schriever AFB, CO; a back-up Master Control Station (BUMCS) at Gaithersburg, MD; and a worldwide network of Ground Antennas (GA) and Monitor Stations (MS) used to command and control the GPS constellation. The original OCS mainframe computers were procured in the mid-1980's. In 1995, the JPO awarded Lockheed-Martin Mission Systems (LM-MS) a contract to replace these computers for control of the legacy SVs with a new distributed architecture called the Architecture Evolution Plan (AEP). In 1996, the JPO awarded a separate contract to the Boeing Company under the Block IIF effort that would satisfy the next generation space and control requirements. However, AEP was more complex than originally envisioned and experienced cost and schedule impacts. These impacts adversely affected the Block IIF OCS development effort.

(U) As a result, in early 1999, the Air Force directed its two major OCS contractors to consolidate their efforts into a single integrated program. Under the Single Prime Initiative (SPI), Boeing became the single prime contractor for both OCS development and sustainment, with Lockheed Martin and Computer Sciences Corporation (CSC) participating as major subcontractors. Under this plan, the first operational release of the new OCS would be the Version 5 (V5) family, scheduled for delivery in three software releases. The third software release would be Version 5.2 and will undergo full system test prior to supporting the first Block IIF satellite launch. Version 3/4 of the AEP was delivered to the GPS Support Facility at Schriever AFB in September 2001 to support development.

(U) Due to concerns with AEP progress, on October 1, 2002 Boeing re-allocated development efforts to Lockheed Martin and the Harris Corporation. The resulting restructure is in progress, with the Air Force scheduled to conduct an Integrated Baseline Review (IBR) in April 2003.

(U) GPS User Equipment

(U) GPS User Equipment (UE) 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, development, test,

7. Executive Summary (Cont'd):

and production of a multitude of airborne, shipboard, and handheld receivers, antennae, and anti-jam technologies. During the last decade, GPS UE funding was used to develop and field more capable GPS receivers, aid other services in planning and engineering their GPS UE needs, and develop the third generation GPS security architecture: the Selective Availability Anti-Spoofing Module (SAASM). Current development efforts focus on numerous advanced anti-jam technologies as well as planning for new M-Code User Equipment (MUE) receivers capable of tracking and exploiting the benefits of the M-Code military signal in space.

(U) The Air Force revised its acquisition strategy for MUE to further refine requirements and better integrate the PRONAV security architecture. This risk mitigation strategy will further the development of enabling technologies, and clarify the essential requirements to carry into Phase B, Pre-Acquisition. The contract award is now planned for FY05. This strategy also synchronizes well with the SV and OCS upgrades for M-Code, and supports the revised APB milestone of M-Code IOC in December 2008.

(U) The strategy for future GPS User Equipment is for the JPO to be the Center of Excellence. The JPO will develop UE solutions and ensure that an industrial base of multiple developers is capable of creating and fielding those solutions. Instead of procuring UE, the JPO (Center of Excellence) will assist the platform system managers who will be responsible for acquisition, integration and test for their platform-specific GPS User Equipment.

8. Threshold Breaches:

Modernized Space & OCS

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

8. Threshold Breaches (Cont'd):

b. Nunn-McCurdy Unit Cost:

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

Modernized User Equipment

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:

Modernized Space & OCS

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Space Segment IIR			
Block IIR Contract Award	JUN 1989	JUN 1989	JUN 1989
1st IIR SV Contract Delivery	AUG 1996	AUG 1996	SEP 1996
2nd IIR SV Contract Delivery	NOV 1996	NOV 1996	MAY 1997 (Ch-1)
1st IIR SV Available for Launch	JAN 1997	JAN 1997	JAN 1997
Space Segment IIR-M			
Start Production	MAR 2001	MAR 2001	MAR 2001
1st IIR-M SV available for launch	MAY 2003	JUL 2004	JUL 2004
Space Segment IIF			
Start Production	JUN 2002	JUN 2002	JUN 2002
1st IIF SV available for launch	JUN 2005	JUN 2006	JUN 2005
Operational Control System			
Legacy Upgrade for IIR-M	DEC 2002	N/A	DEC 2002

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9a. Schedule (Cont'd):  
Modernized Space & OCS

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Version 5.2 upgrade with test capability	DEC 2004	N/A	DEC 2004
Version 6 upgrade with M Code, L2C, and L5 operational capability	SEP 2007	SEP 2007	SEP 2007
System Schedules			
L5 Version 1 ICD	APR 2001	N/A	APR 2001
L5 Version 2 ICD	JAN 2003	N/A	JAN 2003
DT&E Complete, L5	APR 2006	N/A	APR 2006
SAASM OA complete	FEB 2007	N/A	FEB 2007
Final M-code space-to-user ICD	MAR 2008	N/A	MAR 2008
IOT&E Complete, M-code	SEP 2008	N/A	SEP 2008
Military and Civil Codes IOC	DEC 2008	N/A	DEC 2008

Acronym List:

DT&E = Development Test & Evaluation  
ICD = Interface Control Document  
IOC = Initial Operational Capability  
IOT&E = Initial Operational Test and Evaluation  
M code = Military code  
OA = Operational Assessment  
SAASM = Selective Availability/Anti-Spoofing Module  
SV = Space Vehicle

b. Current Change Explanations --

(Ch-1) Changed from June 1997 to May 1997 because milestone was incorrectly reported in the previous SAR.

Modernized User Equipment

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
SAASM capability available	JAN 2002	JAN 2002	JAN 2002
High power trade study complete	JAN 2003	N/A	JAN 2003
Modernized UE Specs and final drafts of ICDs	DEC 2005	N/A	DEC 2005
Prototype M-code Receiver card from at least two manufacturers	FEB 2006	N/A	FEB 2006
Producible M-code Receiver card from at least two manufacturers	DEC 2007	N/A	DEC 2007

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9b. Schedule (Cont'd):

Modernized User Equipment

b. Current Change Explanations -- None

10. Performance Characteristics:

Modernized Space & OCS

a. Performance

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
<b>PPS System Perf</b>				
Pos Accuracy	2.1m H 4.0m V	1.3m H / 17m H 2.6m V / 35m V	TBD	1.6 M SEP
Velocity	0.01m/s	N/A / N/A	TBD	.01 m/s
Time Transfer	10nsec	3.3ns / 40ns	TBD	10 nsec
Availability	99.9%	N/A / N/A	TBD	better than 95% of having 24 satel- lites
<b>SPS System Perf</b>				
Pos Accuracy	1.0m H 4.0m V	1.3m H / 17m H 2.6m V / 35m V	TBD	<13M Horizon- tal <22M Vertical
Time Transfer	40nsec	3.3ns / 40ns	TBD	<40 Nanosec- onds
Availability	90%	N/A / N/A	TBD	>98%
L5 Signal Power	-154dBW	-154.0dB/ -154.9dB	TBD	-154.9 dBW

Acronym List:

PPS = Precise Positioning Service  
 SEP = Spherical Error Probable  
 SPS = Standard Positioning Service

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

Modernized Space & OCS

b. Current Change Explanations -- None

Modernized User Equipment

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Time-To-First-Fix	1 min	1 min / 2 min	TBD	.8 Min
Pos Accuracy	2.1m H 4.0m V	2.1m H / 19m H 4.0m V / 38m V	TBD	2.1m H
Velocity	0.01m/s	0.01m/s / 0.1 m/s	TBD	.01 m/s
Time Transfer	10nsec	10 ns / 44ns	TBD	10 nsec

b. Current Change Explanations -- None

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

Modernized Space & OCS

a. Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	1776.2	1949.5	1950.2
Procurement	3239.4	3619.0	3618.0
Flyaway	(3205.8)		(0.0)
Recurring Flyaway			(3233.1)
Non-Recurring Flyaway			(207.3)
Total Flyaway	(3205.8)		(3440.4)
Other Weapon System	(33.6)		(175.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(2.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	<u>5015.6</u>	<u>5568.5</u>	<u>5568.2</u>
Escalation	105.3	163.3	163.9
Development (RDT&E)	(53.1)	(41.4)	(41.0)
Procurement	(52.2)	(121.9)	(122.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>5120.9</u>	<u>5731.8</u>	<u>5732.1</u>
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	33	37	37
Total	33	37	37

Note: LRIP has not been approved for the Modernized Space & OCS program.

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

Modernized Space & OCS

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

Modernized User Equipment

a. Cost --	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	543.5	781.1	796.7
Procurement	254.3	260.2	261.1
Flyaway			(0.0)
Recurring Flyaway			(0.0)
Non-recurring Flyaway			(0.0)
Unknown			(0.0)
Total Flyaway			(0.0)
Other Weapon System	(6.5)		(9.1)
Peculiar Support	(247.8)		(252.0)
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 2000 Base-Year \$	<u>797.8</u>	<u>1041.3</u>	<u>1057.8</u>
 Escalation	 76.6	 67.8	 67.4
Development (RDT&E)	(57.4)	(52.1)	(51.7)
Procurement	(19.2)	(15.7)	(15.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>874.4</u>	<u>1109.1</u>	<u>1125.2</u>

Note: The JPO (Center of Excellence) will not procure GPS UE in the future. Instead, the JPO will develop UE solutions and assist the platform system managers.

b. Quantity

Development (RDT&E)	0	0	0
Procurement	0	0	0
Total	<u>0</u>	<u>0</u>	<u>0</u>

Note: LRIP has not been approved for the Modernized User Equipment program.

c. Foreign Military Sales -- None.

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

Modernized User Equipment

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

Modernized Space & OCS

	UCR Baseline (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	5568.5	5568.2	
(2) Quantity	37	37	
(3) Unit Cost	150.500	150.492	-0.01
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	3619.0	3618.0	
(2) Quantity	37	37	
(3) Unit Cost	97.811	97.784	-0.03

Modernized User Equipment

	UCR Baseline (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	1041.3	1057.8	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	260.2	261.1	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

Note: The JPO (Center of Excellence) will not procure GPS UE in the future. Instead, the JFO will develop UE solutions and assist the platform system managers.

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**13. Cost Variance Analysis:**

Modernized Space & OCS

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1829.3	3291.6	-	5120.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-1.9	+7.5	-	+5.6
Estimating	-	-0.2	-	-0.2
Other	-	-	-	-
Support	-	-0.4	-	-0.4
Subtotal	-1.9	+6.9	-	+5.0
Current Changes:				
Economic	-17.7	-29.4	-	-47.1
Quantity	-	+288.4	-	+288.4
Schedule	-	-	-	-
Engineering	+199.9	+101.1	-	+301.0
Estimating	-18.4	-69.5	-	-87.9
Other	-	-	-	-
Support	-	+151.8	-	+151.8
Subtotal	+163.8	+442.4	-	+606.2
Total Changes	+161.9	+449.3	-	+611.2
Current Estimate	1991.2	3740.9	-	5732.1

Summary (FY 2000 Constant (Base Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1776.2	3239.4	-	5015.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+5.1	+7.5	-	+12.6
Estimating	-	-58.2	-	-58.2
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	+5.1	-50.8	-	-45.7
Current Changes:				
Quantity	-	+260.5	-	+260.5
Schedule	-	-	-	-
Engineering	+186.0	+82.3	-	+268.3
Estimating	-17.1	57.5	-	+40.4
Other	-	-	-	-
Support	-	+144.1	-	+144.1
Subtotal	+168.9	+429.4	-	+598.3
Total Changes	+174.0	+378.6	-	+552.6
Current Estimate	1950.2	3618.0	-	5568.2

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

Modernized Space & OCS

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices (Economic)	N/A	-17.7
	Adjustment for Current and Prior Inflation (Estimating)	+6.2	+6.5
	Revised estimate for GPS engineering support (Estimating)	-20.9	-22.4
	Systems Engineering Technical Assistance (SETA) Services reduction (Estimating)	-2.4	-2.5
	Additional requirements to include Flexible Power (Engineering)	+186.0	+199.9
	RDT&E Subtotal	+168.9	+163.8
(2)	<u>Procurement</u>		
	Revised escalation indices (Economic)	N/A	-29.4
	Total Quantity Variance associated with increase of 4 satellites from 33 to 37 (Quantity)	+260.5	+288.4
	Adjustment for Current and Prior Year Inflation (Estimating)	+6.1	+6.3
	SETA Services reduction (Estimating)	-3.4	-7.5
	Revised estimate for launch services and program office support (Estimating)	-60.2	-68.3
	Addition of initial spares not previously included in the SAR (Support)	+2.1	+2.2
	Inclusion of all regular procurement and space modifications (funds received or programmed but not previously included) (Support)	+142.0	+149.6
	Additional requirements to include Flexible Power (Engineering)	+82.3	+101.1
	Procurement Subtotal	+429.4	+442.4

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13. Cost Variance Analysis (Cont'd):

Modernized User Equipment

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	600.9	273.5	-	874.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-6.3	-	-	-6.3
Other	-	-	-	-
Support	-	-56.8	-	-56.8
Subtotal	-6.3	-56.8	-	-63.1
Current Changes:				
Economic	-7.7	-2.2	-	-9.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+198.6	-	-	+198.6
Estimating	+62.9	-	-	+62.9
Other	-	-	-	-
Support	-	+62.3	-	+62.3
Subtotal	+253.8	+60.1	-	+313.9
Total Changes	+247.5	+3.3	-	+250.8
Current Estimate	848.4	276.8	-	1125.2

**13a. Cost Variance Analysis (Cont'd):**  
Modernized User Equipment

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	543.5	254.3	-	797.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+16.9	-	-	+16.9
Other	-	-	-	-
Support	-	-47.5	-	-47.5
Subtotal	+16.9	-47.5	-	-30.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+182.5	-	-	+182.5
Estimating	+53.8	-	-	+53.8
Other	-	-	-	-
Support	-	+54.3	-	+54.3
Subtotal	+236.3	+54.3	-	+290.6
Total Changes	+253.2	+6.8	-	+260.0
Current Estimate	796.7	261.1	-	1057.8

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E	Base-Year	Then-Year
Revised escalation indices. (Economic)	N/A	-7.7
Adjustment for Current and Prior Inflation. (Estimating)	+1.9	+1.8
Adjustment to prior year allocation between Modernization and Legacy (FY94, FY00-FY02) (Estimating)	1.2	-1.9
Adjustment to Integration Tech/Program Support (FY02-FY09) (Estimating)	+11.1	+12.2
Funding increase to support additional M-Code requirements (FY03-FY09) (Engineering)	+138.0	+150.8
Funding increase to support additional Flex Power requirements (FY04-FY06) (Engineering)	+16.7	+17.7
Funding increase to support additional Miniaturized Electro-Mechanical System (MEMS) (FY03-FY09) (Engineering)	+17.0	+18.4
Adjustment to reflect a decrease in the total Selective Availability/Anti-Spoofing Module (SAASM) effort (FY02-FY09) (Engineering)	-7.1	-7.5
Funding increase to support additional Anti-Jam Surge Acquisition (Engineering)	+3.5	+3.7

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

Modernized User Equipment

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Funding increase to support additional Ground Based-GPS Receiver Applications Module (GB-GRAM) (FY03-FY05) (Engineering)	+0.9	+1.0
Funding adjustments in support of Advanced Receiver Sets (Engineering)	0.8	-1.0
Funding increase to support additional Advanced Antenna Development (Engineering)	+12.5	+13.5
Funding increase to support additional Advanced Development and Test (Engineering)	+1.8	+2.0
Revised estimate for Advanced Antenna development (Estimating)	-21.4	-23.1
FY09 funds not previously recorded (Estimating)	+64.1	+73.9
RDT&E Subtotal	<u>+236.3</u>	<u>+253.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2.2
Adjustment of FY98 - FY09 funds in Systems Engineering/Program Support (FFRDC and SETA) (Support)	+56.8	+64.5
Funding adjustments in support of Advanced Receiver Sets (Support)	-2.5	2.2
Procurement Subtotal	<u>+54.3</u>	<u>+60.1</u>

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

Modernized Space & OCS

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	
155.18	-1.27	8.99	--	+8.29	-2.38	--	+4.09	-0.257	154.92

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

Modernized Space & OCS

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		
99.75	-0.795	-3.00	--	+2.94	-1.88	--	+4.09	+1.36	101.11	

Note: Block IIR contract award is characterized as Milestone III

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	JUN 1989	JUN 1989
IOC	N/A	N/A	DEC 2008	DEC 2008
Total Cost	N/A	0.0	5120.9	5732.1
Total Quantity	N/A	N/A	33	37
Prog Acq Unit Cost	N/A	N/A	155.2	154.9

Note: Block IIR contract award is characterized as Milestone III

Modernized User Equipment

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		
N/A	--	--	--	--	--	--	--	--	N/A	

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		
N/A	--	--	--	--	--	--	--	--	N/A	

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

Modernized User Equipment

Note: The JPO (Center of Excellence) will not procure GPS UE in the future. Instead, the JPO will develop UE solutions and assist the platform system managers.

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
IOC	N/A	N/A	JAN 2002	JAN 2002
Total Cost	N/A	N/A	874.4	1125.2
Total Quantity	N/A	N/A	0	0
Prog Acq Unit Cost	N/A	N/A	0.0	0.0

Note: The JPO (Center of Excellence) will not procure GPS UE in the future. Instead, the JPO will develop UE solutions and assist the platform system managers.

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

a. RDT&E --	Initial Contract Price		
GPS IIF OCS/MOSC DEV:	Target	Ceiling	Qty
BOEING NORTH AMERICAN, SEAL BEACH CA			
F04701-96-C-0025, FFP/AF/EPA/CPAF	\$13.9	\$0.0	0
Award: April 22, 1996			
Definitized: April 22, 1996			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$686.1	N/A	0	\$750.3	\$760.0
Previous Cumulative Variances			Cost Variance	Schedule Variance
Cumulative Variances To Date (10/31/02)			\$-10.2	\$-6.1
Net Change			\$-18.1	\$-5.5
			\$-7.9	\$0.6

Explanation of Change:

Schedule Variance (SV):

(U) The SV was mainly due to Version 5 (V5) software development, and Simulator WBS elements. V5 software development variance was caused by problems in V5.0 diverting resources from V5.1 and V5.2, and the late completion of the CSC lab and Configuration Management environments. In

15. Contract Information (Cont'd):

addition, resources were diverted from V5.1 and V5.2 to support V5.0 regression testing and support to fixing problems, causing a delay in V5.1 and V5.2 development. During the subcontract restructure, the SV is going to continue, as that work is not being performed. Simulator's variance was due to poor pre-integration testing, and as such, did not operate correctly during system test.

(U) Cost Variance (CV):

(U) The CV is comprised of -\$5.9M actuals on the now completed Version 3/4 Requirements Verification Testing (RVT). The remainder of the variance is due to V5 software development as mentioned in the Schedule Variance section above. SE/PM WBS element also contributed to the variance due to more effort than planned in development environment preparation, requirements work, simulation tool development, and CM environment set up. These unfavorable variances will not be recoverable.

Contract Comments:

(U) The contract information above only pertains to the Operational Control Segment (OCS) 3600 Cost Plus Award Fee (CPAF) development efforts.

(U) The information is based on October 2002 month-end CPR. On October 1, 2002, Boeing issued a "stop work" order to Computer Sciences Corporation (CSC), one of its major subcontractors. Boeing is currently restructuring the Control Segment development effort with Lockheed-Martin (LM) picking up responsibility for completing OCS V5 and Harris Corporation completing Launch, Anomaly Resolution, and Disposal Operations (LADO).

(U) Due to the significant contract restructure, Boeing is implementing an Over Target Baseline (OTB). Schedule and Cost Variances will be set to zero (BCWS- BCWP-ACWP) by the end of March 2003 in preparation for the April 2003 Integrated Baseline Review (IBR). Because of the program restructure, earned value data is questionable until completion of the IBR.

(U) Estimated Price at Completion:

(U) The Contractor's estimate includes a \$40M overrun. However, currently the contractor is projecting an OTB of \$49.5M. The Program Manager will provide a refined estimate after the IBR is completed by the end of April 2003.

15. Contract Information (Cont'd):

<u>BLK IIR-M SAT DEV:</u>			<u>Initial Contract Price</u>		
Lockheed Martin, Valley Forge, PA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F04701-00-C-0006, FFP/CPIF			\$50.8	N/A	0
Award: August 18, 2000					
Definitized: September 25, 2001					
<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>	
\$65.2	N/A	0	\$71.8	\$71.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-2.1	\$-0.8	
Cumulative Variances To Date (12/31/02)			\$ 4.1	\$-0.9	
Net Change			\$-2.0	\$-0.1	

Explanation of Change:

Schedule Variance (SV):

(U) As of December 31, 2002, the GPS Block IIR Modernization development contract has an unfavorable net change SV of -\$0.1M. The SV was mainly caused in the Navigation Processor subsystem. ITT (Lockheed Martin's subcontractor) has been experiencing problems associated with security, specifications, drawings, and placement of material orders due to added scope and cost overruns.

(U) Cost Variance (CV):

(U) As of December 31, 2002, the GPS Block IIR Modernization contract has an unfavorable net change CV of -\$2.0M. The increase in the CV was mainly due to ITT's payload design problems related to the problems mentioned in the SV paragraph above.

Contract Comments:

(U) The contract information above only pertains to the IIR Modernization 3600 Cost Plus Incentive Fee (CPIF) development efforts.

(U) Estimated Price at Completion:

(U) There was an increase in the current contract price due to an increase in scope resulting from the effort to resolve the vulnerability of the new M-Code signal to random noise and jamming.

15. Contract Information (Cont'd):

GPS IIF Space Segment DEV:			Initial Contract Price		
Boeing North American, Seal Beach CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F04701-96-C-0025, CPIF			\$205.0	N/A	0
Award: April 22, 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>	
\$205.0	N/A	0	\$205.0	\$208.6	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/19/02)			\$-0.8	\$-1.1	
Net Change			\$-1.5	\$-3.7	
			\$-0.7	\$-2.6	

Explanation of Change:

Schedule Variance (SV):

(U) As of December 19, 2002, the GPS IIF Space Segment Development has an unfavorable net change SV of \$2.6M. The SV was mainly caused by Navigational Data Unit (NDU), and L-Band Subsystem (LBS) WBS elements. NDU's SV was caused by ASIC Development, EDU Assembly, Test Station Development and Qualification Test. The variances were a result of late requirements definition causing design changes. LBS's SV was caused by the upgrades of Automated Test Equipment needed for testing the L-Band transmitters.

(U) Cost Variance (CV):

(U) As of December 19, 2002, the GPS IIF Space Segment Development has an unfavorable net change CV of -\$0.7M. The CV was mainly caused by Navigation Data Unit (NDU) WBS element. NDU's CV was caused by lack of defined requirements and delays to the design effort. The delay has required the retention of key resources beyond what was originally planned.

Contract Comments:

(U) The contract information above only pertains to the IIF Satellite Vehicle 3600 Cost Plus Award Fee (CPAF) development efforts.

(U) Estimated Price At Completion:

(U) The Estimated Price at Completion for the Program Manager includes an estimated \$3.6M overrun based on the program's historical data and using the SPI&CPI method.

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 (FY74-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-13)</u>	<u>Total</u>
RDT&E	1642.8	247.1	234.3	715.4	2839.6
Procurement	2298.2	284.5	368.2	1066.8	4017.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3941.0	531.6	602.5	1782.2	6857.3

Modernized Space & OCS

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

<u>Appropriation</u>	<u>Prior Years (FY86-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-13)</u>	<u>Total</u>
RDT&E	1331.7	146.5	129.9	383.1	1991.2
Procurement	2148.4	271.5	348.2	972.8	3740.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3480.1	418.0	478.1	1355.9	5732.1

Modernized User Equipment

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

<u>Appropriation</u>	<u>Prior Years (FY93-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	311.1	100.6	104.4	332.3	848.4
Procurement	149.8	13.0	20.0	94.0	276.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	460.9	113.6	124.4	426.3	1125.2

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Navstar GPS, December 31, 2002

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

b. Annual Summary -- Modernized Space & OCS

Appropriation: 3000 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				1.7	1.2
1987				17.0	12.8
1988				17.8	13.8
1989				41.8	34.0
1990				26.5	22.2
1991				40.3	35.1
1992				40.4	36.2
1993				51.0	46.6
1994				25.9	24.1
1995				37.2	35.2
1996				44.8	43.2
1997				86.3	84.3
1998				98.4	96.7
1999				102.3	101.7
2000				92.4	93.2
2001				178.3	182.4
2002				177.9	183.6
2003				273.6	285.4
2004				138.3	146.5
2005				120.8	129.9
2006				98.0	107.1
2007				76.3	84.8
2008				38.6	43.7
2009				34.5	39.7
2010				24.2	28.4
2011				37.8	45.1
2012				22.0	26.7
2013				6.1	7.6
Subtotal				1950.2	1991.2

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991		8.7	178.1	97.1	87.7
1992	4	8.4	80.2	178.3	163.0
1993	4	9.3	230.5	172.3	160.6
1994	4	8.3	162.4	177.0	168.3
1995	5	9.2	202.9	216.2	207.6
1996	4	8.6	116.5	149.2	145.0

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Navstar GPS, December 31, 2002

**16b. Program Funding Summary (Cont'd):**  
Modernized Space & OCS

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	3	7.4	179.4	192.2	189.5
1998	3	9.0	142.1	178.6	177.7
1999		10.8	69.0	79.8	80.4
2000		13.3	105.8	117.3	119.4
2001		12.3	157.2	157.9	162.3
2002		11.4	128.6	153.4	159.7
2003		11.4	205.6	214.3	226.1
2004		11.7	256.6	241.5	258.9
2005	3	11.5	293.3	307.5	334.9
2006	3	11.4	297.4	309.1	342.2
2007	3	11.3	207.0	236.2	266.2
2008	1	11.3	95.1	115.1	132.0
2009		11.0	59.3	70.3	82.1
2010		11.0	66.1	77.1	91.7
Subtotal	37	207.3	3233.1	3440.4	3555.3

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				3.3	2.6
1988				10.2	8.3
1989					
1990					
1991					
1992					
1993				5.9	5.5
1994				4.4	4.2
1995				5.1	4.9
1996				6.9	6.7
1997				10.7	10.6
1998				9.2	9.2
1999				6.3	6.4
2000				4.2	4.3
2001				14.2	14.7
2002				9.8	10.3
2003				12.6	13.4
2004				11.7	12.6
2005				12.1	13.3
2006				12.2	13.6
2007				10.6	12.0

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Navstar GPS, December 31, 2002

16b. Program Funding Summary (Cont'd):  
Modernized Space & OCS

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008				8.9	10.3
2009				19.3	22.7
Subtotal				177.6	185.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	37	207.3	3233.1	5568.2	5732.1

b. Annual Summary - Modernized User Equipment

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				7.0	6.7
1997				4.3	4.2
1998				4.0	3.9
1999				0.3	0.3
Subtotal				15.6	15.1

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				1.2	1.1
1995				1.6	1.5
1996				9.6	9.3
1997				24.8	24.2
1998				34.8	34.2
1999				36.4	36.2
2000				31.9	32.2
2001				40.5	41.4
2002				39.4	40.7
2003				72.1	75.2
2004				95.0	100.6
2005				97.1	104.4
2006				85.0	92.9

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

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				80.4	89.4
2008				67.2	76.1
2009				64.1	73.9
Subtotal				781.1	833.3

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				1.1	1.0
1994				0.5	0.5
1995				2.6	2.5
1996				19.3	18.9
1997				18.9	18.7
1998				22.9	22.8
1999				15.7	15.8
2000				16.9	17.3
2001				23.2	23.9
2002				14.4	15.0
2003				9.1	9.6
2004				11.3	12.1
2005				17.5	19.0
2006				17.8	19.7
2007				13.9	15.7
2008				23.2	26.6
2009				23.7	27.7
Subtotal				252.0	266.8

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then Year \$
1997				0.1	0.1
1998				0.2	0.2
1999				0.6	0.6
2000				0.7	0.7
2001				0.6	0.6
2002				0.7	0.7
2003				0.8	0.9

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Navstar GPS, December 31, 2002

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

Modernized User Equipment

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				0.9	0.9
2005				0.9	1.0
2006				0.9	1.0
2007				1.0	1.1
2008				0.9	1.1
2009				0.9	1.1
Subtotal				9.1	10.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				15.6	15.1
USAF				1042.2	1110.1
Grand Total				1057.8	1125.2

17. Delivery/Expenditure Information:

Modernized Space & OCS

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	21	21

Percent Total Program Quantities Delivered: 56.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2276.4

Percent Total Program Expended: 39.7%

Modernized User Equipment

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): \$ 333

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

Modernized User Equipment

Percent Total Program Expended: 29.6

**18. Operating and Support Costs:**

Modernized Space & OCS

a. Assumptions and Ground Rules --

Operating 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 Schriever Air Force Base (AFB), CO. Also included are the costs of 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 Schriever 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 received 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 as of September 30, 2002.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	Modernized Space & OCS Avg Annual Cost for the System (24 sats)	Block I/II Legacy Avg Annual Cost for the System (24 sats)
Mission Pay & Allowances	0.8	0.8
Unit Level Consumption	N/A	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	0.8	0.7
Contractor Support	0.2	0.1
Sustaining Support	0.2	0.1
Indirect Costs	N/A	N/A
Total	2.0	1.7

Total O&S Cost	Modernized Space & OCS	Block I/II Legacy
BY\$ (In Millions)	48.0	40.8
TY\$ (In Millions)	0.0	0.0

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

Modernized User Equipment

a. Assumptions and Ground Rules --

Note: The JPO (Center of Excellence) will not procure GPS UE in the future. Instead, the JPO will develop UE solutions and assist the platform system managers.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	Modernized User Equipment	Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	1.5
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	1.5

Total O&S Cost	Modernized User Equipment	Antecedent System
BY\$ (In Millions)	N/A	N/A
TYS (In Millions)	N/A	N/A

Report Creation Date: 03/19/2003 12:19:43 PM

AF-9 EELV

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

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Evolved Expendable Launch Vehicle (EELV) - Atlas V, Delta IV

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

SMC/MV	Col Susan K. Mashiko
2420 Vela Way, Suite 1467	Assigned: May 17, 2002
El Segundo, CA 90245-4659	DSN 833-4615; COMM (310) 336-4615
	susan.mashiko@losangeles.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603011F  
PE 0603226E  
PE 0603853F  
PE 0604853F

PROCUREMENT:

APPN 3020 ICN 23EELV (Air Force)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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03-e-0296

EELV, December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated October 15, 1998.

Approved Program:

CAE Approved Acquisition Program Baseline (APB) dated December 6, 2002.

**6. Mission and Description:**

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

**7. Executive Summary:**

The EELV Program Office achieved much since the September 2002 Selected Acquisition Report (SAR).

The EELV Team successfully launched The Boeing Company's (TBC) first Delta IV from Space Launch Complex 37B at Cape Canaveral Air Force Station (CCAFS) on 20 November 2002. All systems performed as expected, and Delta IV placed the W5 communications satellite payload, owned by Eutelsat S.A. of Paris, into a precise geostationary transfer orbit. The EELV Team also successfully launched the first US government mission on 10 March 2003. The Boeing Delta IV launched from Launch Complex 37B at CCAFS and was carrying the Defense Satellite Communications System (DSCS) A3. All systems functioned as expected, and the satellite was placed into a precise geosynchronous transfer orbit.

In the last quarter of 2002, Lockheed Martin Astronautics (LMA) completed the Post Flight Assessment of their inaugural Atlas V launch, accomplished a Heavy Lift Vehicle (HLV) Wrap-up System Design Review (WSDR), successfully fired two qualification Solid Rocket Motors (SRMs), and signed Modification 1 of the RD-180 rocket motor co-production contract.

The EELV Program is executing eight ordered missions including the DSCS A3 just launched and the HLV Operational Launch Service Demonstration (OLSD). All government missions are on track for their currently scheduled launch dates. Per the SECAF BAR/JAT direction, all government missions are to include Mission Assurance activities related to increasing vehicle reliability. Other content added to the program includes the funding related to the Assured Access Initiative for the purpose of maintaining two viable launch service providers. In addition, a Government Mission Director has been added for enhanced

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

confidence above our current mission assurance objectives.

The Program Office formally ordered the launch service for the first Wideband Gapfiller System Satellite on Delta IV in October 2002.

EELV Developmental Test and Evaluation (DT&E) is nearing completion. The only major open issue involving operational testing is the Director Operational Test and Evaluation's (DOT&E's) need for additional operational evaluation. The EELV Program Office has a plan in place to use the Program Office's post-flight reporting mission assurance activity to satisfy DOT&E's needs. LMA successfully completed their only remaining DT&E activities with the qualification firing of their SRM in December 2002. TBC's remaining DT&E activities involve West Coast pathfinder activities and the HLV OLSD.

The Program is within cost and on schedule, meeting all system key performance parameters defined in the Acquisition Program Baseline (APB).

From a performance perspective, the EELV Program is on track. The development contracts for both LMA's Atlas V and TBC's Delta IV are approaching contract closeout without cost growth or performance issues.

**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	DEC 1996	DEC 1996	DEC 1996
Milestone II	JUN 1998	JUN 1998	OCT 1998
Tailored CDR	JUL 1999	JUL 1999	OCT 1999
MLV First Operational Flight	DEC 2001	DEC 2001	AUG 2002
Milestone III	JUN 2003	JUN 2003	JUN 2003
Initial Operational Capability	TBD	TBD	TBD
HLV OLSD Flight/5	N/A	OCT 2003	SEP 2003 (Ch-1)
HLV First Operational Flight/2	JUL 2003	OCT 2004	SEP 2004 (Ch-2)

Notes:

HLV First Operational Flight - HLV Operational Flight date is based on operational satellite need dates. If satellite need date is postponed, the HLV objective and threshold dates will also move.

Acronym List:

APB	Acquisition Program Baseline
CDR	Critical Design Review
DSCS	Defense Satellite Communications System
HLV	Heavy Launch Vehicle
MDA	Milestone Decision Authority
MLV	Medium Launch Vehicle
OLSD	Operational Launch Service Demonstration

b. Current Change Explanations --

(Ch-1): The current estimate for the HLV OLSD mission changed from April 2003 to September 2003. The scheduling change is the downstream impact of effects on commercial and government launches being prioritized to meet warfighter needs.

(Ch-2): The current estimate for the HLV First Operational Flight changed from May 2004 to September 2004. This schedule slip is due to a number of issues such as the reprioritization of the second DSCS mission ahead of the HLV OLSD mission to support warfighter needs, the 12-month post flight analysis requirement between the HLV OLSD and HLV First Operational Flight, and payload scheduling issues for this first operational flight.

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Performance Mass to Orbit				
LEO: 100nm X 100nm 63.4 deg (lbs)	19,550 (15%)	19,550 / 17,000 (15%) /	TBD	17,000
POLAR 1: 450nm x 450nm, 98.2 deg (lbs)	5,060- 8,050	5,060- / 4,400- 8,050 / 7,000	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	2,875- / 2,500- 5,152 / 4,725	TBD	2,500- 4,725
GTO: 19,324nm x 90nm, 27 deg (lbs)	7,015- 9,775	7,015- / 6,100- 9,775 / 8,500	TBD	6,100- 8,500
MOLNIYA: 21,150nm x 650nm, 63.4 deg (lbs)	8,050 (15%)	8,050 / 7,000 (15%) /	TBD	7,000
GEO: 19,323nm x 19,323nm, 0 deg (lbs)	14,175 (5%)	14,175 / 13,500 (5%) /	TBD	13,500
Vehicle Design Reliability (%)	>98	>98 / 98	TBD	98
Standardization Launch Pads	Standard ized and able to launch all configs of EELV for that site	Standard/ ized and/ able to / launch / all / configs / of / EELV for/ that / site /	Standard ized and able to launch all configs of EELV for that site TBD	Standard ized and able to launch all configs of EELV for that site
Payload interfaces	One std payload inter- face	One std / Std payload / payload inter- / inter- face / face / for each / vehicle / class / (add'l / inter- / face / rqmts / met / by	TBD	Std payload interfac e for each vehicle class (add'l inter- face rqmts met by

10a. Performance Characteristics (Cont'd):

<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u> / payload / adapter)	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u> payload adapter)
---	--	--	--

Notes:

Despite three successful inaugural launches, the "Demonstrated Performance" section remains To-Be-Determined (TBD). The three launches were not designed to validate any specific Performance Characteristic, but to accomplish a mission. Several more data points will be needed to demonstrate performance.

Acronym List:

GEO            Geosynchronous Orbit  
 GTO            Geosynchronous Transfer Orbit  
 LEO            Low Earth Orbit  
 MOLNIYA       MOLNIYA Highly Inclined Highly Elliptical Orbit  
 POLAR          Polar Orbit  
 SEMI-SYNC     Semi-Synchronous Orbit

b. Current Change Explanations -- None

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	1344.0	1496.5	1545.9
Procurement	11772.6	13150.2	14447.0
Flyaway Cost	(11772.6)		(14447.0)
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 1995 Base-Year \$	<u>13116.6</u>	<u>14646.7</u>	<u>15992.9</u>
Escalation	4231.2	4192.8	4291.6
Development (RDT&E)	(107.1)	(125.5)	(127.0)
Procurement	(4124.1)	(4067.3)	(4164.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>17347.8</u>	<u>18839.5</u>	<u>20284.5</u>
b. Quantity --			
Development (RDT&E)	0	1	1
Procurement	<u>181</u>	<u>181</u>	<u>181</u>
Total	<u>181</u>	<u>182</u>	<u>182</u>

Notes:

All EELV Launch Services are fully funded and fixed price. Any reductions to procurement funding will result in launch cancellation(s), or delay(s) of at least one year.

Low Rate Initial Production (LRIP) does not apply to the EELV Program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (DEC 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	14646.7	15992.9	
(2) Quantity	182	182	
(3) Unit Cost	80.476	87.873	+9.19
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	13150.2	14447.0	
(2) Quantity	181	181	
(3) Unit Cost	72.653	79.818	+9.86

Unit costs vary from launch to launch due to the unique nature of each launch service. Launch service prices, which are competition sensitive, vary with payload weight and volume, mission-unique services, commercial market conditions, and other factors.

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1451.1	15896.7	-	17347.8
Previous Changes:				
Economic	-	-475.8	-	-475.8
Quantity	+141.1	-	-	+141.1
Schedule	-	+206.4	-	+206.4
Engineering	+28.2	-	-	+28.2
Estimating	+1.6	+1665.2	-	+1666.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+170.9	+1395.8	-	+1566.7
Current Changes:				
Economic	-6.0	-405.0	-	-411.0
Quantity	-	-	-	-
Schedule	-	+132.3	-	+132.3
Engineering	-	-	-	-
Estimating	+43.7	+1591.8	-	+1635.5
Other	+13.2	-	-	+13.2
Support	-	-	-	-
Subtotal	+50.9	+1319.1	-	+1370.0
Total Changes	+221.8	+2714.9	-	+2936.7
Current Estimate	1672.9	18611.6	-	20284.5

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1344.0	11772.6	-	13116.6
Previous Changes:				
Quantity	+126.9	-	-	+126.9
Schedule	-	-	-	-
Engineering	+25.0	-	-	+25.0
Estimating	+0.6	+1431.3	-	+1431.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+152.5	+1431.3	-	+1583.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+37.4	+1243.1	-	+1280.5
Other	+12.0	-	-	+12.0
Support	-	-	-	-
Subtotal	+49.4	+1243.1	-	+1292.5
Total Changes	+201.9	+2674.4	-	+2876.3
Current Estimate	1545.9	14447.0	-	15992.9

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-6.0
Adjustment for Current and Prior Inflation. (Estimating)	+5.4	+5.9
Recissions and other adjustments (Estimating)	-6.6	-7.2
Request for Equitable Adjustment (REA) related to 9/11 (Other)	+12.0	+13.2
Assured Access to Space funding to maintain two viable launch service providers. (Estimating)	+38.6	+45.0
RDT&E Subtotal	+49.4	+50.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-405.0
Stretchout of annual procurement buy profile. (Schedule)	0.0	+132.3
Adjustment for Current and Prior Inflation. (Estimating)	+7.2	+8.1
Launch Services Adjustments including commercial market price variations (Estimating)	+211.9	+287.2
Launch Services Adjustments to include mission assurance (Estimating)	+380.8	+527.5

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Launch Services Adjustments for payload weight growth (Estimating)	+223.7	+275.0
Assured Access to Space funding to maintain two viable launch service providers. (Estimating)	+419.5	+494.0
Procurement Subtotal	<u>+1243.1</u>	<u>+1319.1</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	Changes								PAUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
95.84	-4.87	+0.251	+1.86	+0.155	+18.14	+0.073	--	+15.61	111.45

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									
PUC	Changes								PUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
87.83	-4.87	+0.009	+1.87	--	+17.99	--	--	+15.00	102.83

c. Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	DEC 1996	DEC 1996	DEC 1996	DEC 1996
Milestone II	JUN 1998	JUN 1998	JUN 1998	OCT 1998
Milestone III	JUL 2003	JUN 2003	N/A	JUN 2003
IOC	TBD	DEC 2001	TBD	AUG 2002
Total Cost	2000.0	17347.8	17347.8	20284.5
Total Quantity	N/A	181	181	182
Prog Acq Unit Cost	N/A	95.8	95.8	111.5

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

a. RDT&E --		Initial Contract Price		
<u>Prototype Dev. Agreement:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin Corp., Denver, CO				
F04701-98-9-0004, OTA		\$500.0	N/A	0
Award: October 16, 1998				
Definitized: October 16, 1998				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$507.1	N/A	\$507.1	\$507.1	

Explanation of Change:

None.

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

Contract Comments:

Request for Equitable Adjustment (REA) for 9/11 Security Costs for impacts to development schedule at Launch Complex 41 (LC-41) provided by Omnibus FY02, \$7.05M.

<u>Prototype Dev. Agreement:</u>		Initial Contract Price		
McDonnell Douglas Corp., Huntington Beach CA		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F04701-98-9-0005, OTA		\$500.0	N/A	0
Award: October 16, 1998				
Definitized: October 16, 1998				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$670.6	N/A	\$670.6	\$670.6	

Explanation of Change:

None.

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

Contract Comments:

1. One unit and \$141.5M was added as a result of the congressional approval for the HLV demonstration launch and related tasks.
2. REA for 9/11 Security Costs for impacts to development schedule at Launch Complex 37 (LC-37) provided by Omnibus FY02, \$5.95M.

15. Contract Information (Cont'd):

- 3. REA for Group 1 Activities (impacts to development schedule) provided by Headquarters/Air Force Space Command (HQ/AFSPC), \$3.3M.
- 4. HLV Demonstration Engine Testing, \$19.85M.

McDonnell Douglas Corporation is a wholly-owned subsidiary of the Boeing Company.

b. Procurement --		Initial Contract Price		
<u>Initial Launch Services:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin Corp., Denver, CO				
F04701-98-D-0001, FFP		\$649.0	N/A	9
Award: October 16, 1998				
Definitized: October 16, 1998				
		Estimated Price At Completion		
		<u>Contractor</u>	<u>Program Manager</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$505.8	\$505.8
\$505.8	N/A	7		

Explanation of Change:

None.

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

Contract Comments:

As a result of the program restructure, in fall 2000, the number of missions for LMA has changed from 9 to 7, decreasing the value of their ILS contract from \$649.0M to \$505.8M.

<u>Initial Launch Services:</u>		Initial Contract Price		
		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas Corp., Huntington Beach CA				
F04701-98-D-0002, FFP		\$1378.0	N/A	19
Award: October 16, 1998				
Definitized: October 16, 1998				
		Estimated Price At Completion		
		<u>Contractor</u>	<u>Program Manager</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$1525.3	\$1525.3
\$1525.3	N/A	21		

Explanation of Change:

None.

15. Contract Information (Cont'd):

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

Contract Comments:

As a result of the program restructure, in fall 2000, the total number of missions for Boeing changed from 19 to 22. The value of their ILS contract increased from \$1,378.0M to \$1,525.3M.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-20)	<u>Total</u>
RDT&E	1625.9	8.0	15.0	24.0	1672.9
Procurement	845.0	1159.3	1058.3	15549.0	18611.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2470.9	1167.3	1073.3	15573.0	20284.5

b. Annual Summary -- EELV

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1995 Dollars Nonrec</u>	<u>Flyaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				9.8	9.8
1995				29.6	30.0
1996				107.1	110.7
1997				60.1	62.9
1998				87.6	92.3
1999				227.2	242.0
2000				297.7	321.8
2001				344.5	377.6
2002				291.0	321.8
2003				51.0	57.0
2004				7.0	8.0
2005				13.0	15.0
2006				11.9	14.0
2007				8.4	10.0
Subtotal	1			1545.9	1672.9

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

National User Funding Breakout (TY\$M) (Included in above):  
 FY96: 72.3  
 FY97: 18.6  
 FY98: 5.1

ARPA Funding (TY\$M) (Included in above):  
 FY94: 9.8

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	1		62.4	62.4	68.1
2001	4		327.8	327.8	361.3
2002	1		134.4	134.4	150.0
2003	2		234.8	234.8	265.6
2004	10		1009.3	1009.3	1159.3
2005	9		906.7	906.7	1058.3
2006	10		892.7	892.7	1059.7
2007	12		1080.1	1080.1	1304.9
2008	14		1366.2	1366.2	1680.3
2009	5		583.2	583.2	730.2
2010	9		723.9	723.9	922.6
2011	10		713.8	713.8	926.1
2012	13		1020.9	1020.9	1348.5
2013	14		933.5	933.5	1255.2
2014	14		937.3	937.3	1283.0
2015	14		938.7	938.7	1308.0
2016	13		836.8	836.8	1187.0
2017	14		883.6	883.6	1276.0
2018	12		813.2	813.2	1195.5
2019			24.1	24.1	36.0
2020			23.6	23.6	36.0
Subtotal	181		14447.0	14447.0	18611.6

Notes:

Recurring Flyaway Dollars in any given year are not associated with or a reflection of all the dollars related to the quantities in that year.

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	182		14447.0	15992.9	20284.5

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	1	1

Percent Total Program Quantities Delivered: 0.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1975

Percent Total Program Expended: 9.7%

Delivery as of March 10, 2003, Boeing Delta IV placed DSCS-A3 mission in orbit.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

All O&S costs are funded by Air Force Space Command (AFSPC) and reflect the September 1, 1998 Milestone II Office of the Secretary of Defense (OSD) Cost Analysis Improvement Group (CAIG) approved baseline.

Notes:

O&S costs are allocated across all 181 EELV missions. Actual O&S cost per launch is dependent upon configuration and/or mission.

No comparable O&S data for the antecedent systems (Delta/Atlas/Titan) are available.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	EELV O&S Cost per Launch	Delta/Atlas/Titan (cost not available)
Mission Pay & Allowances	1.1	N/A
Unit Level Consumption	0.6	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	4.5	N/A

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

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	EELV O&S Cost per Launch	Delta/Atlas/Titan (cost not available)
Indirect Costs	0.0	N/A
Total	6.2	N/A

Total O&S Cost	EELV	Delta/Atlas/Titan
BY\$ (In Millions)	1128.4	N/A
TY\$ (In Millions)	1566.3	N/A

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

**PROGRAM:** TRIDENT II MISSILE

**AS OF DATE:** December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Sea Launched Ballistic Missile-UGM 133A TRIDENT II (D-5) Missile

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

STRATEGIC SYSTEMS PROGRAMS	RADM CHARLES B. YOUNG
NEBRASKA AVENUE COMPLEX	Assigned: July 17, 2002
287 SOMERS COURT NW SUITE 10041	DSN 764-1609; COMM (202) 764-1609
WASHINGTON, DC 20393-5446	SP00@SSP.NAVY.MIL

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

RDT&E:

- (U) PE 0603371N Project J0951
- (U) PE 0604363N Project J0951

PROCUREMENT:

- (U) APPN 1507 ICN 1150 (Navy)
- (U) APPN 1507 ICN 1250 (Navy)

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5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated July 15, 1987.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated June 8, 2002.

6. (U) Mission and Description:

(U) The TRIDENT II (D-5) Strategic Weapons System (SWS) 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 with an Initial Operational Capability (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." Performance Evaluation Missile (PEM) tests began on March 21, 1989. Two of the first three PEM flights experienced loss of control in early first stage flight. After corrective actions were completed, PEM flights resumed with six successful flights. The PEM program was completed in February 1990. The system achieved IOC in March of 1990 with the outload and deployment of the SSBN 734 (USS TENNESSEE).

Beginning in FY 1994, both the production capacity and annual procurement rate of missiles were reduced over time. The Navy reduced production infrastructure to lower the maximum facilitated rate from 72 missiles per year to 24 per year. During the same period the annual procurement quantities were reduced from a high of 66 per year to 12 per year. Because of the low annual procurement quantities the Navy developed an acquisition strategy to preserve the industrial base in a cost-effective manner. The acquisition strategy adopted for FY 1996 and subsequent years is based on affordable low rate production augmented by critical component quantities as required to ensure quality, reliability and safety. This approach minimizes both annual funding requirements and program risk associated with supplier base instability.

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

The inventory objective of TRIDENT II (D-5) missiles has previously been changed as a result of reductions in flight test program requirements and force structure. The flight test program has been reduced to 4 missiles per year. In addition, the Navy reevaluated the test flight data needed to ensure the TRIDENT weapon system's reliability and safety. The Director, Strategic Systems Programs concluded that some of the Demonstration and Shakedown Operation (DASO) flight test data, previously not used to calculate system reliability and safety, could be used to complement Follow-on Commander's Evaluation Test (FCET) data. Use of the DASO data reduces the number of FCET tests required to ensure weapon system reliability and safety. This change assumes appropriate adjustments to DASO procedures to make DASO flight tests more representative of tactical conditions and the continued success of flight tests.

The current force structure of 14 SSBNs is based on the outcome of the Department of Defense's 1994 Nuclear Posture Review, is in accordance with Presidential Decision Directive/NSC-30 of September 21, 1994, and has been confirmed by the 2001 Nuclear Posture Review. Two of four planned TRIDENT I (C-4) configured submarines have been backfit to the TRIDENT II (D-5) configuration. The inventory objective is required to outload deployed submarines and conduct flight tests through the system life.

The Department of Defense directed and funded a service life extension of the D-5 missile to match the extended SSBN service life. The TRIDENT SSBNs service life was extended by 15 years from 30 to 45 years. The D-5 missile service life extension increases the service life by almost 50% and will provide the nation a credible and affordable nuclear deterrent well into the 21st century. This extension delays the need for funds to replace these platforms, effectively delaying the expenditure of more than \$25 billion in new construction costs.

All TRIDENT II (D-5) submarines have completed strategic loadout and deployed as follows:

SSBN 734 - March 1990	SSBN 735 - October 1990
SSBN 736 - September 1991	SSBN 737 - June 1992
SSBN 738 - May 1993	SSBN 739 - May 1994
SSBN 740 - June 1995	SSBN 741 - July 1996
SSBN 742 - August 1997	SSBN 743 - October 1998

Two additional SSBNs (732 and 733) have completed backfit to be capable of carrying the D-5 weapon system. SSBN 732 deployed in August 2002 as a D-5 capable SSBN. SSBN 733 will deploy in FY 2003 as a D-5 capable SSBN. SSBNs 730 and 731 are scheduled for D-5 backfit in FY 2005 and FY 2006, respectively, which will complete the 14 D-5 SSBN force structure.

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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I (Initiate Concept Definition)	OCT 1977	OCT 1977	OCT 1977
Commence Advanced Dev Phase	OCT 1980	OCT 1980	OCT 1980
Milestone II (Commence FSD)	OCT 1983	OCT 1983	OCT 1983
First Development Flight Test	JAN 1987	JAN 1987	JAN 1987
Milestone III (Production Approval)/ Award Initial Missile Production	APR 1987	APR 1987	APR 1987
IOC (may be less than full msl outload)	DEC 1989	DEC 1989	MAR 1990

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (CAP)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Perf
(S) Max Range Full Payload (nm)	(b)(1)			
(S) System Circular Error Probable (CEP) (ft)				Ch-1)
(S) System Reliability				Ch-2)
(S) Max Payload - Yield				

b. Current Change Explanations --

(S) (Ch-1) System Circular Error Probable (CEP) changed from (b)(1) based on current TRIDENT submarine launch data and other representative data sources.

(S) (Ch-2) System reliability changed from (b)(1) based on current TRIDENT submarine launch data and other representative data sources. The decrease resulted from two issues discovered during operational testing. Problems are understood and corrective action is underway.

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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)	8434.9	8414.8	8414.8
Procurement	17588.5	17155.2	17212.3
Flyaway	(14471.2)		(13256.5)
Other weapon systems	(3082.9)		(3932.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(23.7)
Construction (MILCON)	532.9	373.7	375.1
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1983 Base-Year \$	26556.3	25943.7	26002.2
Escalation	8962.2	11600.2	11294.5
Development (RDT&E)	(1018.3)	(996.5)	(996.5)
Procurement	(7808.4)	(10528.5)	(10221.7)
Construction (MILCON)	(135.5)	(75.2)	(76.3)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	35518.5	37543.9	37296.7
b. (U) Quantity --			
Development (RDT&E)	30	28	28
Procurement	<u>815</u>	<u>540</u>	<u>540</u>
Total	845	568	568

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs --  
Department of Energy cost (b)(1) billion (Then-Year \$).

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12. (U) Unit Cost Summary:

	UCR Baseline (JUN 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1983 BY\$)	25943.7	26002.2	
(2) Quantity	568	568	
(3) Unit Cost	45.676	45.779	+0.23
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1983 BY\$)	17155.2	17212.3	
(2) Quantity	540	540	
(3) Unit Cost	31.769	31.875	+0.33

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	-380.5	-11.1	-413.1
Quantity	-48.0	-6444.7	-	-6492.7
Schedule	-	+1812.1	+25.6	+1837.7
Engineering	-	-	-	-
Estimating	+27.6	+5444.7	-234.0	+5238.3
Other	-	-	-	-
Support	-	+1855.2	-	+1855.2
Subtotal	-41.9	+2286.8	-219.5	+2025.4
Current Changes:				
Economic	-	-371.7	-0.4	-372.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-4.2	+2.9	-1.3
Other	-	-	-	-
Support	-	+126.2	-	+126.2
Subtotal	-	-249.7	+2.5	-247.2
Total Changes	-41.9	+2037.1	-217.0	+1778.2
Current Estimate	9411.3	27434.0	451.4	37296.7

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TRIDENT II MISSILE, December 31, 2002

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-3823.2	-	-3863.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.9	+2616.3	-159.2	+2477.0
Other	-	-	-	-
Support	-	+773.6	-	+773.6
Subtotal	-20.1	-433.3	-159.2	-612.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-7.8	+1.4	-6.4
Other	-	-	-	-
Support	-	+64.9	-	+64.9
Subtotal	-	+57.1	+1.4	+58.5
Total Changes	-20.1	-376.2	-157.8	-554.1
Current Estimate	8414.8	17212.3	375.1	26002.2

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-371.7
Adjustment for Current and Prior Inflation. (Estimating)	+14.4	+24.2
Revised Estimate for age-driven replacement of Mk-4 reentry body, Arming, Fuzing and Firing System (Estimating)	-22.2	-28.4
Adjustment for Current and Prior Inflation. (Support)	+2.8	+4.7
Revised estimates for D-5 life extension production support. (Support)	+62.1	+121.5
Procurement Subtotal	+57.1	-249.7
(2) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Additional utility and site improvements for Bangor Washington TRIDENT II (D-5) support. (Estimating)	+3.5	+6.4

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Revised Estimates for Bangor Washington TRIDENT II backfit projects. (Estimating)	-2.3	-3.7
MILCON Subtotal	+1.4	+2.5

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.03	-1.38	+9.06	+3.24	--	+9.22	--	+3.49	+23.63	65.66

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	-1.39	+3.93	+3.36	--	+10.07	--	+3.67	+19.64	50.80

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	OCT 1977	OCT 1977	OCT 1977
Milestone II	N/A	OCT 1983	OCT 1983	OCT 1983
Milestone III	N/A	MAR 1987	APR 1987	APR 1987
IOC	N/A	DEC 1989	DEC 1989	MAR 1990
Total Cost	N/A	37645.1	35518.5	37296.7
Total Quantity	N/A	740	845	568
Prog Acq Unit Cost	N/A	50.9	42.0	65.7

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TRIDENT II MISSILE, December 31, 2002

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

a. Procurement --  
(U) MISSILE FOLLOW-ON PROD:  
LOCKHEED MARTIN, SUNNYVALE, CA  
N00030-98-C-0100, CPIF/FF  
Award: October 1, 1998  
Definitized: November 16, 1998

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$547.2	N/A	5	\$543.8	\$543.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.5	\$-0.6
Cumulative Variances To Date (04/29/02)	<u>\$1.1</u>	<u>\$-0.1</u>
Net Change	\$3.6	\$0.5

Explanation of Change:

(U) The favorable cost variance is primarily due to efficiencies experienced with prime contractor and motor supplier labor.

The favorable schedule variance is primarily due to the early delivery of motor components.

(U) Contract Comments:

This contract is complete and will no longer be reported.

(U) MISSILE FOLLOW-ON PROD::  
LOCKHEED MARTIN, SUNNYVALE, CA  
N00030-99-C-0100, CPIF/FF  
Award: October 1, 1999  
Definitized: November 23, 1999

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$673.9	N/A	12	\$705.9	\$705.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.4	\$0.3
Cumulative Variances To Date (11/25/02)	<u>\$3.4</u>	<u>\$-0.1</u>
Net Change	\$1.0	\$-0.4

Explanation of Change:

(U) The favorable cost variance is primarily due to labor efficiencies and favorable costs for third stage chamber insulators.

The unfavorable schedule variance is primarily due to casting problems at

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

Alliant Techsystems (ATK) and changes in planned delivery for separation linear shaped charges.

(U) Contract Comments:

The increase in target contract price from the initial estimate to the current estimate is due to exercising contract options for low cost test missile kits and additional scope to address emergent supplier base issues, specifically the requalification of production sources or life-of-type procurements of missile components and raw materials.

(U) <u>MISSILE FOLLOW-ON PROD::</u>			Initial Contract Price		
LOCKHEED MARTIN, SUNNYVALE, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00030-00-C-0100, CPIF/FF			\$541.0	N/A	12
Award: October 1, 2000					
Definitized: October 31, 2000					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$612.0	N/A	12	\$606.2	\$606.2	
			<u>Cost Variance Schedule Variance</u>		
Previous Cumulative Variances			\$3.0	\$-0.6	
Cumulative Variances To Date (11/24/02)			<u>\$1.1</u>	<u>\$-0.6</u>	
Net Change			\$-1.9	\$0.0	

Explanation of Change:

(U) The unfavorable cost variance is primarily due to higher planning support effort, labor rate growth in the factory management teams, board failures in electronics and higher overhead and G&A rates.

The schedule variance did not change.

(U) Contract Comments:

The increase in target contract price from the initial estimate to the current estimate is due to additional scope to address emergent supplier base issues, specifically the requalification of production sources or life-of-type procurements of missile components and raw materials.

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TRIDENT II MISSILE, December 31, 2002

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

(U) <u>MISSILE FOLLOW-ON PROD::</u>	Initial Contract Price		
LOCKHEED MARTIN, SUNNYVALE, CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00030-01-C0100, CPIF/FF	\$557.1	N/A	12
Award: October 1, 2001			
Definitized: December 14, 2001			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$568.9	N/A	12	\$568.8	\$568.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/24/02)	<u>\$1.9</u>	<u>\$3.7</u>
Net Change	\$1.9	\$3.7

Explanation of Change:

(U) The favorable cost variance is due to reduced Direct Service Center (DSC) rates, lower computer and fringe costs, and cost improvements in reassembly, recertification and disassembly.

The favorable schedule variance is due to early delivery of HMX, an early completion of bulk kitting of parts in the metallic group and the early delivery of McCormick 95 grain flexible linear shaped cord.

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

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

<u>Appropriation</u>	Prior <u>Years</u> (FY78-03)	Budget <u>Year</u> (FY04)	Budget <u>Year</u> (FY05)	Balance To <u>Complete</u> (FY06-15)	<u>Total</u>
RDT&E	9411.3	-	-	-	9411.3
Procurement	16085.3	675.2	770.8	9902.7	27434.0
MILCON	439.1	-	-	12.3	451.4
O&M	-	-	-	-	-
Total	25935.7	675.2	770.8	9915.0	37296.7

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TRIDENT II MISSILE, December 31, 2002

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

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

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

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1978				5.0	5.0
1979				5.0	5.0
1980				25.6	25.6
1981				96.7	96.7
1982				198.4	198.4
1983				343.9	351.0
1984				1368.5	1447.3
1985				1818.1	1982.6
1986				1731.3	1942.3
1987				1355.1	1565.3
1988				862.5	1029.7
1989				439.3	546.5
1990				130.9	169.5
1991				32.1	43.0
1992				1.6	2.2
1993				0.3	0.4
1994					
1995				0.3	0.5
1996				0.2	0.3
Subtotal	28			8414.8	9411.3

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				137.7	160.8
1986				420.7	508.4
1987	21		957.7	1075.6	1346.9
1988	66		1684.9	1562.7	2033.5
1989	66		1544.0	1359.8	1839.0
1990	41		1026.7	1001.1	1400.6
1991	52		1158.3	1054.4	1512.6
1992	28		713.3	745.8	1096.9
1993	21		598.5	653.1	978.1
1994	24		782.8	720.8	1100.7
1995	18		492.0	428.9	665.4
1996	6		152.4	325.1	510.7
1997	7		171.3	199.8	316.9
1998	5		122.0	167.2	268.3
1999	5		135.0	194.3	315.7

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TRIDENT II MISSILE, December 31, 2002

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

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	12		270.7	294.8	484.8
2001	12		258.6	262.6	436.5
2002	12		236.0	318.4	534.9
2003	12		236.0	337.4	574.6
2004	12		236.4	390.4	675.2
2005	5		99.6	438.5	770.8
2006				519.4	928.7
2007				509.9	927.8
2008	12		248.3	563.6	1044.1
2009	24		496.8	600.4	1132.2
2010	24		496.8	586.8	1126.4
2011	24		496.8	601.5	1175.5
2012	24		496.8	472.6	940.2
2013	7		144.8	396.4	802.8
2014				176.2	363.3
2015				696.4	1461.7
Subtotal	540		13256.5	17212.3	27434.0

(U) Procurement costs in FY 2015 include cost to complete funding through FY 2039.

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				72.8	79.3
1985				73.4	82.4
1986				109.3	126.3
1987				17.6	21.0
1988				14.6	18.1
1989				12.0	15.4
1990				5.7	7.6
1991				51.3	70.5
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000				3.8	6.0

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TRIDENT II MISSILE, December 31, 2002

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

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				0.9	1.4
2002				2.4	3.9
2003				4.4	7.2
2004					
2005					
2006				1.6	2.8
2007				1.4	2.5
2008				1.6	2.9
2009				2.3	4.1
Subtotal				375.1	451.4

(U) MILCON costs in FY 2000 through FY 2009 are necessary to upgrade facilities at Bangor, Washington in order to support limited TRIDENT II missile processing capability, consistent with establishment of D-5 capability on the West Coast (FY 2002 IOC).

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	568		13256.5	26002.2	37296.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	28	28
Procurement	375	375

(U) Percent Total Program Quantities Delivered: 71.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 24417.7

(U) Percent Total Program Expended: 65.5%

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 from FY 2000 through FY 2042. The source of the costs displayed is the Program Manager's estimate as reflected in the FY 2004 President's

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TRIDENT II MISSILE, December 31, 2002

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

Budget through FY 2009 and extended through FY 2042. 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 and post production flight hardware. Indirect costs are for base operating support. Operating and Support costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

Date of estimate: December 31, 2002

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	TRIDENT II (D-5) MISSILE Average Annual Cost per System	N/A
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	70.6	0.0
Depot Maintenance	79.8	0.0
Contractor Support	N/A	N/A
Sustaining Support	409.1	N/A
Indirect Costs	14.6	N/A
Total	574.1	0.0

Total O&S Cost	TRIDENT II (D-5) MISSILE	N/A
BY\$ (In Millions)	24690.0	N/A
TY\$ (In Millions)	54810.0	N/A

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

PROGRAM: DDG 51 DESTROYER

AS OF DATE: December 31, 2002

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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 SHIPS	RADM W. W. COBB, JR. USN
1333 ISAAC HULL AVENUE SE 23015	Assigned: December 3, 1998
WASHINGTON, DC 20376-2301	DSN 324 2962; COMM (202) 781 2962
	cobbww@navsea.navy.mil

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

RDT&E:

- (U) PE 0604307N (Shared)
- (U) PE 0604303N

PROCUREMENT:

- (U) APPN 1611 ICN 24222N (Navy)
- (U) APPN 1611 ICN 0204222N (Navy)

MILCON:

- (U) PE P-261
- (U) PE P-263

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DDG 51 DESTROYER, December 31, 2002

5. (U) References:

SAR Baseline (Production Estimate):

(U) Decision Coordinating Paper #1337 Revision 1, Change 1 of August 22, 1986.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated August 31, 2002.

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 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, forward presence requirements, and escort operations at sea. Flight IIA ships will bring new capabilities (CEC and Extended Range Guided Munitions) into the fleet, providing improved air and anti-missile defense and improved land attack.

- 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). DDG 91 and follow ships employ the littoral variant SPY-1D(V). The Advanced Tomahawk Weapon Control System (DDGs 79-95) and the Tactical Tomahawk Weapons Control System (DDG 96 and follow) allow employment of various variants of Tomahawk missiles for strike warfare. The MK-45 gun weapon system provides significant capability for surface warfare, land attack, and air defense. The Cooperative Engagement Capability (CEC) is being installed on DDG 51 Class Ships to promote Network Centric 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

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DDG 51 DESTROYER, December 31, 2002

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

capability.

7. (U) Executive Summary:

(U) These DDG Class destroyers are the most advanced State-of-the-Art warships built in the world. They are designed to operate successfully with Strike, Anti-Submarine, and Amphibious Forces in the presence of increasingly sophisticated air, surface, and sub-surface threats in any operational environment. These destroyers are equipped with the Navy's AEGIS Combat System (ACS) the world's foremost naval weapon system. The Navy plans to incorporate the Cooperative Engagement Capability (CEC) into the Fleet within the next few years. CEC, when integrated with the ACS, will let groups of ships and aircraft link their radars to provide a composite picture of a large battle space so that each can 'see' well beyond the range of its own sensors. This new capability is designed to provide the Navy with its 21st Century fighting edge.

Funding for the lead ship, ARLEIGH BURKE, was provided in FY85 with the lead ship construction contract awarded, as the result of a full and open competition, to Bath Iron Works (BIW), Bath, Maine in April 1985. The Navy established Ingalls Shipbuilding Incorporated (ISI), now Northrop Grumman Ship Systems (NGSS), as the second source, by awarding the DDG 52 construction contract in May 1987 in a full and open competition.

The FY04 President's Budget Submission reflects a 62 ship DDG 51 Program, a reduction of two ships from the FY03 President's Budget Submission. The Navy revised the ship profile to add one additional ship in FY04 and FY05 and eliminated both FY06 and FY07 ships. The Navy has awarded all 62 ships, 34 to BIW and 28 to NGSS. Currently, there are 38 ships delivered meeting the Fleet's mission requirements and 24 ships in various stages of construction.

The FY03 DoD Appropriations and Authorizations Acts authorized and provided funding for two DDG 51 class ships in FY03. On September 13, 2002, the Navy awarded the FY02-FY05 fixed price incentive Multi-Year Procurement (MYP) contracts to BIW and NGSS for approximately \$5.3B. BIW was awarded six ships (1,1,2,2) and NGSS four ships (1,1,1,1) starting in FY02, respectively. The FY02-FY05 MYP is projected to save the government \$330M compared to annual with option procurements.

On June 17, 2002, a Memorandum of Understanding (MOU) was signed by the Navy, NGSS and BIW. The MOU trades four LPD ships (originally at BIW) for three DDG 51 Class ships plus one equivalent workload ship. The Swap ensures workload stability at both yards, reduces total Navy shipbuilding costs across the FYDP, and improves the balance of shipyard workload for future Navy Surface Combatant Programs. This initiative was incorporated into the FY02-FY05 MYP pricing. Award of the DDG 102 on July 31, 2002, which was previously awarded to NGSS, along with the award of one additional MYP ship in both FY04 and FY05 to BIW was made in accordance with the MOU. The successful partnership of the Navy, Industry, and Congress has been instrumental in executing the DDG/LPD Swap and Multi-Year Procurement, while reducing shipbuilding costs.

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DDG 51 DESTROYER, December 31, 2002

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

Funding stability is required to execute the DDG 51 FY02-FY05 MYP as planned. Prior to award of the FY02-FY05 MYP, the Secretary of Defense (Comptroller) certified to the President of the Senate, the Speaker of the House, and the Chairman and ranking members of the Congressional Defense Committees that all FY02-FY05 MYP support costs were fully funded. Since then, the DDG 51 Program has been forced to absorb Congressional undistributed rescissions of \$15M and \$20M from the FY02 and FY03 appropriations, respectively. The Navy will attempt to resolve these budget reductions in upcoming budget reviews.

DDG 51 Class ship construction has achieved numerous production milestones since the last (December 31, 2001) report. The more significant are the following:

FY02-FY05 DDG 51 Class Multi-Year Ship Construction Contracts (incorporating the DDG/LPD Swap) awarded Sep 13, 2002 (DDGs 103-112).

DDG 85 (McCAMPBELL) delivered on Mar 08, 2002 in Bath, ME.  
USS McCAMPBELL (DDG 85) commissioned Aug 17, 2002 in San Francisco, CA.

DDG 86 (SHOUP) delivered on Feb 19, 2002, in Pascagoula, MS.  
USS SHOUP (DDG 86) commissioned on Jun 22, 2002 in Seattle, WA.

DDG 87 (MASON) delivered on Nov 22, 2002, in Bath, ME.

DDG 88 (PREBLE) delivered Aug 12, 2002 in Pascagoula, MS.  
USS PREBLE (DDG 88) commissioned Nov 9, 2002 in Boston, MA.

DDG 90 (CHAFEE) launched Nov 02, 2002 in Bath, ME.  
DDG 90 (CHAFEE) christened on Nov 11, 2002 in Bath, ME.

DDG 91 (PINCKNEY) launched Jun 26, 2002, in Pascagoula, MS.  
DDG 91 (PINCKNEY) christened Jun 29, 2002, in Pascagoula, MS.

DDG 93 (CHUNG-HOON) float-off occurred on Dec 15, 2002 in Pascagoula, MS.

DDG 97 (HALSEY) fabrication started Mar 25, 2002 in Pascagoula, MS.

DDG 98 (SHERMAN) fabrication started on Sep 30, 2002 in Pascagoula, MS.

DDG 99 (FARRAGUT) fabrication started on Apr 14, 2002 in Bath, ME.

DDG 101 (TBD) fabrication started Dec 08, 2002, in Bath, ME.

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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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Complete Concept Design	N/A	DEC 1980	DEC 1980
DNSARC I	JUN 1981	JUN 1981	JUN 1981
Complete Preliminary Design	N/A	MAR 1983	MAR 1983
DSARC II	DEC 1983	DEC 1983	DEC 1983
Complete Contract Design	N/A	JUN 1984	JUN 1984
DDG 51 Contract Award	APR 1985	APR 1985	APR 1985
Milestone IIIA	OCT 1986	OCT 1986	OCT 1986
DDG 52 Contract Award	JAN 1987	MAY 1987	MAY 1987
DDG 53 Contract Award	N/A	SEP 1987	SEP 1987
Lay Keel DDG 51	N/A	DEC 1988	DEC 1988
Launch DDG 51	N/A	SEP 1989	SEP 1989
DDG 51 Delivery	N/A	APR 1991	APR 1991
Launch DDG 52	N/A	MAR 1991	MAY 1991
Organic Support Available	N/A	JUL 1991	JUL 1991
Depot Support Available	N/A	JUL 1991	JUL 1991
OPEVAL	N/A	FEB 1992	FEB 1992
DDG 52 Delivery	N/A	MAY 1992	OCT 1992
DDG 51 IOC	OCT 1990	FEB 1993	FEB 1993
DDG 53 Delivery	N/A	FEB 1993	AUG 1993
Milestone IV	N/A	APR 1993	OCT 1993
DDG 51 Flight IIA Contract Award	N/A	MAR 1994	JUL 1994
Complete ESSM COEA	N/A	NOV 1994	NOV 1994
ESSM Milestone IV	N/A	NOV 1994	NOV 1994
SH-60B Hellfire IOC	N/A	DEC 1997	DEC 1997
DDG 51 Flight IIA Delivery	N/A	MAY 2000	MAY 2000

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
DDG 51 Flight IIA IOC	N/A	OCT 2001	OCT 2001
ESSM IOC	N/A	JAN 2004	JAN 2004

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

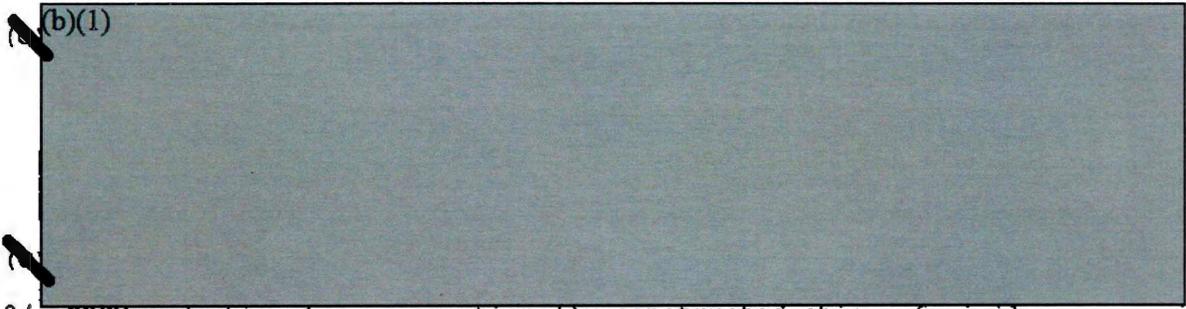
	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
<b>SHIP:</b>				
Length (ft)	466	N/A / N/A	471	471
Beam (ft)	59	N/A / N/A	59	59
Navigational Draft (ft)	30.6	N/A / N/A	31.7	31.7
Displacement (long tons)	8300	N/A / N/A	9300	9300
Propulsion LM (Gas Turbine)	2500	N/A / N/A	2500	2500
Accommodations	341	N/A / N/A	380	380
<b>MOBILITY:</b>				
Speed (knots)	30	30 / 30	30	30
Endurance (@ 20 Knots) (nm)	(b)(1)			
<b>ANTI-AIR WARFARE:</b>				
CONDUCT SUCCESSFUL AAW ENGAGEMENT:				
Probability of Successful Engagement-ESSM	N/A	TBD / 0.75	TBD	0.75
<b>ANTI-SURFACE WARFARE:</b>				
CONDUCT SUCCESSFUL ASUW ENGAGEMENT:				
Probability of Successful Engagement HELO	N/A			(Ch-1)
<b>NAVAL SURFACE FIRE SUPPORT</b>				
Probability of Successful Engagement HELO	N/A			(Ch-1)
<b>ANTI-SUBMARINE WARFARE:</b>				
CONDUCT SUCCESSFUL ASW ENGAGEMENT:				
Figure of Merit:				

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demonstrated Perf	Current Estimate
Probability of Achieving Attack Criteria	N/A	(b)(1)		TBD	(b)(1)
Number VLS Missiles	N/A	(b)(1)		(b)(1)	(1)
<b>MINE WARFARE:</b>					
Detection Range of Moored/Floating Mine (YDS)	N/A	(b)(1)		(b)(1)	(Ch-1)
<b>SIGNATURE:</b>					
Radar Cross section (dbsm)	N/A	(b)(1)		(b)(1)	(2) (Ch-1)
<b>SURVIVABILITY/VULNERABILITY:</b>					
Nuclear Airblast Overpressure (psi)	N/A	(b)(1)		(b)(1)	(b)(1)
<b>Armament</b>					
<b>Anti-Submarine Warfare</b>					
ASW System	AN/SQQ-89	N/A	/ N/A	AN/SQQ-89(V)10	AN/SQQ-89(V)10
ASROC Helo	VLA SEAHAWK; LAMPS	N/A	/ N/A	VLA	VLA
		2	/ 2	2	2
		EMBARKED/ HELOS	/ EMBARKED HELOS	EMBARKED HELOS	EMBARKED HELOS
<b>Anti-Air Warfare</b>					
Launchers	MK 41 VLS	N/A	/ N/A	MK 41 VLS	MK 41 VLS
Missiles	SM-2 MR	N/A	/ N/A	SM-2 MR	SM-2 MR
Missile Fire Control System	3 MK 99	N/A	/ N/A	3 MK 99	3 MK 99
Guns	2 PHALANX	N/A	/ N/A	2 PHALANX	2 PHALANX/ ESSM
<b>Anti-Surface/Strike Warfare</b>					
Guns	1 5"/54	N/A	/ N/A	1 5"/54	1 5"/54
Gunfire Control System	MK 160	N/A	/ N/A	MK 160	MK 160
Anti-Ship Cruise Missile	HARPOON	N/A	/ N/A	N/A	N/A
Cruise Missile	TOMAHAWK	N/A	/ N/A	TOMAHAWK	TOMAHAWK
Electronic Warfare	SLQ-32 SRBOC	N/A	/ N/A	SLQ-32 (V)3, SRBOC, COMBAT	SLQ-32 (V)3, SRBOC, Combat

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf DF</u>	<u>Current Estimate DF</u>
Radars					
Surface	SPS-67	N/A	/ N/A	SPS-67	SPS-67
3D	SPY-1D	N/A	/ N/A	SPY-1D	SPY-1D



- 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 --

(Ch-1) The change in the Current Estimate for Performance Characteristics reflects demonstrated performance on Flight IIA ships resulting from tests and trials conducted during the past year and are as follows:

- 1/ HELLO Naval Surface Fire Support
- 2/ HELLO Anti-Submarine Warfare
- 3/ (U) Detection range of Moored/Floating Mine (YDS)
- 4/ Radar Cross Section (dbsm)

FROM	TO
(b)(1)	

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

	Production <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	979.8	2610.5	2660.2
Procurement	15948.3	46421.9	44739.0
Basic Ship Costs	(5383.6)		(19606.4)
HM&E and Combat Systems	(9427.9)		(22450.8)
Other Costs	(621.9)		(871.7)
OF/PD	(514.9)		(1810.1)
Total Sailaway	(15948.3)		(44739.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.6	34.8	37.7
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1987 Base-Year \$	16953.7	49067.2	47436.9
Escalation	3163.8	16956.0	15365.8
Development (RDT&E)	(-63.2)	(586.3)	(589.5)
Procurement	(3224.8)	(16363.5)	(14769.5)
Construction (MILCON)	(2.2)	(6.2)	(6.8)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	20117.5	66023.2	62802.7
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>23</u>	<u>64</u>	<u>62</u>
Total	23	64	62

c. (U) Foreign Military Sales --

There are 58 Japanese AEGIS Weapon System FMS cases totaling \$2.6B. There are two Spanish AEGIS Weapon System FMS cases totaling \$0.7B and one Korean AEGIS Weapon System FMS case totaling \$0.9B.

d. (U) Nuclear Costs --

None.

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12. (U) Unit Cost Summary:

	UCR Baseline (AUG 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1987 BY\$)	49067.2	47436.9	
(2) Quantity	64	62	
(3) Unit Cost	766.675	765.111	-0.20
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1987 BY\$)	46421.9	44739.0	
(2) Quantity	64	62	
(3) Unit Cost	725.342	721.597	-0.52

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	-114.1	-4589.5	-	-4703.6
Quantity	-	+38949.9	-	+38949.9
Schedule	+144.9	+922.3	-	+1067.2
Engineering	+213.2	+2120.0	+16.7	+2349.9
Estimating	+2036.2	+6209.6	-	+8245.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2280.2	+43612.3	+16.7	+45909.2
Current Changes:				
Economic	-18.8	-526.1	-	-544.9
Quantity	-	-2020.0	-	-2020.0
Schedule	-	-82.1	-	-82.1
Engineering	-	-	-	-
Estimating	+71.7	-648.7	-	-577.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+52.9	-3276.9	-	-3224.0
Total Changes	+2333.1	+40335.4	+16.7	+42685.2
Current Estimate	3249.7	59508.5	44.5	62802.7

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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	-	+26032.4	-	+26032.4
Schedule	+89.1	-	-	+89.1
Engineering	+142.4	+1392.5	+11.9	+1546.8
Estimating	+1399.2	+3048.7	+0.2	+4448.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1630.7	+30473.6	+12.1	+32116.4
Current Changes:				
Quantity	-	-1337.7	-	-1337.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+49.7	-345.2	-	-295.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+49.7	-1682.9	-	-1633.2
Total Changes	+1680.4	+28790.7	+12.1	+30483.2
Current Estimate	2660.2	44739.0	37.7	47436.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised Escalation rates (Economic)	N/A	-18.0
Economic adjustment on negative program change (Economic)	N/A	-0.8
Adjustment for Current and Prior Year inflation (Estimating)	+4.8	+6.8
Reduction in sustained engineering due to project completing two years earlier than reported in the December 2001 SAR submission (QR)(Estimating)	-18.8	-30.4
Revised cost estimates to support Commercial Off-the-Shelf (COTS) technology integration (Estimating)	+90.0	+133.6
Revised cost estimates for AEGIS Weapon System development modifications (Estimating)	-26.3	-38.3
RDT&E Subtotal	+49.7	+52.9
(2) <u>Procurement</u>		
Revised Escalation Rates (Economic)	N/A	-433.9
Economic adjustment on negative program change due to loss of two ships (QR)(Economic)	N/A	-92.2

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduction of two ships from 64 to 62 ships (QR) (Quantity)	-1256.9	-1890.8
Savings associated with the FY02-FY05 MYP contract award (AR) (Estimating)	-219.3	-330.0
Adjustment for current and prior year inflation (Estimating)	+122.0	+170.3
Outfitting and Post Delivery requirements for loss of two ships (QR) (Quantity)	-80.8	-129.2
Change in ships profile from 2-2-2-2 (FY04-FY07) to 3-3-2-0 (FY04-FY07) (Schedule)	0.0	-82.1
Funds transferred from prior year requirements in the FY03 Appropriations Act (Estimating)	-6.2	-7.9
Additional funds for prior year requirements identified in the "Cost to Complete" funding line (Estimating)	+213.3	+294.4
Revised estimates for costs associated with the DDG/LPD swap (Estimating)	+74.9	+109.1
An allocation resulting from a change in Total Program quantity from 64 to 62 ships (QR) (Estimating)	-383.8	-672.4
Revised estimates for ship construction, GFE, outfitting and post delivery (Estimating)	-146.1	-212.2
Procurement Subtotal	<u>-1682.9</u>	<u>-3276.9</u>

AR = Acquisition Reform related changes.

QR = Quantity 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	
874.67	-84.65	+45.44	+15.89	+37.90	+123.69	--	--	+138.27	1012.95

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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	-82.51	+71.28	+13.55	+34.19	+89.69	--	--	+126.20	959.81

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 1981	JUN 1981	JUN 1981	JUN 1981
Milestone II	MAY 1983	DEC 1983	DEC 1983	DEC 1983
Milestone III	AUG 1986	AUG 1986	OCT 1986	OCT 1986
IOC	N/A	N/A	OCT 1990	FEB 1993
Total Cost	10953.5	14910.6	20117.5	62802.7
Total Quantity	9	14	23	62
Prog Acq Unit Cost	1217.1	1065.0	874.7	1013.0

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

a. Procurement --	Initial Contract Price		
(U) <u>89, 91, 93, 95, 97, 98, 100:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman (NGSS), Pascagoula MS N00024-98-C-2307, FPI Award: March 6, 1998 Definitized: March 6, 1998	\$2530.5	\$2882.5	7
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$2654.6	\$2755.5	
	<u>Cost Variance Schedule Variance</u>		
Previous Cumulative Variances	\$-3.4	\$-45.9	
Cumulative Variances To Date (11/30/02)	<u>\$-67.9</u>	<u>\$-55.6</u>	
Net Change	\$-64.5	\$-9.7	

Explanation of Change:

(U) Cost variance change is primarily driven by General & Administrative and overhead costs. G&A cost increase is due to changes associated with the DD21/DD(X) Bid & Proposal process. Overhead increases are due to the reduced business base resulting from the loss of American Classic Voyages (AMCV) work. Schedule variance is driven by material. During this phase of construction material variances are common and are not good indicators of performance.

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

(U) Contract Comments:

This is a multiyear contract to procure 6 ships (FY98-FY01) with exercised options for two additional ships, bringing the total ships to be procured under this contract to 8. In last year's report, DDG 102 was reported in Current Contract Price and Estimated Price at Completion. Subsequent to last year's SAR, the DDG 102 was transferred to BIW as the result of the DDG/LPD swap and is incorporated in the N00024-02-C-2303 contract. Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$180.2M).

(U) <u>DDG 90, 92, 94, 96, 99, 101 C:</u>	<u>Initial Contract Price</u>		
General Dynamics (BIW), Bath, ME	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-98-C-2306, FPI	\$2181.4	\$2492.9	6
Award: March 6, 1998			
Definitized: March 6, 1998			
<u>Current Contract Price</u>		<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>
\$2322.8	\$2650.5	6	\$2486.7
			<u>Program Manager</u>
			\$2546.8
			<u>Cost Variance</u>
Previous Cumulative Variances			\$-60.3
Cumulative Variances To Date (11/30/02)			\$-155.2
Net Change			\$-94.9
			<u>Schedule Variance</u>
			\$-6.6
			\$-8.4
			\$-1.8

Explanation of Change:

(U) Cost variance change is driven primarily by labor and overhead. The labor variance increase is primarily the result of aggressive bids, and inefficiencies on the Land Level Transfer Facility. The overhead increase is due to higher health care costs and BIW's funding of the employees' pension plan. Schedule variance on this contract is considered insignificant.

(U) Contract Comments:

This is a multiyear contract with 6 MYP ships awarded and funded. Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$165.7M).

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

(U) AWS PRODUCTION CONTRACT:  
 Lockheed Martin, Moorestown, NJ  
 N00024-98-C-5178, FPI  
 Award: May 1, 1998  
 Definitized: January 9, 2002

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$902.2	\$973.2	13	\$900.9	\$900.9
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/31/02)			\$19.2	\$0.7
Net Change			<u>\$15.9</u>	<u>\$3.1</u>
			\$-3.3	\$2.4

Explanation of Change:

(U) Cost and schedule variances are considered insignificant.

(U) Contract Comments:

This contract includes funding for 4 FY98 AEGIS Weapon Systems (DDGs 89-92), 3 FY99 systems (DDGs 93-95), 3 FY00 systems (DDGs 96-98), and 3 FY01 systems (DDGs 99-101).

(U) DDG 102/104/106/108/109/:  
 GENERAL DYNAMICS (BIW), BATH, ME  
 N00024-02-C-2303, FPI  
 Award: September 13, 2002  
 Definitized: September 13, 2002

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$3599.8	\$3993.7	7	\$3599.8	\$3630.3
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (09/13/02)			\$0.0	\$0.0
Net Change			<u>\$0.0</u>	<u>\$0.0</u>
			\$0.0	\$0.0

Explanation of Change:

(U) No earned value data is available for this contract since it was recently awarded. Earned value data will be provided in the next SAR. Contract Performance Reporting will begin in March 2003.

(U) Contract Comments:

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

This is a multiyear contract to procure 6 ships (FY02-05) and 1 additional FY02 ship (DDG 102). Ships are awarded as follows: 2 in FY02, 1 in FY03, 2 in FY04, and 2 in FY05. Target Price, Ceiling Price, and Estimated Price at completion do not include performance incentive arrangements nor future changes estimated (\$255.0M).

(U) <u>DDG 103/105/107/110 Cons:</u> NORTHROP GRUMMAN (NGSS), PASCAGOULA MS N00024-02-C-2304, FPI Award: September 13, 2002 Definitized: September 13, 2002	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1950.3	\$2146.8	4

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1950.3	\$2146.8	4	\$1950.3	\$1962.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (09/13/02)	<u>\$0.0</u>	<u>\$0.0</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) No earned value data is available for this contract since it was recently awarded. Earned value data will be provided in the next SAR. Contract Performance Reporting will begin in March 2003.

(U) Contract Comments:

This is a multiyear contract to procure 4 ships (FY02-05). Ships are awarded as follows: 1 in FY02, 1 in FY03, 1 in FY04, and 1 in FY05. Target Price, Ceiling Price, and Estimated Price at completion do not include performance incentive arrangements nor future changes estimated (\$140.1M).

(U) <u>AWS PRODUCTION CONTRACT:</u> LOCKHEED MARTIN, MOORESTOWN, NJ N00024-01-C-5168, FPI Award: April 23, 2001 Definitized: January 20, 2003	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$293.5	\$334.8	5

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$293.5	\$334.8	5	\$331.4	\$331.4

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (01/31/03)	<u>\$0.4</u>	<u>\$1.6</u>
Net Change	\$0.4	\$1.6

Explanation of Change:

(U) Cost and Schedule variances are considered insignificant at this early stage of production.

(U) Contract Comments:

This contract includes funding for 3 FY02 AEGIS Weapon Systems (DDGs 102-104), and 2 FY03 systems (DDGs 105-106).

Two contracts that were identified in the previous report (12-31-01), N00024-96-C-2304 and N00024-96-C-2305, are now more than 90% complete with all of their ships delivered to the Navy and are no longer included in this report.

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> (FY80-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-11)	<u>Total</u>
RDT&E	2648.9	126.2	143.4	331.2	3249.7
Procurement	51039.7	3426.6	3738.0	1304.2	59508.5
MILCON	44.5	-	-	-	44.5
O&M	-	-	-	-	-
Total	53733.1	3552.8	3881.4	1635.4	62802.7

b. Annual Summary -- DDG 51 Program

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 1987 Dollars Nonrec</u>	<u>Sailaway FY 1987 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1980				14.0	10.5
1981				43.1	35.3
1982				118.3	102.0
1983				167.3	150.7
1984				129.8	121.1
1985				144.2	138.8
1986				94.4	93.5

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DDG 51 DESTROYER, December 31, 2002

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

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

Fiscal Year	Qty	Sailaway FY 1987 Dollars Nonrec	Sailaway FY 1987 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				98.5	100.4
1988				88.7	93.4
1989				47.6	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				61.9	82.5
1998				58.3	78.3
1999				114.3	155.4
2000				168.7	232.6
2001				102.7	143.5
2002				163.7	230.7
2003				155.6	221.8
2004				87.2	126.2
2005				97.6	143.4
2006				82.6	123.4
2007				70.1	106.6
2008				39.5	61.2
2009				25.4	40.0
Subtotal				2660.2	3249.7

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1987 Dollars Nonrec	Sailaway FY 1987 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	2187.5	2255.1	2484.9
1988				4.0	9.6
1989	4		2557.1	2463.8	2876.4
1990	5	11.2	3078.1	2987.7	3586.5
1991	4	2.9	2562.5	2522.8	3149.0
1992	5	29.7	3159.2	3118.5	4020.3
1993	4	6.1	2571.6	2634.5	3397.4
1994	3	67.5	2098.2	2173.5	2797.0
1995	3	28.5	2114.0	2140.3	2839.9
1996	2	42.3	1551.6	1631.8	2379.0

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DDG 51 DESTROYER, December 31, 2002

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

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1987 Dollars Nonrec	Sailaway FY 1987 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	4	27.5	2632.4	2588.3	3638.1
1998	4	87.2	2807.2	2793.6	3542.2
1999	3	29.9	2175.3	2156.7	2724.8
2000	3	23.2	2154.3	2114.5	2753.7
2001	3		2170.8	2169.1	3288.1
2002	3	31.0	2450.5	2407.9	3404.6
2003	2	18.5	1772.2	1767.8	2825.8
2004	3	3.6	2427.6	2337.0	3426.6
2005	3	16.9	2492.7	2425.3	3738.0
2006				240.3	353.4
2007				293.4	441.6
2008				93.4	138.5
2009				77.4	116.8
2010				123.5	189.8
2011				41.0	64.1
Subtotal	62	877.2	43861.8	44739.0	59508.5

(U) FY 84 and FY 86 Then Year figures are for advance 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	Sailaway FY 1987 Dollars Nonrec	Sailaway FY 1987 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				4.5	4.6
1987					
1988				13.5	14.7
1989				7.5	8.5
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998				9.7	13.2
1999					
2000					
2001				2.5	3.5
Subtotal				37.7	44.5

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DDG 51 DESTROYER, December 31, 2002

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

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	62	877.2	43861.8	47436.9	62802.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	38	38

(U) Percent Total Program Quantities Delivered: 61.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 40566.8

(U) Percent Total Program Expended: 64.6%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Program baseline O&S estimate projects for a 62 ship buy, encompassing eight different baseline configurations and three different hull variants (Flights). Estimates for DDG 51 Hull, Mechanical, and Electrical (HM&E) systems are derived primarily from the Navy's Visibility And Management of Operating and Support Cost (VAMOSOC) database. Estimates are based on data collected through 2001 for operational hulls DDG 51 to DDG 81.

AEGIS Weapon System program baseline O&S estimates are based on historical actual cost incurred by the PEO Ships organization over the 10 year period between FY89 and FY98. Cost for AWS unique manning, computer program maintenance, training, and modernization is accounted for in this estimate. These costs are in addition to the cost associated with DDG 51 HM&E.

Average annual operating cost shown below represent a composite average of all 62 ships in the DDG 51 Class. Estimates are based on a service life of 35 years.

The Antecedent System shown below is the CG 47 Program. The CG 47 Class was used since it is the only other ship class with the AEGIS Weapon System installed. CG 47 estimates are based on 27 ships with a service life of 35 years.

(Cost Estimate was updated December 2002).

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DDG 51 DESTROYER, December 31, 2002

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

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

Cost Element	DDG 51 Program Average Annual Cost Per Ship (FY87\$)	CG 47 Program Average Annual Cost Per Ship
Mission Pay & Allowances	10.7	12.4
Unit Level Consumption	4.8	6.0
Intermediate Maintenance	0.3	0.5
Depot Maintenance	5.6	6.2
Contractor Support	0.5	0.5
Sustaining Support	3.7	3.9
Indirect Costs	9.6	10.9
Total	35.2	40.4

Total O&S Cost	DDG 51 Program	CG 47 Program
BY\$ (In Millions)	76384.0	38178.0
TY\$ (In Millions)	107541.0	53800.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: AMRAAM (AIM-120)

CONGRESSIONAL

AS OF DATE: December 31, 2002

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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:

Counterair Joint Systems Program	SES-1 THOMAS J. ROBILLARD
Office (JSPO)	Assigned: October 29, 2001
(AAC/YA)	DSN 872-3531; COMM (850) 882-3531
Eglin AFB, FL 32542-6844	thomas.robillard@eglin.af.mil

(U) Navy Program Director	GM-15 PASQUAL D. GAMBATESE
Counterair Joint Systems Program	Assigned: January 26, 2003
Office (JSPO) (AAC/YA)	DSN 872-2412, AC(850)882-2412 Ext 508
EGLIN AFB, FL 32542-6844	pasquale.gambatese@eglin.af.mil

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

RDT&E:

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

~~Classified by: AMRAAM SECURITY CLASSIFICATION GUIDE, 01 Apr 00  
Downgrade instructions: Reason for classifying, category 1.5a. and 1.5g.  
Declassify on: Prompt category 3 (X3)~~

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DEPARTMENT OF DEFENSE

ABC-0283

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AMRAAM (AIM-120), December 31, 2002

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

(U) PE 0604314F  
(U) PE 0604314N  
(U) PE 063370F

**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 Protection (EP) capabilities for air-to-air applications against massed penetration aircraft and is designed to augment the AIM-7 Sparrow.

**7. (U) Executive Summary:**

(U) (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 Initial Operational Capability in January 1992. In April 1992 a follow-up to the Defense Acquisition Board (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 airframe for F-22 internal carriage. In December 1997 Raytheon and Hughes merged into the Raytheon Systems Company. The Lot 15 production option was awarded in March 2001 for 233 U.S. and 349 Foreign Military Sales (FMS) missiles for a total of 582 missiles. The first missile incorporating the Phase 2 P3I missile design was delivered in August 1999 providing additional Electronic Protection capability and a more lethal warhead. This design also included an improved kinematic +5 inch rocket motor with deliveries beginning in May 2000. Seventeen countries have AMRAAM operational capability: Australia, Bahrain, Belgium, Denmark, Finland, Germany, Greece, Israel, Italy, Japan, Netherlands, Norway, South Korea, Sweden, Switzerland, Turkey, and the United Kingdom.

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

The P3I Phase 3 contract completed its fourth year of a five year development. Initial software design has been completed and is undergoing integration using Proof of Manufacture (POM) hardware. Major program accomplishments include: (1) began hardware/software integration testing, (2) began captive flight test program, and (3) completed final antenna design. Integration efforts along with added requirements and flight test execution have paced development and contributed to a potential \$23.4M contract cost increase and 3-6 month schedule slip. Funding sources have been identified to cover the FY03 and FY04 requirement.

During 2002, AMRAAM maintained a tactical availability rate above 95% which exceeds the Air Force goal of 91%.

An updated AMRAAM Test and Evaluation Master Plan (TEMP) was signed by OSD DOT&E on June 14, 2002, which completed the coordination and approval cycle.

The USMC awarded a Complementary Low Altitude Weapons System (CLAWS) contract to integrate existing hardware into a surface-to-air system using AMRAAM in April 2001. CLAWS is a high mobility multi-wheeled vehicle (HUMVEE) based slew-able launcher. The Army Air Defense Missile System Operational Requirements Document (ORD) was approved on June 5, 2002.

The first guided launch from an F-22 was successfully completed in September 2001. The missile passed the target well within the lethal effectiveness range. The second guided launch of an AMRAAM from an F-22 was successfully executed on January 24, 2002 at Point Mugu, CA. which guided within lethal range of the drone. Two supersonic AMRAAM separations were completed successfully on May 15, 2002 and September 12, 2002, respectively, and the first guided supersonic launch from the F-22 was successfully completed on November 5, 2002.

The Lot 16 production contract was awarded on April 30, 2002. The contract included the new AIM-120C-7 Phase 3 missile with long-term pricing agreements for Lots 17-21 production and depot repair for FY02-07. The initial award was for 387 missiles (159 USAF, 47 USN, and 181 FMS). The Counterair Joint Systems Program Office (JSPO) closed the contract with a total of 671 FMS missiles which enabled the USAF and USN to purchase all the quantities that were originally budgeted. The total number of missiles purchased on the contract was 916 missiles (190 USAF, 55 USN, and 671 FMS) which was the largest quantity sold since Lot 10 (1996).

The Counterair JSPO is planning a Phase 3 software update program (SWUP) currently scheduled to start in mid-CY03 with a Functional Configuration Audit (FCA) to be completed in early CY06.

Dollars were added in the FY04PB documentation for the Phase 3 Follow-On missile. The Phase 3 Follow-On program will develop improvements to meet remaining P3I Operational Requirements Document (ORD) requirements to include improved no escape range, improved High Off-Boresight (HOBS) launch, Global

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

Positioning System (GPS) capable advanced data link, and improved kinematics.

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 (DSARC)	NOV 1978	NOV 1978	NOV 1978
Milestone II (DSARC)	SEP 1982	SEP 1982	SEP 1982
Start DT&E/IOT&E	OCT 1983	N/A	OCT 1983
Certification	FEB 1986	FEB 1986	FEB 1986
Milestone IIIA (DAB)	JUN 1987	JUN 1987	JUN 1987
DAE Program Review	MAY 1988	MAY 1988	MAY 1988
Start Production Deliveries	SEP 1988	SEP 1988	SEP 1988
Complete D/IOT&E (Air Force)	JAN 1989	JAN 1989	JAN 1989
Complete IOT&E/Captive Carry	JUN 1990	JUN 1990	JUN 1990
Reliability Program w/Lot 1 Assets (Air Force)			
Initial Equippage	DEC 1990	DEC 1990	DEC 1990
Initial Operational Capability (IOC) Air Force	MAR 1991	MAR 1991	SEP 1991
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	APR 1991	APR 1991	MAY 1991
DAB Program Review Full Rate Production Approval	MAR 1992	MAR 1992	APR 1992
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	MAR 1992	MAR 1992	JAN 1992

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Complete FOT&E (OPEVAL) (Navy)	MAR 1992	JAN 1994	MAR 1994
Complete AF FOT&E Phase I	MAR 1992	FEB 1993	APR 1993
P3I Phase 1 CDR Complete	OCT 1992	OCT 1992	JAN 1993
Initial Operational Capability (IOC) (Navy)	SEP 1992	SEP 1993	SEP 1993
Joint Depot Activated	SEP 1994	JUL 1999	JUL 1999
P3I Phase 1 Flight Test Completed	DEC 1994	DEC 1994	APR 1995
Last Delivery	SEP 2001	N/A	AUG 2012 (Ch-1)

(U) (Ch-1) Last delivery date extended to AUG 2012 due to the addition of another production lot (Lot 24, FY10).

Acronyms:

- CDR - Critical Design Review
- DAB - Defense Acquisition Board
- DSARC - Defense Systems Acquisition Review Council
- DT&E - Development Test and Evaluation
- FOT&E - Follow-on Test and Evaluation
- IOT&E - Initial Operational Test and Evaluation
- OPEVAL - Operational Evaluation

b. Current Change Explanations -- None

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10. (U) Performance Characteristics:

a. Performance --

Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
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10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Availability (%)	86	86 / 82	N/A	96
Captive-Carry (MTBM-Type I) (hrs)	600	600 / 450	1152	1270
On Alert Storage MTBM Aircraft Configure/Load - 3 Man Load Crew	30000	30000 / 22500	N/A	30000
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	Day, Night, Rain	Day, Night, Rain	Day, Night, Rain

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Aircraft Compatibility	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	F-15, F-16, F/A-18
All-Up Round	Control Surfaces field in-	Control Surfaces field in-	Control Surfaces field in-	Control Surfaces field stalled

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

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Target  
Discrimination  
(cluster target):  
Attack Multiple  
Targets which are  
unresolved by  
friendly fighter

(b)(1)



A-Pole - The distance between the shooter and the target when the missile goes active.  
ECCM - Electronic Counter Counter Measure  
ECM - Electronic Counter Measure  
F-Pole - The distance between the shooter and the target when the missile intercepts the target.  
MTBM - Mean Time Between Maintenance  
Pk - Probability of Kill

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

b. Current Change Explanations -- None

(U) Stages I and II of the Captive Carry Reliability Program (CCRP) demonstrated an overall reliability of 90 hours for the eject stations and 203 hours for the pylon stations. The Stage III CCRP demonstrated a mean time between maintenance (MTBM) of 118 hours, based on 1764 flying hours. Missile weight increased due to a change in materials. The probability of kill (Pk) continues to improve. Availability or operational reliability increased from 93% to 95% because of increase in MTBM. Captive Carry Reliability measured in Air Combat Command (ACC) conducted tests exceeded 2255 hrs MTBM on the F-16 and exceeded 1333 MTBM on the F-15. Production reliability exceeds 750 hrs MTBM for both Hughes and Raytheon.

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1725.7	2097.2	2257.0
Procurement	10552.5	10205.7	8286.3
Flyaway	(10038.5)		(5865.4)
Non-Recurring Flyaway			(1927.4)
Total Flyaway	(10038.5)		(7792.8)
Other Weapon Cost	(378.0)		(0.0)
Peculiar Support	(0.0)		(405.7)
Initial Spares	(136.0)		(87.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1992 Base-Year \$	<u>12278.2</u>	<u>12302.9</u>	<u>10543.3</u>
Escalation	834.2	1025.0	174.1
Development (RDT&E)	(-375.1)	(-275.7)	(-263.9)
Procurement	(1209.3)	(1300.7)	(438.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>13112.4</u>	<u>13327.9</u>	<u>10717.4</u>

(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	<u>15450</u>	<u>13038</u>	<u>11033</u>
Total	15450	13038	11033

(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 low rate initial production (LRIP) missiles or 3.3% of the total planned quantity of 24,320. However, LRIP was extended from FY87 through FY92 with a quantity of 4,159 missiles (27% of the production estimate total quantity). This resulted

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

from two actions: (1) the planned total procurement decreased from 24,320 missile at Milestone IIIA to 15,450 missiles at Milestone IIIB, and (2) Milestone IIIB authorized the program to continue LRIP through FY92, adding 3,349 missiles to the LRIP quantities.

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c. (U) Foreign Military Sales --

(b)(1)

- (U) NATO EF2000 and Tornado Development, Production, and Logistics Management Agency (NETMA) (M1-D-YAA) Case signed November 5, 1991 \$10.6M PURPOSE: 6 AMRAAMs (Lot VII).
- (U) UNITED KINGDOM (UK-D-YDR) Case signed March 13, 1992 \$100.1M PURPOSE: 210 AMRAAMs (Lots VII,VIII), support, and software updates.
- (U) NORWAY (NO-D-YCU) Case signed October 7, 1992 \$53.6M PURPOSE: 100 AMRAAMs (Lots VIII,IX), support.
- (U) NORWAY (NO-D-YCZ) Case signed August 31, 1994 \$68.3M PURPOSE: 228 AMRAAMs (Lot IX,X), and support.
- (U) SWEDEN (SW-D-YCD) Case signed September 1, 1994 \$44.2M PURPOSE: 110 AMRAAMs (Lots X,XII) and support. Missile procurement is FMS administered direct commercial sales.
- (U) FINLAND (FI-D-YAA) Case signed November 4, 1994 \$106.3M PURPOSE: 312 AMRAAMs (Lots X,XI,XII,XIII) and software updates. Missile procurement is FMS administered direct commercial sales.
- (U) GREECE (GR-B-YBR) Case signed June 30, 1995 \$32.5M PURPOSE: 100 AMRAAMs (Lot X), support.
- (U) NETHERLANDS (NE-D-YME) Case signed September 29, 1995 \$77.0M PURPOSE: 200 AMRAAMs (Lots X,XI) and support.
- (U) BELGIUM (BE-D-YCD) Case signed December 22, 1995 \$27.0M PURPOSE: 72 AMRAAMs (Lot XI).
- (U) NORWAY (NO-D-YDA) Case signed April 1, 1996 \$100.3M PURPOSE: 250 AMRAAMs (Lot XI) and 228 MRLs(Lots XI), and software updates.
- (U) United Kingdom (UK-D-NST) Case signed April 11, 1996 \$9.6M Purpose: Integration/testing of AMRAAM.
- (U) SPAIN (SP-D-YDH) Case signed July 11, 1996

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

(b)(1)

AS AMENDED

- (U) GREECE (GR-D-SBD) Case amended September 26, 1996  
\$57.9M PURPOSE: 140 AMRAAMs (Lot XI,XII).
- (U) ISRAEL (IS-D-YEO) Case signed February 6, 1997  
\$49.4M PURPOSE: 125 AMRAAMs (Lot X,XI,XII,XIII), support, and software updates.
- (U) SOUTH KOREA (KS-D-YGQ) Case signed March 13, 1997  
\$9.2M PURPOSE: 100 AMRAAMs (Lot XII), and software updates. Missile procurement is FMS administered direct commercial sales.
- (U) TURKEY (TK-D-YDV) Case signed November 24, 1997  
\$51.0M PURPOSE: 138 AMRAAMs (Lot XII), support, and software updates.
- (U) ITALY (IT-D-YAC) Case signed December 1, 1997  
\$110.3M PURPOSE: 233 AMRAAMs (Lot XIII), support, and software updates.

AS AMENDED

(b)(1)

- (U) JAPAN (JA-D-YCJ) Case signed February 19, 1999  
\$20.3M PURPOSE: 40 AMRAAMs (Lot XIII).
- (U) SPAIN (SP-D-YAF) Case signed March 5, 1999  
\$43.6M PURPOSE: 100 AMRAAMs (Lot XIII) and support.
- (U) BAHRAIN (BA-D-YBI) Case signed November 13, 1999  
\$25.8M PURPOSE: 26 AMRAAMs (Lot XIV), support, and integration.
- (U) KOREA (KS-D-YGY) Case signed December 27, 1999  
\$66.0M PURPOSE: 159 AMRAAMs (Lot XIV), support, and software updates.
- (U) JAPAN (JA-D-YCK) Case signed March 24, 2000  
\$8.7M PURPOSE: 21 AMRAAMs (Lot XIV), support, and software updates.
- (U) UNITED ARAB EMIRATES (AE-D-SAA) Case signed August 18, 2000  
\$4.5M PURPOSE: 2 AMRAAMs (Lot XIV), support, software updates, and integration.
- (U) SWITZERLAND (SZ-D-NAV) Case signed October 16, 2000  
\$2.1M PURPOSE: Software updates.
- (U) TAIWAN (TW-D-SKA) Case signed December 13, 2000  
\$68.8M PURPOSE: 120 AMRAAMs (Lot XV), support, and software updates.
- (U) NAMSA (N4-D-GAH) Case signed March 17, 2001

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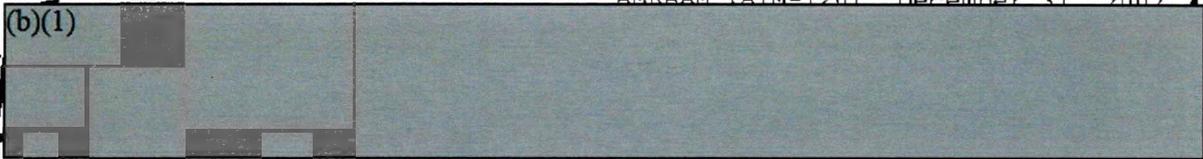
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AMRAAM (ATM-1201 December 31, 2002)

11c. (b)(1) 

- (U) JAPAN (JA-D-YCL) Case signed March 21, 2001  
\$9.6M PURPOSE: 21 AMRAAMs (Lot XV) and support.
- (U) SINGAPORE (SN-D-YAD) Case signed March 27, 2001  
\$32.2M PURPOSE: 50 AMRAAMs (Lot XV) and support.
- (U) THAILAND (TH-D-YJK) Case signed June 28, 2001  
\$2.5M PURPOSE: 4 AMRAAMs (Lot XV).
- (U) ISRAEL (IS-D-YES) Case signed July 21, 2001  
\$25.3M PURPOSE: 48 AMRAAMs (Lot XV), support, and integration testing.
- (U) THAILAND (TH-D-YJL) Case signed July 13, 2001  
\$3.6M PURPOSE: 4 AMRAAMs (Lot XV) and support.
- (U) GREECE (GR-D-YDT) Case signed December 5, 2001  
\$37.3M PURPOSE: 100 AMRAAMs (Lot XV) and support.
- (U) JAPAN (JA-D-YYZ) Case signed January 30, 2002  
\$10.7M PURPOSE: 21 AMRAAMs (Lot XVI), and support.
- (U) SAUDI ARABIA (SR-D-YPY) Case signed March 10, 2002  
\$84.1M PURPOSE: 160 AMRAAMs (Lot XVI), spares and support.
- (U) OMAN (MU-D-YEI) Case signed May 2, 2002  
\$27.7M PURPOSE: 50 AMRAAMs (Lot XVI), spares and support.
- (U) UNITED KINGDOM (UK-D-QBV) Case signed May 31, 2002  
\$13.2M PURPOSE: Integration and testing of AMRAAM.
- (U) UNITED KINGDOM (UK-D-QBW) Case signed May 31, 2002  
\$0.6M PURPOSE: Integration and testing of AMRAAM.
- (U) KOREA (KS-D-SIR) Case signed June 12, 2002  
\$80.8M PURPOSE: 157 AMRAAMs (Lot XVI), spares, and support.
- (U) PORTUGAL (PT-D-YAP) Case signed June 27, 2002  
\$8.7M PURPOSE: 12 AMRAAMs (Lot XVI), spares and support.
- (U) UNITED ARAB EMIRATES (AE-D-YAB) Case signed August 20, 2002  
\$52.M PURPOSE: 100 AMRAAMs (Lot XVI), support equipment and software.
- (U) SPAIN (SP-D-YDI) Case signed September 30, 2002  
\$16.7M PURPOSE: 31 AMRAAMs, program management support, and logistic support.

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AMRAAM (AIM-120), December 31, 2002

11d (b)(1) [Redacted]

d. (U) Nuclear Costs  
None

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 1996 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1992 BY\$)	12302.9	10543.3	
(2) Quantity	13038	11033	
(3) Unit Cost	0.944	0.956	+1.27
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1992 BY\$)	10205.7	8286.3	
(2) Quantity	13038	11033	
(3) Unit Cost	0.783	0.751	-4.09

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	-53.5	-329.3	-	-382.8
Quantity	-	-2977.1	-	-2977.1
Schedule	-7.3	+1777.4	-	+1770.1
Engineering	+460.1	+111.8	-	+571.9
Estimating	+168.5	-1879.6	-	-1711.1
Other	-	-	-	-
Support	-	+0.8	-	+0.8
Subtotal	+567.8	-3296.0	-	-2728.2
Current Changes:				
Economic	-4.6	-20.6	-	-25.2
Quantity	-	+46.1	-	+46.1
Schedule	-	+2.6	-	+2.6
Engineering	+84.3	+189.5	-	+273.8
Estimating	-5.0	+26.5	-	+21.5
Other	-	-	-	-
Support	-	+14.4	-	+14.4
Subtotal	+74.7	+258.5	-	+333.2
Total Changes	+642.5	-3037.5	-	-2395.0
Current Estimate	1993.1	8724.3	-	10717.4

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AMRAAM (AIM-120), December 31, 2002

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	-8.1	+791.9	-	+783.8
Engineering	+373.3	+78.1	-	+451.4
Estimating	+105.6	-1351.1	-	-1245.5
Other	-	-	-	-
Support	-	-30.1	-	-30.1
Subtotal	+470.8	-2476.3	-	-2005.5
Current Changes:				
Quantity	-	+35.1	-	+35.1
Schedule	-	-	-	-
Engineering	+64.7	+143.5	-	+208.2
Estimating	-4.2	+21.9	-	+17.7
Other	-	-	-	-
Support	-	+9.6	-	+9.6
Subtotal	+60.5	+210.1	-	+270.6
Total Changes	+531.3	-2266.2	-	-1734.9
Current Estimate	2257.0	8286.3	-	10543.3

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-4.4
Economic adjustment for negative program change. (Economic)	N/A	-0.2
Increase for additional outyear requirements - Phase 3 Follow-On. (Engineering)	+64.7	+84.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.2
Prior year revisions to reflect actual costs. (Estimating)	-5.2	-6.2
RDT&E Subtotal	+60.5	+74.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-20.6
Total Quantity Variance associated with increase of 116 units (From 10,917 to 11,033). (Quantity)	+35.1	+46.1
Additional containers. (QR)(Estimating)	+8.4	+10.5
Increase in Initial Spares. (QR)(Support)	+1.7	+2.2
Stretchout of annual procurement buy profile. (Schedule)	0.0	+2.6

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AMRAAM (AIM-120), December 31, 2002

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Unit cost increase due to Phase 3 Follow-On. (Engineering)	+143.5	+189.5
Adjustment for Current and Prior Inflation. (Estimating)	+2.3	+2.8
Unit cost increase due to low FMS quantities. (Estimating)	+2.0	+2.4
Test equipment for Phase 3. (Estimating)	+3.4	+3.5
Increase in classified project. (Estimating)	+1.9	+2.4
Increase in Telemetry units. (Estimating)	+3.9	+4.9
Realignment of Peculiar Support. (Support)	-3.3	-3.1
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Additional Telemetry units for Weapon System Evaluation Program (WESP). (Support)	+10.8	+14.9
Procurement Subtotal	+210.1	+258.5

QR = Quantity related changes.

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	
0.476	-0.058	+0.143	+0.121	+0.019	+0.188	--	-0.040	+0.373	0.849

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	
0.849	-0.037	+0.074	+0.161	+0.077	-0.153	--	+0.001	+0.123	0.971

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

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

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.428	-0.056	+0.117	+0.123	+0.006	+0.183	--	-0.040	+0.333	0.761

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	
0.761	-0.032	+0.040	+0.161	+0.027	-0.168	--	+0.001	+0.029	0.791

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

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	NOV 1978	NOV 1978	NOV 1978
Milestone II	N/A	NOV 1982	SEP 1982	SEP 1982
Milestone III	N/A	DEC 1984	APR 1991	MAY 1991
IOC	N/A	SEP 1986	SEP 1992	SEP 1993
Total Cost	N/A	11591.6	13112.4	10717.4
Total Quantity	N/A	24335	15450	11033
Prog Acq Unit Cost	N/A	0.5	0.9	1.0

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

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AMRAAM (AIM-120), December 31, 2002

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

a. RDT&E --		Initial Contract Price		
(U) <u>Raytheon P3I Phase 3:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Company, Tucson, AZ				
F08626-98-C-0027, CPAF		\$150.5	N/A	0
Award: October 29, 1998				
Definitized: October 29, 1998				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$214.5	N/A	0	\$237.7	\$237.7
Previous Cumulative Variances		<u>Cost Variance</u>	<u>Schedule Variance</u>	
		\$-3.1	\$-1.0	
Cumulative Variances To Date (12/21/02)		<u>\$-12.2</u>	<u>\$-1.9</u>	
Net Change		\$-9.1	\$-0.9	

Explanation of Change:

(U) The unfavorable cost variance is attributable to increase flight test program execution costs, additional development required for the new Phase 3 antenna and preparing special test equipment. The program cost difference comprised in latest contractor's Latest Revised Estimate (LRE) of approximately ~\$23.4M includes added requirements and increased costs. This cost growth was incurred due to program delays caused by development and test challenges in the program.

The unfavorable schedule variance was due to delays in the initial Hardware/Software integration facility and difficulties in the captive flight test. The net change in current target price from initial contract target price is due to the addition of development scope to meet warfighter requirements.

(U) Contract Comments:

The net change in current target price from initial contract target price is due to the addition of development scope to meet warfighter requirements.

b. Procurement --		Initial Contract Price		
(U) <u>Raytheon Lot XII - XIV:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Company, Tucson, AZ				
F08626-98-C-0018, FFP		\$187.5	N/A	618
Award: April 13, 1998				
Definitized: April 13, 1998				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$622.0	N/A	2010	\$622.0	\$622.0

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AMRAAM (AIM-120), December 31, 2002

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

Explanation of Change:

None.

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

(U) Contract Comments:

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

(U) <u>Raytheon Lot XV:</u> Raytheon Company, Tucson, AZ F08635-01-C-0016, FFP Award: April 26, 2001 Definitized: April 26, 2001	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$177.3	N/A	424

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$253.5	N/A	582	\$253.5	\$253.5

Explanation of Change:

None.

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

(U) Contract Comments:

The net change in current target price from initial target price is due to the addition of contract modifications, the addition of 25 Common Field-Level Memory Reprogramming Equipment (CFMRE) units, and exercising additional Lot XV options.

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AMRAAM (AIM-120), December 31, 2002

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

(U) Raytheon Lot XVI: Raytheon Company, Tucson, AZ F08635-02-C-0001, FFP Award: April 30, 2002 Definitized: April 30, 2002	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$165.3	N/A	387

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$333.8	N/A	916	\$333.8	\$333.8

Explanation of Change:

None.

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

(U) Contract Comments:

The net change in current target price from the initial target price is due to the addition of contract modifications, 135 Explosive Dish Assemblies, and exercising additional Lot XVI options for 529 missiles.

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

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

<u>Appropriation</u>	<u>Prior Years (FY77-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-10)</u>	<u>Total</u>
RDT&E	1754.2	41.7	41.4	155.8	1993.1
Procurement	7555.5	143.3	144.4	881.1	8724.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	9309.7	185.0	185.8	1036.9	10717.4

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AMRAAM (AIM-120), December 31, 2002

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

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

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

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 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
1984				9.3	7.3
1985				9.7	7.8
1986				5.1	4.2
1987				5.8	5.0
1988				25.1	22.3
1989				13.3	12.4
1990				7.2	6.9
1991				3.5	3.5
1992				2.4	2.5
1993				3.0	3.1
1994					
1995				7.2	7.8
1996				3.9	4.3
1997				1.9	2.1
1998				4.9	5.5
1999				4.0	4.5
2000				11.1	12.8
2001				9.6	11.3
2002				8.2	9.7
2003				6.6	7.9
2004				7.7	9.3
2005				6.5	8.0
2006				2.2	2.7
2007				3.7	4.7
2008				1.5	2.0
2009				0.8	1.0
Subtotal				300.9	252.0

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1977				10.3	4.8
1978				13.2	6.7

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AMRAAM (AIM-120), December 31, 2002

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

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1979				29.5	16.1
1980				43.2	26.2
1981				34.1	22.9
1982				192.0	137.9
1983				283.2	212.9
1984				252.7	197.3
1985				255.9	206.6
1986				110.2	91.1
1987				43.6	37.7
1988				30.1	26.7
1989					
1990				12.4	11.9
1991				18.0	17.9
1992				29.6	30.3
1993				37.2	38.9
1994				60.9	64.8
1995				58.9	63.8
1996				40.1	44.2
1997				8.7	9.7
1998				34.9	39.2
1999				29.5	33.5
2000				42.8	49.4
2001				42.9	50.4
2002				45.3	53.5
2003				29.8	35.5
2004				26.7	32.4
2005				27.2	33.4
2006				28.2	35.3
2007				28.5	36.2
2008				28.3	36.7
2009				28.2	37.2
Subtotal				1956.1	1741.1

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989	26	2.8	26.4	31.7	31.2
1990	85	18.6	61.3	84.8	85.1
1991	300	51.2	185.4	253.5	261.9
1992	191	36.3	110.1	186.1	194.5
1993	165	19.1	68.0	98.7	105.2

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AMRAAM (AIM-120), December 31, 2002

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

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994	75	19.8	24.5	52.2	56.8
1995	106	22.4	36.9	68.3	75.0
1996	115	25.6	31.7	66.3	73.7
1997	100	14.5	27.0	46.8	52.7
1998	120	8.9	33.6	47.9	54.5
1999	100	7.8	31.8	44.2	50.9
2000	91	8.5	28.6	39.3	46.0
2001	63	7.7	21.3	31.9	37.8
2002	55	10.8	17.1	30.9	36.8
2003	100	9.9	28.9	41.8	50.4
2004	53	13.2	15.1	31.0	38.0
2005	46	12.9	13.2	29.4	36.6
2006	101	24.0	37.8	66.1	83.7
2007	150	29.7	55.2	89.4	115.3
2008	140	12.6	50.7	67.3	88.3
2009	150	9.6	52.1	65.7	87.8
2010	87	24.9	30.3	65.3	88.9
Subtotal	2419	390.8	987.0	1538.6	1751.1

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984		36.0		36.0	29.2
1985		88.9		88.9	74.1
1986		222.1		226.8	197.9
1987	180	187.1	445.0	654.7	596.1
1988	400	170.2	567.6	753.9	711.3
1989	874	104.1	677.2	797.9	786.2
1990	803	88.1	574.4	680.3	682.6
1991	600	184.2	384.9	592.5	611.9
1992	700	70.0	419.5	506.8	529.8
1993	1000	131.8	395.9	556.4	593.3
1994	983	74.9	319.1	411.0	447.0
1995	412	68.8	112.3	210.0	230.5
1996	291	19.5	131.4	161.6	179.8
1997	133	9.6	83.0	99.9	112.6
1998	173	39.3	47.2	90.5	103.0
1999	180	19.5	58.3	78.6	90.4
2000	163	5.3	58.4	71.6	83.8
2001	170	7.9	63.5	80.4	95.3
2002	190	5.9	67.6	84.1	100.2

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AMRAAM (AIM-120), December 31, 2002

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

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	158	3.4	58.9	72.9	88.0
2004	201		72.2	85.9	105.3
2005	202		71.8	86.5	107.8
2006	202		69.7	83.0	105.2
2007	203		67.7	79.3	102.3
2008	197		66.1	78.9	103.6
2009	199		66.7	79.3	106.0
Subtotal	8614	1536.6	4878.4	6747.7	6973.2

(U) Summary does not include funding or quantities for SEEK EAGLE (store certification program) procurements of 12 AMRAAMs in FY90, 24 AMRAAMs in FY94, and 20 quasi-C jettison test vehicles (JTVs) and 4 airborne instrumentation unit (AIU) kits and conversions for 4 AFSEO (AF SEEK EAGLE Office) pseudo-C separation test vehicles (STVs) in FY01. The SEEK EAGLE funding for FY01 is \$0.6M.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	2419	390.8	987.0	1839.5	2003.1
USAF	8614	1536.6	4878.4	8703.8	8714.3
Grand Total	11033	1927.4	5865.4	10543.3	10717.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	8466	8466

(U) Percent Total Program Quantities Delivered: 76.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 9051.4

(U) Percent Total Program Expended: 84.5%

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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 Interim Contractor Support (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.

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 (AIM-120) 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

Total O&S Cost	AMRAAM (AIM-120)	Antecedent
BY\$ (In Millions)	696.0	N/A
TY\$ (In Millions)	819.3	N/A

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

PROGRAM: MH-60R

AS OF DATE: December 31, 2002

INDEX

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1. (U) Designation and Nomenclature (Popular Name): MH-60R Multi-Mission Helicopter
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
 Air ASW, Assault and Special Mission CAPT William Shannon  
 Programs (PMA-299) 47123 Buse Rd Assigned: September 22, 2000  
 Unit IPT, Suite 156 DSN 757-5409; COMM 301-757-5409  
 Patuxent River, MD 20670-1547 shannonwe@navair.navy.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0604212N Project H2412  
 (U) PE 0604216N Project H1707  
 PROCUREMENT:  
 (U) APPN 1506 ICN 018200 (Navy)

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FOR OPEN PUBLICATION  
AS AMENDED

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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Declassify on: X3~~

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03-C-0489

5. (U) References:

SAR Baseline (Development Estimate):

(U) FY 1996/1997 President's Budget  
ASN(RD&A) Acquisition Decision Memorandum dated August 1993.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated March 14, 2002.

6. (U) Mission and Description:

(U) The MH-60R primary mission areas are Under Sea Warfare (USW), Anti-Surface Warfare (ASUW), Area Surveillance & Combat, Naval Surface Fire Support, Search and Rescue as well as the Traditional Rotary Wing Support Roles. The MH-60R Multi-Mission Helicopter (previously known as the LAMPS Mark III, Block II Upgrade) is a development program that incorporates the capabilities improvements over the legacy SH-60B and SH-60F helicopters. The avionics upgrades over the existing SH-60B/F include: a glass cockpit common with the MH-60S; Airborne Low Frequency Sonar (ALFS) as a long range active dipping sonar; Electronic Support Measures (ESM) with expanded frequency coverage and location detection; Multi-Mode Radar (MMR) with long range search, periscope detection, and imaging Inverse Synthetic Aperture Radar (ISAR); Forward Looking Infra-Red (FLIR) for imaging and laser target designation; Commercial Off-The-Shelf Acoustic Processor (COTS AP) for acoustic processing for ALFS and sonobuoys; Integrated Self Defense (ISD); and the Mission Planning System (MPS). MH-60R sensors and real-time exchange of tactical data with the host ship will bring a new dimension of battle space control to the Naval Commander.

7. (U) Executive Summary:

(U) The MH-60R, previously designated SH-60R, achieved Milestone II in FY93. In August 2000, the MH-60R program proposed a rebaseline to ASN(RDA) to reduce cost and schedule risks. The rebaseline was rejected by ASN(RDA) due to the identification of additional technical risks on the common cockpit. ASN(RDA) also directed the MH-60R program to assess the procurement of newly manufactured aircraft vice remanufactured and propose a revised restructured program. Based on Program Office analysis, ASN(RDA) revised the acquisition strategy to new production. The program changes included cost increases associated with the decision to build newly manufactured aircraft, incorporation of Airborne Low Frequency Sonar (ALFS) into the MH-60R program, an increase in spares funding, program schedule extension, and an increase in production aircraft quantities. A Program Deviation Report and revised Acquisition Program Baseline (APB), which incorporated the additional aircraft, funding increases and schedule delays was approved on 14 March 2002. In addition, the revised Operational Requirements Document (ORD), which includes a revised Initial Operating Capability (IOC) definition and Key Performance Parameters (KPPs), is scheduled for Joint Staff review during Spring 2003. The ORD is phased, defining multiple Block Upgrades that incrementally increase the

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

aircraft mission performance capabilities based on technology advances and developmental progress of sensors and subsystems. Each Block Upgrade is designed to provide the Warfighter with a useful and supportable increase in capability at a reduced cycle time.

The program has been successfully executing to the revised parameters of the approved March 2002 Acquisition Program Baseline (APB) and implementing the approved program from the Acquisition Decision Memorandum provided by ASN (RDA) in March 2002.

The first flight of a fully functional MH-60R test article took place on 4 April 2002. All test articles have been delivered to Patuxent River for testing. DT-IIC completed on 31 July 2002. All exit criteria were met. Key systems tested during this period were Electronic Support Measures (ESM), Airborne Low Frequency Sonar (ALFS), and the Multi-Mode Radar (MMR). DT-IID commenced on schedule on 1 November 2002. Major Systems being tested include weapons, Forward Looking Infra-Red (FLIR), radar, acoustics and ESM. All LRIP I aircraft have been delivered from Sikorsky to Lockheed Martin with delivery to the Navy anticipated to be complete by third quarter FY03. Delivery of these airframes completed the remanufacturing program with future airframes being "new" builds.

Block I Upgrade capability enhancements funded as part of President's Budget FY04 increased the estimated Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) in the approved APB dated March 2002 causing a program breach as a result of the increased scope and associated cost increases. These capability enhancements include:

- LINK 16
- Follow-on Anti-Surface Warfare (ASUW) Missile
- Integration CV(N) Interoperability
- Right Hand Extended Pylon
- Single Channel Ground-Air-Radio System (SINCGARS)
- Integrated Satellite Communications Demand Assign Multiple Access Waveform (SATCOM DAMA)
- GPS Selective Available Anti-Spoofing Module
- Low Light MTS FLIR
- Modularized Infrared Suppression
- Low Probability of Interception Radar Mode

A Program Deviation Report (PDR) has been processed; an updated APB is in process.

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)	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:

Block I Upgrade capability enhancements funded as part of President's Budget FY04 increased the estimated Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) in the approved APB dated March 2002 causing a program breach as a result of the increased scope and associated cost increases. These capability enhancements include:

- LINK 16
- Follow-on Anti-Surface Warfare (ASUW) Missile
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- GPS Selective Available Anti-Spoofing Module
- Low Light MTS FLIR
- Modularized Infrared Suppression
- Low Probability of Interception Radar Mode

The additional new capabilities approved for the incorporation of the Block I Upgrade will increase the PAUC and APUC by approximately 11 percent.

A new APB to reflect Block I is in process.

9. (U) Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone II	JUL 1993	JUL 1993	JUL 1993
EMD Contract Award	JUL 1993	JUL 1993	AUG 1993
Preliminary Design Review	JUL 1995	JUL 1995	NOV 1995
Critical Design Review	OCT 1996	MAR 1999	SEP 1999
LRIP Contract Award	NOV 1998	NOV 1999	MAR 2000
LRIP First Delivery	JUL 2000	NOV 2002	NOV 2002
TECHEVAL			
Start	JAN 2000	OCT 2003	OCT 2003
Complete	JUN 2000	APR 2004	APR 2004
OPEVAL			
Start	SEP 2000	MAY 2004	MAY 2004
Complete	MAR 2001	NOV 2004	NOV 2004
Milestone III	OCT 2001	MAR 2005	MAR 2005
Airborne Low Frequency Sonar			
EMD Contract Award	JAN 1992	JAN 1992	JAN 1992
Preliminary Design Review	OCT 1992	OCT 1992	OCT 1992
Critical Design Review	APR 1993	APR 1993	AUG 1993
TECHEVAL			
Start	FEB 1998	N/A	N/A
Complete	JUN 1998	N/A	N/A
OPEVAL			
Start	JUL 1998	N/A	N/A
Complete	SEP 1998	N/A	N/A
Milestone III	JAN 1999	N/A	N/A
Production Contract Award	MAR 1999	N/A	N/A
Initial Operating Capability	MAR 2001	SEP 2005	SEP 2005

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Maximum Operating Sea State	5	5 / 5	TBD	5
Mission Duration (ASW) (hrs)	3.3	2.0 / 1.25	TBD	1.83 (Ch-1)
Mission Duration (ASUW) (hrs)	3.5	125 / 80	TBD	125 (Ch-2)
Multi-Mode Radar	(b)(1)			
Range to Detect a 10000 Sq Meter Target	(b)(1)	N/A / N/A	TBD	(b)(1)
Range to Detect a 0.5 Sq Meter Target	(b)(1)	N/A / N/A	TBD	(b)(1)

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Using ISAR Classify a Surface Combatant at a percentage of the Target's Maximum Detectable Range	(b)(1)		TBD	(b)(1)
Electronic Support Measures	(b)(1)		TBD	(b)(1)
Detectable Frequency Bandwidth (GHz)	(b)(1)		TBD	
Ability to Detect a Threat Emitter X times Detection Range of the Threat Radar	(b)(1)	N/A / N/A	TBD	
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				
Sonobuoys: Maximum AOUs with a 75% Probability of Detection for a Nuclear Subsurface Target (sqnm)	1000	1000 / 300	TBD	300
Sonobuoys & ALFS: Maximum AOUs with a 90% Probability of Detection for a Subsurface Target (sqnm)	(b)(1)		TBD	(b)(1)
Airborne Low Frequency Sonar				
Operating Frequency (Khz)	<5	N/A / N/A	TBD	<5
Maximum System Weight	550	N/A / N/A	TBD	550
Source Level (db)	(b)(1)	N/A / N/A	TBD	(b)(1)
Minimum Long Pulse Length (sec) (minimum duty cycle 6.7%)	(b)(1)	N/A / N/A	TBD	(b)(1)
Reeling Machine MCBCF (cycles)	1000	N/A / N/A	TBD	150

(Ch-3)

AS...

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

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>		Demon- strated <u>Perf</u>	Current <u>Estimate</u>	
Avionics MTBMCF (hrs) (excluding cable and reeling machine)	78	N/A	/ N/A	TBD	53	
MTBF (hrs)	58	N/A	/ N/A	TBD	39	
MTTR, O Level (hrs)	2.0	N/A	/ N/A	TBD	3.8	
Availability (%)	0.98	N/A	/ N/A	TBD	.90	
ALFS: Max AOU with a 75% Probability of Detection for a Nuclear Subsurface Target (sqmn) using AQS-22 ALFS only	N/A	1000	/ 500	TBD	500	(Ch-4)
Interoperability	N/A	All IERs/ Critical / IERs		TBD	Critical (Ch-4) IERs	

(U) Note: Mission Duration (ASUW) definition was changed from hours to Nautical Miles (NM) in the approved APB.

b. Current Change Explanations --

(U) (Ch-1) - Mission Duration (ASW) changed due to revised definition in the Operational Requirements Document (ORD) and approved Acquisition Program Baseline (APB) excludes transit time. The revised estimate reflects this change in definition.

(Ch-2) Mission Duration (ASUW) changed due to revised definition in the ORD and approved APB changed from Hours to Nautical Miles (NM). The revised estimate reflects this change in definition.

(Ch-3) Detectable Frequency Bandwidth changed due to threshold value being revised in the ORD and approved APB.

(Ch-4) ALFS Only and Interoperability parameters were added in the revised ORD and the approved APB.

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	508.4	1117.5	1238.3
Procurement	3512.1	6073.4	6750.4
Airframe/CFE	(2119.0)		(4014.8)
GFE	(435.7)		(694.9)
Nonrecurring flyaway	(150.6)		(482.6)
ECOs			(130.5)
Unknown			(276.2)
Total Flyaway	(2705.3)		(5599.0)
Pubs	(40.0)		(53.0)
Weapon System	(5.6)		(18.0)
Field Activities	(165.5)		(184.0)
ILS/LSA/MES	(79.2)		(75.9)
Total Other Wpn Sys	(290.3)		(330.9)
Peculiar Support	(238.9)		(515.7)
Initial Spares	(277.6)		(304.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1993 Base-Year \$	4020.5	7190.9	7988.7
Escalation	1615.9	2400.9	2078.0
Development (RDT&E)	(40.3)	(99.5)	(130.7)
Procurement	(1575.6)	(2301.4)	(1947.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	5636.4	9591.8	10066.7
b. (U) Quantity --			
Development (RDT&E)	0	2	2
Procurement	<u>188</u>	<u>241</u>	<u>241</u>
Total	188	243	243

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

(U) The Low Rate Initial Production (LRIP) quantity is currently 11 which is less than 10% of the total procurement.

c. (U) Foreign Military Sales --  
None.

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	7190.9	7988.7	
(2) Quantity	243	243	
(3) Unit Cost	29.592	32.875	+11.09
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1993 BY\$)	6073.4	6750.4	
(2) Quantity	241	241	
(3) Unit Cost	25.201	28.010	+11.15

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	-24.0	-540.9	-	-564.9
Quantity	+153.0	+775.0	-	+928.0
Schedule	-	+436.7	-	+436.7
Engineering	+50.0	-50.4	-	-0.4
Estimating	+408.8	+2496.7	-	+2905.5
Other	-	-	-	-
Support	+70.2	-14.6	-	+55.6
Subtotal	+658.0	+3102.5	-	+3760.5
Current Changes:				
Economic	-4.4	-161.7	-	-166.1
Quantity	-	-	-	-
Schedule	-	-326.3	-	-326.3
Engineering	+176.1	+541.0	-	+717.1
Estimating	-9.4	+44.2	-	+34.8
Other	-	-	-	-
Support	-	+410.3	-	+410.3
Subtotal	+162.3	+507.5	-	+669.8
Total Changes	+820.3	+3610.0	-	+4430.3
Current Estimate	1369.0	8697.7	-	10066.7

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

(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	+133.3	+555.7	-	+689.0
Schedule	-	+53.0	-	+53.0
Engineering	+45.4	-42.4	-	+3.0
Estimating	+352.3	+1939.3	-	+2291.6
Other	-	-	-	-
Support	+60.4	+38.7	-	+99.1
Subtotal	+591.4	+2544.3	-	+3135.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-84.2	-	-84.2
Engineering	+145.8	+416.8	-	+562.6
Estimating	-7.3	+55.5	-	+48.2
Other	-	-	-	-
Support	-	+305.9	-	+305.9
Subtotal	+138.5	+694.0	-	+832.5
Total Changes	+729.9	+3238.3	-	+3968.2
Current Estimate	1238.3	6750.4	-	7988.7

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-4.9
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Incorporation of Block I/LINK 16 software and hardware development and integration efforts. (Engineering)	+140.7	+170.1
Performance of engineering evaluation of dynamic components for substantiation of lifecycle limitations and/or apply advanced design, manufacturing, and materials for extension of component life. (Engineering)	+2.9	+3.4
Redesign of aircraft nose/FLIR interface to provide for lockdown FLIR capability. (Engineering)	+2.2	+2.6
Adjustment for Current and Prior Inflation. (Estimating)	+3.2	+3.8
Revised Program Cost Estimate (Estimating)	-10.5	-13.2
RDT&E Subtotal	+138.5	+162.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-225.5

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic adjustment for negative program change. (Economic)	N/A	+63.8
Additional Schedule Variance due to increase of annual procurement rate to reduce program schedule by 2 years from 2015 to 2013. (Schedule)	-84.2	-152.0
Acceleration of annual procurement buy profile. (Schedule)	0.0	-174.3
Incorporation of Block I/LINK 16 capabilities, physical and functional modifications. (Engineering)	+410.3	+533.5
Redesign and upgrade of components for the Airborne Low Frequency Sonar (ALFS). (Engineering)	+6.5	+7.5
Adjustment for Current and Prior Inflation. (Estimating)	+2.1	+2.5
Revised program estimate associated with shift from Reman. to New Buy. (Estimating)	+71.6	+81.2
Additional Inflation adjustments resulting from budget decisions. (Estimating)	-18.2	-39.5
Adjustment for Current and Prior Inflation. (Support)	+1.3	+1.4
Change in Initial Spares due to revised program estimates and incorporation of the Block I/LINK 16 upgrades. (Support)	+105.7	+133.3
Change in Peculiar Support due to revised program estimates and incorporation of the Block I/LINK 16 upgrades. (Support)	+130.0	+191.4
Change in Pubs due to revised program estimates and incorporation of the Block I/LINK 16 upgrades. (Support)	+21.5	+26.5
Change in Weapon System due to revised program estimates and incorporation of the Block I/LINK 16 upgrades. (Support)	+2.0	+2.5
Change in Field Activities due to the additional program support requirements for incorporation of Block I/LINK 16. (Support)	+34.2	+42.3
Change in ILS/LSA/MES due to revised program estimates and incorporation of the Block I/LINK 16 upgrades. (Support)	+11.2	+12.9
Procurement Subtotal	+694.0	+507.5

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	
29.98	-3.01	-2.97	+0.454	+2.95	+12.10	--	+1.92	+11.45	41.43

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.06	-2.92	-2.73	+0.458	+2.04	+10.54	--	+1.64	+9.03	36.09

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JUL 1993	N/A	JUL 1993
Milestone III	N/A	OCT 2001	N/A	MAR 2005
IOC	N/A	MAR 2001	N/A	SEP 2005
Total Cost	N/A	5636.4	N/A	10066.7
Total Quantity	N/A	188	N/A	243
Prog Acq Unit Cost	N/A	30.0	N/A	41.4

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

a. RDT&E --

(U) Development (EMD II):

Lockheed Martin, Owego, NY  
 N00019-93-C-0196, CPFF  
 Award: June 10, 1999  
 Definitized: September 30, 2002

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$154.1	N/A	2

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$174.1	N/A	2

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$174.6	\$174.1

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-17.3	\$-8.5
Cumulative Variances To Date (12/01/02)	<u>\$-0.6</u>	<u>\$-1.2</u>
Net Change	\$16.7	\$7.3

Explanation of Change:

(U) Alpha Contracting procedures resulted in a restructure and replan of the program. The contract was rebaselined in October 2002 and an Interim Baseline Review was conducted on 18/19 December 2002.

(U) <u>Test Articles:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Sikorsky Aircraft Corp., Stratford CT N00019-99-C-1069, CPIF Award: July 11, 1999 Definitized: December 30, 1999	\$63.9	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>
\$98.1	N/A	4	\$108.3	\$107.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-8.8	\$-3.2
Cumulative Variances To Date (12/31/02)	<u>\$-17.5</u>	<u>\$0.0</u>
Net Change	\$-8.7	\$3.2

Explanation of Change:

(U) The Cost and Schedule variances have been caused by continued high costs associated with the remanufacture process. Poor performance on machined parts, availability of serviceable Government Furnished Equipment (GFE) parts, induction of fleet aircraft that were in worse than anticipated condition and additional engineering effort to incorporate revisions into the contract drawing packages contributed to the increased labor hours and manufacturing delays.

(U) Contract Comments:

Two test articles are funded with FY99 RDT&E and the second two test articles are funded with FY00 procurement funding.

Deliveries are 100% complete under this contract and this will be the last time this contract is reported.

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

(U) <u>Production (LRIP 1):</u>			Initial Contract Price		
Lockheed Martin, Owego, NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
N00019-00-C-0249, CPIF	\$88.1	N/A	7		
Award: March 14, 2000					
Definitized: August 8, 2000					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$101.5	N/A	5	\$110.0	\$106.6	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/19/02)			\$1.9	\$-1.3	
Net Change			<u>\$-2.4</u>	<u>\$-2.3</u>	
			\$-4.3	\$-1.0	

Explanation of Change:

(U) Cost variance deteriorated due to Level Of Effort (LOE) activities impacted by the delay in award of LRIP 2 and cancellation of LRIP 3 follow-on contracts. Budgets were set up based upon spreading costs across LRIP's 1, 2 and 3. Base program management, performance management and base asset management costs were all negatively impacted by LRIP 2 deferral and LRIP 3 cancellation. Base Asset Management also required additional effort for Minimum Avionics Configuration (MAC) kit and aircraft deliveries. The MMR/Radome proposal also required additional effort due to obsolescence redesign, additional Traveling Wave Tube Amplifier (TWTA) cost, additional testing and qualification of an alternate source.

(U) Contract Comments:

The contract includes Mission Avionics for two test articles and the LRIP Lot 1 aircraft.

The restructured program approved in March 2002 changed the acquisition strategy from remanufacture to build new and deleted the last two remanufactured aircraft to be procured under this contract changing the quantity from seven to five.

b. Procurement --			Initial Contract Price		
(U) <u>Production (LRIP 1):</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Sikorsky Aircraft Corp., Stratford CT	\$63.9	N/A	5		
N00019-99-C-1069, CPIF					
Award: July 11, 1999					
Definitized: December 30, 1999					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$98.1	N/A	3	\$108.3	\$107.6	

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-8.8	\$-3.2
Cumulative Variances To Date (12/31/01)	<u>\$-17.5</u>	<u>\$0.0</u>
Net Change	\$-8.7	\$3.2

Explanation of Change:

(U) Please refer Test Articles Section of contract no. N00019-99-C-1069 for variance discussion. The variances reported here are the same as reported under the RDT&E portion of the contract.

(U) Contract Comments:

LRIP I and the Test Articles are part of the same contract.

All aircraft have now been delivered from the contract. This will be the last report for this 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 (FY90-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-15)</u>	<u>Total</u>
RDT&E	1130.5	77.0	79.2	82.3	1369.0
Procurement	420.7	453.2	496.3	7327.5	8697.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1551.2	530.2	575.5	7409.8	10066.7

b. Annual Summary -- Multi-Mission Helicopter

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

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				11.0	10.2
1991				29.6	28.5
1992				53.5	53.0
1993				71.7	72.7
1994				68.4	70.7
1995				66.5	70.0
1996				60.8	65.1
1997				50.9	55.2
1998				78.1	85.3

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

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

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				189.0	209.0
2000				98.2	110.1
2001				69.0	78.4
2002				112.9	129.5
2003				80.0	92.8
2004				65.4	77.0
2005				66.2	79.2
2006				40.0	48.6
2007				15.5	19.2
2008				11.4	14.3
2009				0.2	0.2
Subtotal	2			1238.3	1369.0

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	5	23.0	153.4	207.7	235.6
2001		40.4		46.9	53.7
2002		8.5		12.4	14.4
2003		31.6		99.7	117.0
2004	6	60.1	180.9	380.1	453.2
2005	10	13.7	253.9	409.5	496.3
2006	15	17.5	361.5	562.6	693.5
2007	21	17.4	469.2	696.3	873.6
2008	31	48.8	660.0	943.2	1204.8
2009	31	54.4	652.0	878.2	1141.9
2010	31	38.0	611.0	668.8	885.3
2011	31	38.0	606.8	663.8	894.5
2012	31	38.0	603.3	647.5	888.2
2013	29	53.2	564.4	520.8	727.2
2014				7.3	10.4
2015				5.6	8.1
Subtotal	241	482.6	5116.4	6750.4	8697.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	243	482.6	5116.4	7988.7	10066.7

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	5	2

(U) Percent Total Program Quantities Delivered: 1.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1228.7

(U) Percent Total Program Expended: 12.2%

(U) All LRIP aircraft have been delivered from Sikorsky to Lockheed Martin for the installation of mission systems. All Test Articles have been delivered to the Navy with delivery of the remaining three LRIP I aircraft to be complete by third quarter FY03.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
The average annual cost is based on 13 aircraft per squadron operating until FY31. The estimate is dated January 2003.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Multi-Mission Helicopter Avg Annual Cost MH-60R per Squadron	SH-60B Avg Annual Cost Per Squadron
Mission Pay & Allowances	11.5	11.2
Unit Level Consumption	9.3	10.4
Intermediate Maintenance	1.5	1.7
Depot Maintenance	1.7	2.5
Contractor Support	0.3	0.1
Sustaining Support	5.0	7.1
Indirect Costs	4.9	6.0
<b>Total</b>	<b>34.2</b>	<b>39.0</b>

Total O&S Cost	Multi-Mission Helicopter	SH-60B
BY\$ (In Millions)	1453.3	1623.8
TY\$ (In Millions)	2778.2	3116.4

Report Creation Date: 03/31/2003 12:00:09 PM



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5. (U) References:

SAR Baseline (Planning Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated January 12, 1998.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 23, 2002.

6. (U) Mission and Description:

(U) DD(X) will be an optimally crewed, multi-mission surface combatant designed to fulfill volume firepower and precision strike requirements. This advanced warship will provide credible forward naval presence while operating independently or as an integral part of Naval, Joint or Combined Expeditionary Strike Forces. Armed with an array of weapons, DD(X) will provide offensive, distributed and precision firepower at long ranges in support of forces ashore. To ensure effective operations in the littoral, DD(X) will incorporate full-spectrum signature reduction, active and passive self-defense systems and cutting-edge survivability features.

7. (U) Executive Summary:

(U) The DD(X) RFP was released in November 2001 and industry proposals were received February 4, 2002. The Navy awarded the DD(X) Design and Development contract to Ingalls Shipbuilding Inc. (ISI) on April 29, 2002.

On May 9, 2002, Bath Iron Works (BIW) filed a protest with GAO challenging the award of the DD(X) Phase III contract. The program stopped work on the Phase III contract pending resolution of the protest. In order to mitigate impacts, the Navy, with concurrence of both ISI and BIW, modified the Phase II Agreement to continue core Advanced Gun System (AGS) and CATIA Computer Aided Design (CAD), Computer Aided Manufacture (CAM) work. The GAO ruled on August 19, 2002 in the Navy's favor and work on the Phase III contract resumed.

The Navy conducted a Post Award Conference on October 8-9 2002 that focused on the Design Agent organizational structure, subcontracts issued and Engineering Development Model (EDM) schedules and progress to date. The Navy conducted a Quarterly Program Review (QPR) on November 6-7 2002. The QPR focused on DD(X) system design status, near-term events and EDM schedules and progress to date.

In December 2002, an agreement was reached with Lockheed Martin completing formulation of the DD(X) national team. The national team includes: Northrop Grumman Ship Systems, Bath Iron Works, Northrop Grumman Newport News, Raytheon, Lockheed Martin, United Defense Limited Partnership and Boeing.

A program level Integrated Baseline Review, to set the Performance Measurement Baseline, is scheduled for April 2003.

Limited SAR reporting is permitted for pre-Milestone B programs in accordance with Title 10, United States Code, Section 2432, "SARs."

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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
Milestone 0	JAN 1995	JAN 1995	JAN 1995
Milestone I	DEC 1997	DEC 1997	JAN 1998
System Concepts Contracts Award	JAN 1998	JAN 1998	JUN 1998
DD(X) Design/Development Contract	N/A	APR 2002	APR 2002 (Ch-1)
Milestone B	JUL 2003	MAR 2005	MAR 2005 (Ch-1)
Lead Ship Award	OCT 2003	MAR 2005	MAR 2005
First Ship Delivery	AUG 2007	JUL 2011	JUL 2011
OPEVAL	N/A	JUL 2012	JUL 2012 (Ch-1)
Initial Operational Capability	AUG 2008	JAN 2013	JAN 2013 (Ch-1)
Milestone C	AUG 2011	MAR 2014	MAR 2014

b. Current Change Explanations --

(U) (Ch-1) After the SAR was submitted on April 5, 2002, the DD(X) schedule was further refined following an Overarching Integrated Product Team meeting that was held on April 15, 2002. The dates for Milestone B and Initial Operational Capability (IOC) were moved to the right by six and eight months respectively, to more accurately depict the restructured program. The Milestones for DD(X) Design/ Development Contract and OPEVAL were new milestones added to the April 2002 APB, therefore, the December 2002 SAR is the first opportunity to include them.

Milestone	From	To
Milestone B	July 2004	March 2005
Initial Operational Capability	July 2012	January 2013
DD(X) Design/Development Contract	N/A	April 2002
OPEVAL	N/A	July 2012

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10. (U) Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Land Attack:	(b)(1)	(b)(1)	TBD	(b)(1)
A minimum of two separate gun systems with a total of ___ 155 mm artillery battery equivalency (Six MK 198 Towed Howitzers)	(b)(1)	(b)(1)	TBD	(b)(1)
NSFS Gun range (nm)	(b)(1)	(b)(1)	TBD	(b)(1)
Gun system accuracy (m CEP)	(b)(1)	(b)(1)	TBD	(b)(1)
Ship C4ISR architecture accommodates Joint Interoperability for the following types of information and data:	(b)(1)	(b)(1)		(b)(1)
Strategic (National sensor downlink of equivalents)	(b)(1)	(b)(1)	TBD	(b)(1)
Theater (UAV and JSTARS Direct Down Link or equivalents)	(b)(1)	(b)(1)	TBD	(b)(1)
Force Coordination (BGIXS or equivalent)	(b)(1)	(b)(1)	TBD	(b)(1)
Force Control (JTIDS and AFATIDS or equivalents)	(b)(1)	(b)(1)	TBD	(b)(1)
Weapons Control (CEC or equivalent)	(b)(1)	(b)(1)	TBD	(b)(1)
Signature Reduction:	(b)(1)	(b)(1)		(b)(1)
Radar Cross Section (dBsm median)	(b)(1)	(b)(1)	TBD	(b)(1)
0-360 degrees azimuth	(b)(1)	(b)(1)		(b)(1)
0-10 degrees elevation	(b)(1)	(b)(1)		(b)(1)
2-4 and 8-18Ghz RCS smoothly distributed over length of ship	(b)(1)	(b)(1)		(b)(1)
Minimize wake contribution	(b)(1)	(b)(1)		(b)(1)
Infrared	(b)(1)	(b)(1)		(b)(1)

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

	Planning Estimate (SAR)	Approved Program (APR) Obj/Threshold	Demonstrated Perf	Current Estimate
Contrast Radiance for non-stack areas (sr=steradians) ( $\mu\text{W}/\text{cm}^2/\text{sr}$ ) (3-5 $\mu\text{m}$ band)/(8-12 $\mu\text{m}$ band) 0-10 degrees elevation. Minimize wake contribution	(b)(1)	(b)(1)	TBD	(b)(1)
Contrast Radiant Intensity for stack and plume (W/sr) (3-5 $\mu\text{m}$ band)/(8-12 $\mu\text{m}$ band) 0-10 degrees elevation	(b)(1)	(b)(1)	TBD	(b)(1)
Magnetic (nanoTeslas)	(b)(1)	(b)(1)	TBD	(b)(1)
Acoustic =< 15kts	(b)(1)	(b)(1)	TBD	(b)(1)
Sustained speed (kts)	(b)(1)	(b)(1)	TBD	(b)(1)
Endurance (nm radius at 20 kts)	(b)(1)	(b)(1)	TBD	(b)(1)
Vertical launch cell capacity (#)	256	256 / 128	TBD	256
Magazine capacity per tube system	750	750 / 600	TBD	750
Manning: Number of ship's company personnel (helo det included)	95	95 / 150	TBD	95
Logistics and Readiness:				
Operational Availability (Ao) for mission critical systems	0.95	0.95 / 0.90	TBD	.95

(U) \* The chart depicting the acoustics Objective / Threshold can be found in the DD 21 Operational Requirements Document (ORD) dated November 3, 1997.

The performance characteristics shown above reflect the DD 21 program. DD(X) performance characteristics will be shown at Milestone B when the new DD(X) Operational Requirements Document is approved.

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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 --	Planning <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	1754.0	9313.5	9124.3
Procurement	0.0	N/A	0.0
Total Sailaway			(0.0)
Other Weapon System			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	<u>0.0</u>	<u>N/A</u>	<u>0.0</u>
Total FY 1996 Base-Year \$	1754.0	9313.5	9124.3
Escalation	335.0	1496.2	1254.7
Development (RDT&E)	(335.0)	(1496.2)	(1254.7)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(N/A)</u>	<u>(0.0)</u>
Total Then Year \$	2089.0	10809.7	10379.0
b. (U) Quantity --			
Development (RDT&E)	0	0	1
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	0	0	1

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

Not required for Pre-Milestone B 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	2089.0	-	-	2089.0
Previous Changes:				
Economic	-104.4	-	-	-104.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+5471.3	-	-	+5471.3
Estimating	+3353.8	-	-	+3353.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8720.7	-	-	+8720.7
Current Changes:				
Economic	-201.5	-	-	-201.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-229.2	-	-	-229.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-430.7	-	-	-430.7
Total Changes	+8290.0	-	-	+8290.0
Current Estimate	10379.0	-	-	10379.0

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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
Planning Estimate	1754.0	-	-	1754.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+4720.9	-	-	+4720.9
Estimating	+2838.6	-	-	+2838.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7559.5	-	-	+7559.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-189.2	-	-	-189.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-189.2	-	-	-189.2
Total Changes	+7370.3	-	-	+7370.3
Current Estimate	9124.3	-	-	9124.3

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-209.3
Economic adjustment for negative program change. (Economic)	N/A	+7.8
Adjustment for Current and Prior Inflation. (Estimating)	+21.6	+24.2
FY2003 Congressional Reduction due to downselect delay (Estimating)	-14.6	-16.0
Revision Of Outyear Estimates (FY2008 and FY2009) (Estimating)	-139.7	-172.0
Miscellaneous Program Adjustments (Reduction to Contractor Support Services, Reduction to Overhead, Direct and Indirect costs, and savings from process improvements) (Estimating)	-56.5	-65.4
RDT&E Subtotal	-189.2	-430.7

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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 B programs in accordance with Section 2433, Title 10, USC.

b. Procurement Unit Cost (PUC) History

Not required for Pre-Milestone B 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	DEC 1997	N/A	N/A	JAN 1998
Milestone B	JUL 2003	N/A	N/A	MAR 2005
Milestone C	AUG 2011	N/A	N/A	MAR 2014
IOC	AUG 2008	N/A	N/A	JAN 2013
Total Cost	2089.0	N/A	N/A	10379.0
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

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

a. RDT&E --

(U) DD(X) Phase III Dev:

Northrop Grumman Ship Sys, Pascagoula MS  
N0002402C2302, CPAF

Award: April 29, 2002

Definitized: April 29, 2002

Initial Contract Price  
Target      Ceiling      Qty

\$2879.3      N/A      0

Current Contract Price  
Target      Ceiling      Qty  
\$2847.3      N/A      0

Estimated Price At Completion  
Contractor      Program Manager  
\$2847.3      \$2847.3

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) A program level Integrated Baseline Review, to set the Performance Measurement Baseline, is scheduled for April 2003. The Navy is working with the DD(X) Design Agent on Cost Performance Report (CPR) formats and the Design Agent continues to work with their subcontractors to provide a consolidated CPR. Anticipated CPR data will be available to support the next SAR.

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

(U) Contract Comments:

The difference in Initial Contract Price and the Current Contract Price is twofold. The contract was initially modified to allow Phase II core Advanced Gun System (AGS) and computer aided design work to continue during the protest period. Secondly, funding was added to incorporate Multi-Function Radar (MFR) integration and testing efforts under the DD(X) Design Agent contract.

The MFR Other Transaction Authority 804/845 Agreement was terminated for convenience so that integrated testing with VSR could be accomplished under one contract vehicle; the Northrop Grumman contract. Phase II was completed with the award of the Phase III contract and protest resolution.

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 (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	2535.5	1058.4	1458.3	5326.8	10379.0
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2535.5	1058.4	1458.3	5326.8	10379.0

(U) The RDT&E total contains \$2.517B (FY2005 - FY2011) for DD(X) detail design and construction of the first ship.

b. Annual Summary -- DD(X)

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1996 Dollars Nonrec</u>	<u>Flyaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				7.0	7.0
1996				9.9	10.0
1997				11.7	12.0
1998				51.9	53.5
1999				206.3	215.1
2000				265.9	281.3
2001				496.6	532.5
2002				462.8	500.6
2003				844.2	923.5
2004				953.1	1058.4
2005				1293.0	1458.3

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DD(X) Destroyer, December 31, 2002

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

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

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				1519.4	1742.0
2007				1151.9	1343.8
2008				777.0	922.8
2009				510.5	617.2
2010				285.2	351.0
2011				199.5	250.0
2012				78.4	100.0
Subtotal	1			9124.3	10379.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1			9124.3	10379.0

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): \$ 1750

(U) Percent Total Program Expended: 16.9%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone B programs.

Report Creation Date: 03/20/2003 12:12:11 PM

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

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): F-35 Joint Strike Fighter (JSF)

2. DoD Component: OSD

Joint Participants:

USAF, USN, USMC, DARPA, United Kingdom, Norway, Denmark, the Netherlands, Canada, Italy, Turkey, Australia

3. Responsible Office and Telephone Number:

Joint Strike Fighter Program Office	MGen John Hudson
1213 Jefferson Davis Hwy	Assigned: October 26, 2001
Suite 600	DSN 332-7640; COMM 703-602-7640
Arlington, VA 22202-3402	john.hudson@jsf.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

PROCUREMENT:

- APPN 3010 ICN 0207142F (Air Force)
- APPN 1506 ICN 0214146N (Navy)

MILCON:

**No Security Objection  
to Open Publication  
(AS AMENDED)**

03-C-01K  
MAR 24 2003

*[Signature]*  
**Office of the Chief of  
Naval Operations  
Dept. of the Navy**

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03-C-0483

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

PE 0204146N

PE 0207142F

JSF is DoD's largest cooperative development program. The UK signed a Memorandum of Understanding in January 2001 as the only Level I partner. During 2002 seven additional countries signed MOUs for JSF SDD participation as follows: Canada, Denmark, the Netherlands, Norway, Italy, Turkey, Australia. Italy and the Netherlands are Level II partners, and the others are Level III. Associated financial contributions are reflected in Section 16.

**5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated October 26, 2001.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 26, 2001.

**6. Mission and Description:**

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next-generation strike fighter 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 and GR-7 for the United Kingdom Royal Navy and Royal Air Force. 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:**

This SAR completes the transition to a Development SAR following the Milestone B decision in October 2001.

The Department of Defense established the F-35 Joint Strike Fighter Program, originally named Joint Advanced Strike Technology (JAST) Program, in 1993. It was created as the focal point for defining affordable next-generation strike weapon systems to replace aging Navy and Air Force tactical assets. Fiscal Year 1995 legislation merged the Defense Advanced

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

Research Projects Agency (DARPA) Advanced Short Take-Off and Landing (ASTOVL) program with the then-JAST Program. The United Kingdom became a Collaborative Partner in 1995, extending a collaboration begun under the DARPA ASTOVL program. Denmark, Norway, the Netherlands, Canada, and Italy also became partners in the Concept Demonstration Phase, with Turkey, Singapore, and Israel as Foreign Military Sales customers.

Facilitated by the JSF Program Office, the Services evolved weapon system requirements based on extensive cost and performance trades emphasizing Cost As An Independent Variable (CAIV). The process culminated in the Services' Joint Operational Requirements Document in March 2000, revalidated by the Joint Requirements Oversight Council (JROC) in October 2001.

The Concept Demonstration Phase commenced in November 1996 with competitive contract awards to Boeing and Lockheed Martin for Concept Demonstration Programs (CDP), with Pratt and Whitney providing propulsion hardware and engineering support. The competing contractors conducted concept-unique ground demonstrations; continued refinement of the weapon system concepts that they proposed for Systems Development and Demonstration (SDD) and Production; and built and flew concept demonstrator aircraft. Contractor flight demonstrations commenced in September 2000 and completed in August 2001. Flight test results met or exceeded expectations, to an unprecedented degree in many cases.

A Milestone B Defense Acquisition Board (DAB) review was held on October 24, 2001. On October 25, the Secretary of Defense provided certification to congress (in accordance with Section 212 of the FY 2001 Defense Authorization Act) that the JSF program successfully completed the CDP exit criteria and demonstrated sufficient technical maturity to enter SDD. On October 26, SDD contracts were awarded to Lockheed Martin and Pratt and Whitney. General Electric continues technical efforts related to development of a second engine source for competition in production.

Significant SDD technical accomplishments over the past year include the following: successful completion of the Air System Requirements Review (ASRR) with Lockheed Martin in February 2002; completion of Integrated Baseline Reviews (IBRs) for all three primes, major subcontractors and key suppliers in Spring and Summer 2002; completion of propulsion Preliminary Design Reviews (PDR) in Summer 2002; and preparation for the March 2003 Air System PDR.

JSF is DoD's largest cooperative development program. The UK signed a Memorandum of Understanding (MOU) in January 2001 as the only SDD Level I partner. During 2002 seven additional countries signed MOUs for JSF SDD participation as follows: Canada, Denmark, the Netherlands, Norway, Italy, Turkey, Australia. Italy and the Netherlands are Level II partners, and the others are Level III partners. The Department held discussions with Israel and Singapore for potential as Security Cooperation Participants for case specific scope outside of the JSF cooperative partnership.

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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
	NOV 1996	NOV 1996	NOV 1996
Concept Demonstration			
Contract Award			
Milestone B	OCT 2001	OCT 2001	OCT 2001
EMD Contract Award	OCT 2001	OCT 2001	OCT 2001
Preliminary Design Review	APR 2003	APR 2003	APR 2003
Critical Design Review			
CDR (CTOL&Common)	APR 2004	APR 2004	APR 2004
CDR (STOVL&Common)	OCT 2004	OCT 2004	OCT 2004
CDR (CV&Common)	JUL 2005	JUL 2005	JUL 2005
DAE (IPR 1)	APR 2005	APR 2005	APR 2005
1st Flt CTOL	NOV 2005	NOV 2005	NOV 2005
1st Flt STOVL	APR 2006	APR 2006	APR 2006
1st Flt CV	JAN 2007	JAN 2007	JAN 2007
DAE (IPR 2)	APR 2006	APR 2006	APR 2006
1st Operational Aircraft Delivered	JUN 2008	JUN 2008	JUN 2008
USMC IOC	APR 2010	APR 2010	APR 2010
USAF IOC	JUN 2011	JUN 2011	JUN 2011
Completed IOT&E	MAR 2012	MAR 2012	MAR 2012
USN IOC	APR 2012	APR 2012	APR 2012
DAB Milestone C	APR 2012	APR 2012	APR 2012

The "Development Estimate (SAR)" and "Approved Program (APB)" columns reflect Milestone B (October 2001) baselines.

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9b. Schedule (Cont'd):

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
STOVL Mission Performance	Execute 550 ft. STO with 4 JDAM (2 ext- ernal & 2 inter- nal), 2 AIM-120 (inter- nal), fuel to fly 550nm	Execute / Execute 550 ft. / 550 ft. STO with/ STO with 4 JDAM / 2 JDAM (2 ext- / (inter- ernal & / nal), 2 2 inter- / AIM-120 nal), 2 / (inter- nal), AIM-120 / nal), (inter- / fuel nal), / to fly fuel / 450nm to fly / 550nm /	TBD	Execute (Ch-1) 514 ft. STO with 2 JDAM (inter- nal), 2 AIM-120 (inter- nal), fuel to fly 472nm
Combat Radius NM - CTOL Variant	690	690 / 590	TBD	679 (Ch-2)
Combat Radius NM - STOVL Variant	550	550 / 450	TBD	472 (Ch-3)
Combat Radius NM - CV Variant	730	730 / 600	TBD	771 (Ch-4)
Internal Weapons Carriage - CTOL Variant	Suffic- ient bay volume to load, carry & employ object- ive Annex A weapons	Suffic- / Suffic- ient bay/ ient bay volume / volume to load, / to load, carry & / carry & employ / employ object- / thresh- ive / old Annex A / Annex A weapons / weapons	TBD	Suffi- cient bay volume to load, carry & employ objec- tive Annex A weapons
Internal Weapons Carriage - STOVL Variant	Suffic- ient bay volume to load, carry & employ object- ive Annex A weapons	Suffic- / Suffic- ient bay/ ient bay volume / volume to load, / to load, carry & / carry & employ / employ object- / thresh- ive / old Annex A / Annex A weapons / weapons	TBD	Suffi- cient bay volume to load, carry & employ objec- tive Annex A weapons

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Internal Weapons Carriage - CV Variant	Suffic- ient bay volume to load, carry & employ object- ive Annex A weapons	Suffic- / ient bay/ volume / to load, / carry & / employ / object- / ive / Annex A / weapons /	Suffic- ient bay volume to load, carry & employ object- ive Annex A weapons	TBD	Suffi- cient bay volume to load, carry & employ objec- tive Annex A weapons
Radio Frequency (RF) Signature	See Classi- fied Extract	See / Classi- / fied /	See Classi- fied Extract	TBD	Classi- fied
Logistic Footprint - CTOL Variant	Less than or equal to 6 C-17 equiva- lent loads	Less / than or / equal to / 6 C-17 / equiva- / lent / loads /	Less than or equal to 6 C-17 equiva- lent loads	TBD	Less (Ch-5) than or equal to 5.6 C-17 equiva- lent loads
Logistic Footprint - CV Variant	Less than or equal to 34,000 cu ft, 183 Short Tons	Less / than or / equal to / 34,000 / cu ft, / 183 / Short / Tons /	Less than or equal to 34,000 cu ft, 183 Short Tons	TBD	Less (Ch-6) than or equal to 18,473 cu ft, 131 Short Tons
Logistic Footprint - STOVL Variant	Less than or equal to 4 C-17 equiva- lent loads	Less / than or / equal to / 4 C-17 / equiva- / lent / loads /	Less than or equal to 4 C-17 equiva- lent loads	TBD	Less (Ch-7) than or equal to 3.4 C-17 equi- valent loads cu ft, 131 Short Tons
Sortie Generation Rate - CTOL Variant	4/day initial surge; 3/day sus-	4/day / initial / surge; / 3/day / sus- /	3/day initial surge; 2/day sus-	TBD	3.7/day (Ch-8) initial surge; 2/day sus-

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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>
	tained	tained / tained		tained
	surge;	surge; / surge;		surge;
	2/day	2/day / 1/day		1/day
	Wartime	Wartime / Wartime		Wartime
	Sus-	Sus- / Sus-		Sus-
	tained	tained / tained		tained
	based on	based on/ based on		based on
	ASD of	ASD of / ASD of		ASD of
	2.5	2.5 / 2.5		2.5
Sortie Generation	4/day	4/day / 3/day	TBD	4.4/day (Ch-9)
Rate - CV Variant	initial	initial / initial		initial
	surge;	surge; / surge;		surge;
	3/day	3/day / 2/day		2/day
	sus-	sus- / sus-		sus-
	tained	tained / tained		tained
	surge;	surge; / surge;		surge;
	1/day	1/day / 1/day		1/day
	Wartime	Wartime / Wartime		Wartime
	Sus-	Sus- / Sus-		Sus-
	tained	tained / tained		tained
	based on	based on/ based on		based on
	ASD of	ASD of / ASD of		ASD of
	1.8	1.8 / 1.8		1.8
Sortie Generation	6/day	6/day / 4/day	TBD	7.2/day (Ch-10)
Rate - STOVL	initial	initial / initial		initial
Variant	surge;	surge; / surge;		surge;
	4/day	4/day / 3/day		3/day
	sus-	sus- / sus-		sus-
	tained	tained / tained		tained
	surge;	surge; / surge;		surge;
	2/day	2/day / 1/day		1/day
	Wartime	Wartime / Wartime		Wartime
	Sus-	Sus- / Sus-		Sus-
	tained	tained / tained		tained
	based on	based on/ based on		based on
	ASD of	ASD of / ASD of		ASD of
	1.1	1.1 / 1.1		1.1
Interoperability	100% of	100% of / 100% of	TBD	100% of
	all top	all top / critical		critical
	level	level / top		top
	IERs	IERs / level		level
		/ IERs		IERs
Mission Reliability	98% for	98% for / 95% for	TBD	98.4% (Ch-11)
	all	all / CV &		for
	variants	variants/ STOVL &		CV,
	at ASD's	at ASD's/ 93% for		99.1%
	listed	listed / CTOL at		for

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR) in Table 13	Approved Program (APB) Obj/Threshold in / ASD's Table 13/ listed / in Table / 13.	Demonstrated Perf	Current Estimate STOVL & 98.3% CTOL at ASDs listed in Table
CV Recovery Performance, Approach Speed	Max approach speed (Vpa) at Required Carrier Landing Weight (RCLW) of less than 140 kts	Max approach speed (Vpa) at Required Carrier Landing Weight (RCLW) of less than 140/ kts / Max approach speed (Vpa) at Required Carrier Landing Weight (RCLW) of less than 145 kts w/ 15 kts WOD at RCLW	TBD	Max approach speed (Vpa) at Required Carrier Landing Weight (RCIW) of less than 139 kts w/ 15 kts WOD at RCLW (Ch-12)

The "Development Estimate (SAR)" and "Approved Program (APB)" columns reflect Milestone B (October 2001) baselines for JSF Key Performance Parameters (KPPs).

"Current Estimate" reflects government assessment of projected performance based on Lockheed Martin's pre-PDR (240-1.1 Rev A) configuration and the Pratt and Whitney PDR (A-14) engine deck using LM IOC weight empty targets. For logistics characteristics, government assessment is based on Lockheed Martin's Milestone B (235-1.2) configuration. JSF is projected to meet or exceed all KPP threshold requirements; degradation of performance margins is anticipated in future configuration updates. Some non-KPP threshold requirements will not be met. Refinements to performance projections will continue as the design configuration matures during SDD.

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --

"PM's Current Estimate" changed from the December 01 SAR as follows due to design maturation:

- (Ch-1) STOVL mission performance changed from 550 ft STO to 514 ft STO with stated internal weapons and fuel to fly 472 nm vice 450 nm
- (Ch-2) Combat Radius NM- CTOL Variant changed from 590 to 679
- (Ch-3) Combat Radius NM- STOVL Variant changed from 450 to 472
- (Ch-4) Combat Radius NM- CV Variant changed from 600 to 771
- (Ch-5) Logistic Footprint CTOL Variant changed from less than or equal to 8 C-17 equivalent loads to 5.6 C-17 equivalent loads
- (Ch-6) Logistic Footprint CV Variant changed from less than or equal to 46,000 cu ft, 243 short tons to 18,473 cu ft, 131 short tons
- (Ch-7) Logistic Footprint STOVL Variant changed from less than or equal to 8 C-17 equivalent loads to 3.4 C-17 equivalent loads cu ft, 131 short tons
- (Ch-8) Sortie Generation Rate- CTOL Variant changed from 3/day to 3.7/day initial surge
- (Ch-9) Sortie Generation Rate- CV Variant changed from 3/day to 4.4/day initial surge
- (Ch-10) Sortie Generation Rate- STOVL Variant changed from 4/day to 7.2/day
- (Ch-11) Mission Reliability changed from 95% for CV to 98.4%, 95% for STOVL to 99.1%, 93% for CTOL to 98.3%
- (Ch-12) CV Recovery Performance, Approach Speed changed from Max Approach speed (Vpa) at required Carrier Landing Weight (RCLW) of less than 145 kts to 139 kts w/15 kts WOD at RCLW

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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)	32300.0	32300.0	35368.1
Procurement	143300.0	143300.0	125948.5
Total Flyaway	(121215.5)		(106459.1)
Other Wpn Sys Costs	(6935.5)		(6110.2)
Peculiar Support	(8468.0)		(7534.0)
Initial Spares	(6681.0)		(5845.2)
Construction (MILCON)	1500.0	1500.0	227.3
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	<u>177100.0</u>	<u>177100.0</u>	<u>161543.9</u>
 Escalation	 55900.0	 55900.0	 38192.5
Development (RDT&E)	(2100.0)	(2100.0)	(1919.4)
Procurement	(53300.0)	(53300.0)	(36247.6)
Construction (MILCON)	(500.0)	(500.0)	(25.5)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>233000.0</u>	<u>233000.0</u>	<u>199736.4</u>

The "Development Estimate (SAR)" and "Approved Program (APB)" columns reflect MS B (Oct 2001) baselines for all cited appropriations.

Since the Services had not yet fully established JSF basing plans, the Milestone B MILCON estimate reflected a top-level parametric estimate, not discrete estimate for specific sites. "Current Estimate" reflects specific MILCON requirements identified in the FY 2004/2005 President's Budget Future Years Defense Plan (FYDP). The MILCON "Current Estimate" will continue to be updated as additional specific MILCON requirements are identified in future budget submissions.

b. Quantity --

Development (RDT&E)	14	14	14
Procurement	2852	2852	2443
Total	<u>2866</u>	<u>2866</u>	<u>2457</u>

Procurement Quantities:

1763- Air Force (CTOL variant)  
680- Department of Navy (CV and STOVL variants)  
2443- Total DoD

The October 2001 Milestone B procurement baseline for the Department of Navy (DoN) reflected 609 STOVL variants for USMC and 480 CV variants for USN (DoN total of 1089). Subsequently, the DoN Navy/Marine Corps Tactical Aviation (TACAIR) Integration Plan reduced total JSF CV/STOVL procurement quantities to 680. Annual STOVL and CV quantities through FY 2009 still reflect the Milestone B quantity profile. The annual and total quantity mix (and definitive related procurement estimates) of STOVL and CV variants beyond FY 2009 remain To Be Determined pending further assessment by the Services. Procurement estimates will continue to be refined in future budget cycles.

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

JSF procurement cost reflects DoD cost only, but assumes the benefits of 150 UK aircraft anticipated but not formalized in a MOU for procurement.

The approved Low-Rate Initial Production (LRIP) aircraft quantity of 465 exceeds 10% of planned total production. This is necessary to meet Service IOC requirements, prevent a break in production, and to ramp up to full rate production. The DAE reaffirmed the LRIP quantity in the Milestone B Acquisition Decision Memorandum dated October 26, 2001.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (OCT 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	177100.0	161543.9	
(2) Quantity	2866	2457	
(3) Unit Cost	61.793	65.748	+6.40
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	143300.0	125948.5	
(2) Quantity	2852	2443	
(3) Unit Cost	50.245	51.555	+2.61

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	34400.0	196600.0	2000.0	233000.0
Previous Changes:				
Economic	-	-4548.2	-	-4548.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-8.5	+15.0	-	+6.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-8.5	-4533.2	-	-4541.7
Current Changes:				
Economic	-334.3	-3070.1	-	-3404.4
Quantity	-	-25434.9	-	-25434.9
Schedule	+39.2	+2623.7	-	+2662.9
Engineering	+2427.8	-	+252.8	+2680.6
Estimating	+763.3	-315.9	-	+447.4
Other	-	-	-	-
Support	-	-3673.5	-	-3673.5
Subtotal	+2896.0	-29870.7	+252.8	-26721.9
Total Changes	+2887.5	-34403.9	+252.8	-31263.6
Adjustments	-	-	-2000.0	-2000.0
Current Estimate	37287.5	162196.1	252.8	199736.4

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

Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	32300.0	143300.0	1500.0	177100.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+90.9	+1839.7	-	+1930.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+90.9	+1839.7	-	+1930.6
Current Changes:				
Quantity	-	-16249.1	-	-16249.1
Schedule	-	-	-	-
Engineering	+2231.0	-	+227.3	+2458.3
Estimating	+746.2	-347.0	-	+399.2
Other	-	-	-	-
Support	-	-2595.1	-	-2595.1
Subtotal	+2977.2	-19191.2	+227.3	-15986.7
Total Changes	+3068.1	-17351.5	+227.3	-14056.1
Adjustments	-	-	-1500.0	-1500.0
Current Estimate	35368.1	125948.5	227.3	161543.9

The adjustment is due to the fact that the Services had not fully established JSF basing plans at the time of Milestone B, and the Current Estimate only reflects FYDP planning for initial sites.

The JSF Program is built around developing and fielding a family of highly common aircraft variants. Therefore, a reduction in quantity of any variant impacts the unit costs of all variants. The schedule and quantity variances above, and the resultant changes in support costs are the direct result of the DoN aircraft reductions.

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-334.3
Adjustment for Current and Prior Inflation. (Estimating)	-6.7	-5.1
Impact of schedule delays in GE F136 Engine Program. (Schedule)	0.0	+39.2
Addition of International Commonality Effort (ICE). (Engineering)	+1183.9	+1270.0
Refined planned GE engine program to optimize F135/F-136 engine interchangeability. (Engineering)	+1047.1	+1157.8

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
	Revised SDD estimating methodology reflecting transition from parametric modeling to bottom-up estimate of definitive requirements. (Estimating)	+471.7	+451.4
	Revised estimate of OPTEVFOR Testing and GE Engine testing at Arnold Engineering Development Center. (Estimating)	+281.2	+317.0
	RDT&E Subtotal	<u>+2977.2</u>	<u>+2896.0</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-4958.4
	Economic adjustment for negative program change. (Economic)	N/A	+1888.3
	Change in costs associated with decrease of 409 DoN aircraft from 1089 to 680. (Quantity)	-16249.1	-25434.9
	Schedule variance associated with decrease of 409 DoN aircraft from 1089 to 680 and lowered outyear rate. (Schedule)	0.0	+2623.7
	Model refinements (Estimating)	-64.2	-33.1
	Decrease in initial spares requirement associated with decrease of from 1089 DoN aircraft to 680 DoN aircraft. (QR)(Support)	-921.2	-1181.8
	Reduced requirement for Peculiar Support Equipment (PSE) and other Weapons' System Support Cost due to reduced DoN quantity (QR)(Support)	-1956.7	-2774.5
	Correction to align Flyaway and Support Costs. (Support)	+282.8	+282.8
	(Estimating)	-282.8	-282.8
	Procurement Subtotal	<u>-19191.2</u>	<u>-29870.7</u>
(3)	<u>MILCON</u>		
	Project established for test facility at Edwards AFB and for initial USAF operational sites. (Engineering)	+204.0	+228.4
	Project established for test facility at NAS Pax River. (Engineering)	+23.3	+24.4
	MILCON Subtotal	<u>+227.3</u>	<u>+252.8</u>

QR = Quantity related changes.

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Joint Strike Fighter, December 31, 2002

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
81.30	-3.24	+2.38	+1.08	+1.09	+0.185	--	-1.50	-0.005	81.29

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
68.93	-3.12	+1.13	+1.07	--	-0.123	--	-1.50	-2.54	66.39

c. Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	N/A	NOV 1996	N/A	NOV 1996
Milestone B	MAR 2001	OCT 2001	N/A	OCT 2001
Milestone C	TBD	APR 2012	N/A	APR 2012
IOC	TBD	APR 2010	N/A	APR 2010
Total Cost	24800.0	233000.0	N/A	199736.4
Total Quantity	0	2866	0	2457
Prog Acq Unit Cost	0.0	81.3	N/A	81.3

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

a. RDT&E -- GE F136 Phase IIIb: General Electric, Cincinnati, OH N00019-96-C-0176, CPAF Award: November 13, 2001 Definitized: November 13, 2001	Initial Contract Price		
	Target	Ceiling	Qty
	\$411.0	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$425.5	N/A	0	\$425.5	\$425.5

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Joint Strike Fighter, December 31, 2002

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (01/31/03)	<u>\$6.2</u>	<u>\$-3.9</u>
Net Change	\$6.2	\$-3.9

Explanation of Change:

The cumulative cost variance is due to contractor efficiency in selected cost accounts; work is being accomplished with fewer resources than originally estimated.

The cumulative schedule variance is due to design complexity, the requirement to iterate the overall engine design concept and a shortage of engineering manpower. The manpower issues in general have been resolved, although some shortfalls exist in specific skill areas.

Contract Comments:

The F136 contract price increased from \$411M to \$425M to add scope to the contract to support engine interchangeability and autonomic logistics analysis.

<u>Propulsion JSF F135 SDD:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Pratt and Whitney, East Hartford CT N00019-02-C-3003, CPAF Award: October 26, 2001 Definitized: October 26, 2001	\$4827.8	N/A	33

<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>
\$4827.8	N/A	33	\$4827.8	\$4827.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (02/10/03)	<u>\$13.0</u>	<u>\$-9.0</u>
Net Change	\$13.0	\$-9.0

Explanation of Change:

The cumulative cost variance is due to efficiencies in lift fan, STOVL exhaust duct, product assurance and engine system integration.

The cumulative schedule variance is driven by Turbine Exhaust Case augmentor design and redesigns for roll post, lift fan and clutch.

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Joint Strike Fighter, December 31, 2002

15. Contract Information (Cont'd):

<u>JSF Air System SDD:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Fort Worth, TX			\$18981.9	N/A	14
N00019-02-C-3002, CPAF					
Award: October 26, 2001					
Definitized: October 26, 2001					
<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>	
\$19041.5	N/A	14	\$19041.5	\$19041.5	
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$0.0	\$0.0	
<u>Cumulative Variances To Date (02/18/03)</u>			\$25.5	\$-40.7	
<u>Net Change</u>			\$25.5	\$-40.7	

Explanation of Change:

The cumulative cost variance is primarily due to the efficiencies recorded by the Vehicle Systems IPT suppliers and staffing shortfalls in the Mission Systems IPT suppliers as well as unexpected efficiencies in Program Integration.

The cumulative schedule variance is primarily due to prime and supplier staffing shortfalls and a late start up in mission systems and vehicle systems requirements development, airframe loads analysis, and airframe layout activities in the Air Vehicle IPT.

Contract Comments:

"Current Contract Price" increase from the "Initial Contract Price" reflects a contract modification for International Commonality Effort which includes trade studies for development of a partner version and associated development work.

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Joint Strike Fighter, December 31, 2002

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-26)	<u>Total</u>
RDT&E	9805.6	4889.0	5226.4	17366.5	37287.5
Procurement	-	-	119.5	162076.6	162196.1
MILCON	-	44.5	11.2	197.1	252.8
O&M	-	-	-	-	-
<b>Total</b>	<b>9805.6</b>	<b>4933.5</b>	<b>5357.1</b>	<b>179640.2</b>	<b>199736.4</b>

b. Annual Summary -- JSF

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1996				30.8	28.9
1997				71.7	68.2
1998				21.8	20.9
<b>Subtotal</b>				<b>124.3</b>	<b>118.0</b>

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				32.5	29.5
1995				106.4	98.3
1996				85.6	80.4
1997				255.9	243.3
1998				467.5	448.2
1999				485.9	471.3
2000				242.3	238.4
2001				342.1	341.2
2002				720.6	724.9
2003				1679.6	1708.9
2004				2102.6	2171.7
2005				2122.1	2226.0
2006				1875.1	1999.5
2007				1518.9	1648.0
2008				1185.4	1309.3
2009				940.0	1057.0
2010				650.3	744.4
2011				460.4	536.5

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Joint Strike Fighter, December 31, 2002

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

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

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2012				163.8	194.3
Subtotal	9			15437.0	16271.1

Note: USN and USAF RDT&E funding in FY04 and subsequent is premised on use of a Special Termination Cost Clause (STCC) in JSF SDD contracts with Lockheed Martin and Pratt and Whitney effective FY 2004 through contracts completion.

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				90.7	83.8
1996				86.5	81.3
1997				264.6	251.6
1998				463.4	444.3
1999				470.2	456.1
2000				253.1	249.1
2001				342.1	341.2
2002				715.8	720.1
2003				1668.7	1697.8
2004				2124.3	2194.1
2005				2137.8	2242.5
2006				1868.4	1992.4
2007				1511.6	1640.1
2008				1179.4	1302.7
2009				931.0	1046.8
2010				652.9	747.3
2011				462.9	539.4
2012				166.2	197.2
Subtotal	5			15389.6	16227.8

Note: USN and USAF RDT&E funding in FY04 and subsequent is premised on use of a Special Termination Cost Clause (STCC) in JSF SDD contracts with Lockheed Martin and Pratt and Whitney effective FY 2004 through contracts completion.

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Joint Strike Fighter, December 31, 2002

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

Appropriation: 9991 - RDT&E, Other Funding

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				14.9	14.0
1997				74.7	71.0
1998				80.5	77.2
1999				56.4	54.7
2000				35.1	34.5
2001				2.5	2.5
2002				304.6	306.4
2003				410.4	417.6
2004				506.6	523.2
2005				722.5	757.9
2006				755.5	805.6
2007				653.4	708.9
2008				440.3	486.3
2009				151.9	170.8
2010				112.2	128.4
2011				93.6	109.1
2012				2.1	2.5
Subtotal				4417.2	4670.6

"Other RDT&E Funding" reflects financial contributions under international cooperative agreements with the following countries: United Kingdom, Canada, Denmark, the Netherlands, Norway, Italy, Turkey, and Australia.

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				45.8	48.7
2006	4	43.6	506.3	701.8	759.0
2007	8	90.4	834.8	1206.0	1327.5
2008	29	196.6	2567.8	3194.1	3579.1
2009	52	161.5	3762.6	4838.5	5519.3
2010	41	167.3	2608.4	3365.0	3907.5
2011	42	171.2	2435.9	3084.9	3646.7
2012	48	106.6	2438.2	3053.2	3674.3
2013	55	104.9	2622.2	3356.6	4112.1
2014	55	100.0	2500.6	3201.8	3993.0
2015	55	96.2	2405.9	3081.4	3912.0
2016	55	93.8	2346.5	3005.6	3884.5
2017	55	91.5	2287.4	2864.4	3768.6
2018	55	92.2	2233.8	2795.9	3744.8
2019	57	90.7	2267.8	2826.7	3854.2

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Joint Strike Fighter, December 31, 2002

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

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2020	40	62.8	1571.3	1948.2	2704.2
2021	29	45.1	1127.6	1388.5	1962.0
Subtotal	680	1714.4	34517.1	43958.4	54397.5

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				66.6	70.8
2006	6	63.0	699.3	917.7	992.4
2007	14	153.3	1338.5	1575.3	1734.0
2008	20	126.0	1532.4	1768.6	1981.8
2009	30	82.0	1893.2	2518.3	2872.6
2010	44	165.0	2436.8	3145.5	3652.6
2011	72	270.5	3602.3	4451.0	5261.7
2012	110	210.4	4741.0	5713.2	6875.3
2013	110	177.0	4425.1	5467.8	6698.4
2014	110	168.5	4215.4	5209.9	6497.4
2015	110	162.2	4055.2	5013.3	6364.7
2016	110	158.2	3957.7	4893.0	6323.8
2017	110	154.4	3862.4	4665.5	6138.3
2018	110	156.9	3778.2	4558.6	6105.6
2019	110	148.2	3705.1	4470.8	6095.9
2020	110	145.9	3647.5	4402.0	6110.0
2021	110	144.7	3618.5	4367.9	6171.8
2022	110	145.7	3643.3	4396.8	6324.5
2023	110	144.4	3611.0	4358.0	6381.5
2024	110	143.2	3580.7	4321.4	6441.8
2025	110	141.4	3536.2	4234.0	6425.2
2026	37	49.5	1237.4	1474.9	2278.5
Subtotal	1763	3110.4	67117.2	81990.1	107798.6

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				23.3	24.4
2005					
2006					
2007					

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Joint Strike Fighter, December 31, 2002

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

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008					
2009					
Subtotal				23.3	24.4

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				19.2	20.1
2005				10.5	11.2
2006					
2007					
2008				92.8	104.1
2009				81.5	93.0
Subtotal				204.0	228.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				124.3	118.0
Navy	689	1714.4	34517.1	59418.7	70693.0
USAF	1768	3110.4	67117.2	97583.7	124254.8
Other Funding				4417.2	4670.6
Grand Total	2457	4824.8	101634.3	161543.9	199736.4

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): \$ 6033

Percent Total Program Expended: 3.0%

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The JSF family of highly common aircraft variants will replace or augment four current aircraft: F-16, A-10, F/A-18C/D, and AV-8B. The JSF O&S estimate is based on F-18C, F-16C, and AV-8B history.

JSF O&S costs shown in comparison with the antecedent system reflect cost-per-flying-hour for the JSF CTOL variant only. The CTOL variant will make up the majority of the JSF aircraft DoD buy, 1,763 of the 2,443 total. The O&S differences between JSF CTOL and F-16 are representative of the comparisons across legacy fleets.

JSF CTOL costs reflect 24-aircraft squadrons operating at 300 flying hours per aircraft per year. F-16 costs have been normalized to the same groundrules as were used in estimating the JSF CTOL costs. The F-16 costs are reconciled numbers developed in a joint effort by the JSF Program Office and the Air Force, and reflected in JSF Milestone B briefings in Fall 2001.

"Total O&S Cost" below reflects the O&S costs for all three variants based on an estimated 8000 hour aircraft service life. A comparable number for antecedent systems is not available.

b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	JSF Cost per Flying Hour (\$BY02)	F-16C/D Cost per Flying Hour (\$BY02)
Mission Pay & Allowances	3289.0	5233.0
Unit Level Consumption	3295.0	3507.0
Intermediate Maintenance	0.0	3.0
Depot Maintenance	399.0	293.0
Contractor Support	0.0	44.0
Sustaining Support	861.0	627.0
Indirect Costs	1301.0	2329.0
Total	9145.0	12036.0

Total O&S Cost	JSF	F-16C/D
BY\$ (In Millions)	130136.0	N/A
TY\$ (In Millions)	332028.0	N/A

Report Creation Date: 03/25/2003 3:08:42 PM

AF-6 C-17A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: C-17A

AS OF DATE: December 31, 2002

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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	COL Janet C. Wolfenbarger
AERONAUTICAL SYSTEMS CENTER	Assigned: December 20, 2002
2590 LOOP ROAD WEST	DSN 785-1545; COMM 937-255-1545
WPAFB, OH 45433-7142	Janet.Wolfenbarger@wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

- PE 0401130F
- PE 0604227F (Shared) Project 663282
- PE 0604231F
- PE 0604609F (Shared) Project 663263 (Shared)

PROCUREMENT:

- APPN 3010 ICN C017AD (Air Force)

MILCON:

- PE 0401130F

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AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

SAF/PAS

00-0085

CONGRESSIONAL

*CB-C-0255*

**5. References:**

SAR Baseline (Production Estimate):

Program Management Directive 0020(22), dated May 10, 1989. Amended FY91 President's Budget.

Approved Program:

CAF Approved Acquisition Program Baseline (APB) dated February 1, 2002.

**6. Mission and Description:**

The C-17 is a multi-engine, turbofan, 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 oversized 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 are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two-man cockpit, with multi function displays, reduces complexity and improves reliability; built-in test features reduce maintenance and troubleshooting times; and walk-in avionics bays improve accessibility. This aircraft was designed to have lower maintenance manhours per flight hour than predecessors.

**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 in November 1995 authorized the full rate production of 120 total aircraft.

On May 31, 1996, The Secretary of the Air Force (SECAF) 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 \$16.0B. These long-term commitments are the longest and largest multi year contracts ever entered into by the Department of Defense. Execution of the Multi Year Procurement (MYP) strategy will save the U.S. taxpayers more than \$1B over a seven year period. This \$1B savings is in addition to the previously negotiated annual savings of more than \$4.4B

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C-17A, December 31, 2002

7. Executive Summary (Cont'd):

realized from production efficiencies, streamlining, and reform initiatives.

The FY00 President's Budget added 14 C-17s to support Air Mobility Command's Special Operations Low Level Mission. Total aircraft to be procured increased from 120 to 134.

The FY02 Appropriation Act (PL 107-117) recognized a requirement and authorized a follow-on multi year contract for 60 aircraft, bringing the total United States Air Force (USAF) fleet size to 180 aircraft.

The following significant accomplishments have occurred since the December 2001 SAR:

C-17 AIRCRAFT DELIVERIES: During calendar year 2002, a total of 16 aircraft were delivered, at an average of 115 days ahead of contract schedule. Ninety-six (96) aircraft have been delivered to the USAF to date.

C-17 FOLLOW-ON BUY: The follow-on MYP airframe contract was awarded on August 2002. The contract procures an additional sixty (60) C-17s for the Air Force (AF) for a total of 180 C-17s. The contract is valued at \$9.8B. Activity on the contract began with obsolescence mitigation redesigns on the 31 Line Replaceable Units (LRUs) and long-term supplier contracts. The associate engine contract is scheduled to be awarded April 2003. The first aircraft delivery for the follow-on contract is scheduled for September 2004.

FLEXIBLE SUSTAINMENT: The current Flexible Sustainment (Flex) contract buys Boeing support for the first 120 aircraft. The Flexible Sustainment Contract will be expanded to include planning and support for the 60 additional C-17 aircraft associated with the follow-on MYP contract (total of 180). In addition to the increased flying hour profile, Boeing support will be expanded to cover six (6) new C-17 bases that will activate within a 5 year period. A follow-on Flex contract, covering FY04 through FY08, is being negotiated between Boeing and the AF. Award of the follow-on contract is scheduled for September 2003.

C-17 LONG-TERM SUSTAINMENT: In FY03, the C-17 System Program Director (SPD) will make a long-term sustainment recommendation to Secretary of the Air Force/Chief of Staff of the Air Force (SECAF/CSAF). The recommendation is for a long-term, performance-based partnership between Boeing and the Air Force (AF). Boeing and AF have signed a C-17 Sustainment Direct Sales Partnering Agreement (DSPA), and coordinated the agreement through the Commander of Air Force Material Command (AFMC/CC) on November 7, 2002. This agreement will enable the AF Air Logistic Centers to partner with Boeing and aid in achieving the FY03 core workload requirements.

C-17 SERVICE IN OPERATION ENDURING FREEDOM (OEF): C-17 Globemaster IIIs continue to support the deployment of personnel and cargo. It is the transport of choice due to its ability to operate in a medium-threat, semi-prepared runway environment. As of December 19, 2002, C-17s have flown 18,579 sorties, 57% of strategic airlift missions (excluding commercial aircraft), 98% of

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\*\*\* UNCLASSIFIED \*\*\*

C-17A, December 31, 2002

7. Executive Summary (Cont'd):

strategic airlift missions into Afghanistan, transported over 164,110 tons of cargo, and deployed over 94,754 personnel in support of OEF.

LARGE AIRCRAFT INFRARED COUNTERMEASURES SYSTEM (LAIRCM): Combat Mission Needs Statement (C-MNS) for an accelerated LAIRCM capability on twelve (12) C-17s was signed by CSAF on December 1, 2002 and the contract awarded that same day. This accelerated program will provide the User four (4) C-17 aircraft with a partial LAIRCM capability (termed "LAIRCM Lite") by June 2003 and all twelve (12) aircraft with full capability by June 2004.

PALLETIZED SEATING SYSTEM (PSS): C-MNS for PSS was signed by CSAF on June 27, 2002, Contract Award was on July 3, 2002, with the Preliminary and Critical Design Reviews held on August 6, and 22, 2002, respectively. Flight Test assessments were completed on September 19, 2002. On September 26, 2002, a production contract was awarded for the required 34 systems and Contractor Logistics Support. Delivery is scheduled for February-March 2003, with a possibility of first delivery in late January 2003.

As the fielded fleet grows in both number and increased capability, we are experiencing the expected increase in operational problems. The following 7 operational issues have garnered increased attention of the C-17 team:

MAIN LANDING GEAR (MLG) DURABILITY ISSUES: A fleet wide inspection Time Compliance Technical Order (TCTO) of Lrunnion collar and gear post lugs using the "Ultrasonic" Non-Destructive Inspection (NDI) technique developed by Air Force Research Laboratory (AFRL) will be completed by April 2003. As of February 3, 2003, 78 of 90 aircraft (4 landing gear per aircraft) and 57 spares have been inspected with 27 posts removed based on positive indications on the post lugs. This is consistent with initial engineering estimates that a 9% positive indication rate on post lugs could be expected. In addition, 15 posts have been removed and replaced due to positive indications on the post shelf or integral jacking lug. Redesign has been finalized and released as alternate repair. The production cut-in point activity is under discussion.

FUEL VENTING: Contamination found in the fuel tank was determined to be the root cause of several inadvertent fuel venting occurrences. Operator and maintenance risk mitigation procedures have been issued. A proposed solution offering fast implementation at an efficient cost was approved for development by Headquarters Air Mobility Command (HQ AMC) on June 1, 2002, and for retrofit on November 4, 2002. Production incorporation will be P-100 which is scheduled for acceptance on March 12, 2003. Retrofit of P-1 through P-99 is scheduled to begin in August 2003.

ON BOARD INERT GAS GENERATING SYSTEM (OBIGGS): A two-pronged approach to OBIGGS reliability issues is in process. The first is a reliability upgrade, referred to as OBIGGS 1.1 that is planned to begin in January 2003. The second is the OBIGGS system redesign, OBIGGS II, which is scheduled to begin in March 2003.

STATION KEEPING EQUIPMENT (SKE 2000): Efforts to deploy corrective software

C-17A, December 31, 2002

7. Executive Summary (Cont'd):

and lift operational restrictions were halted when additional problems occurred. On October 10, 2002, during a personnel airdrop mission in Instrument Meteorological Conditions (IMC), P-61 and P-71 had a near-miss with no warning or other annunciation of degraded system performance to the crew. Root cause is under investigation. On November 20, 2002, a three-ship mission also experienced erroneous displays; however, these problems were confirmed to be consistent with previously discovered issues. HQ AMC issued a Flight Crew Information File (FCIF) and the C-17 SPO issued an Interim Safety Supplement (ISS) to restrict formation flight to Visual Meteorological Conditions (VMC) until problems are resolved. SPO/Boeing formed an Independent Review Team (IRT) on November 12-15 2002 to assess root cause investigation and results. The review team identified no root cause, but provided several findings and recommendations that could lead to containing errors, adding robustness to software, and lifting the SKE restriction. A final IRT report is expected by 3 February 3, 2003. SPO/Boeing/AMC will address IRT recommendations and develop a corrective action plan.

STATION KEEPING EQUIPMENT FOLLOW-ON (SKEFO): SKEFO is an upgrade of the current SKE 2000 system that operates in two modes: Network Mode supports formations of up to 100 aircraft and increased frequencies necessary to meet the US Army's Strategic Brigade Airdrop (SBA) 30 minute pass time requirement. The Pulse Mode provides interoperability with older C-17 SKE 2000 systems as well as other SKE platforms (C-141/C130). However, due to recent incidents, the Network Mode availability is now at high risk. As a result, AMC requested the SPO to evaluate other options including implementing up to three additional frequencies in the Pulse Mode in order to increase frequency availability and aircraft in formation. Initial SKEFO pulse mode software completed flight test in October 2002 and is expected to be retrofitted in P-86 and subsequently delivered aircraft, which will operate with the same IMC restriction as SKE 2000 equipment until all issues are resolved.

GLOBAL AIR TRAFFIC MANAGEMENT (GATM) Certification: Full system compliance will be met in three phases: Phase I identified software criticality levels for appropriate LRUs; Phase II will identify specific software development tasks for the C-17 program (ECD-March 2003); and Phase III (late-FY03) will implement those tasks. Phase II work is ongoing and monthly Technical Interchange Meetings are conducted. SPO has coordinated ongoing Phase II tasks/schedules with Electronic Systems Center/Global Air Traffic Office (ESC/GATO) and Boeing to ensure compliance with the final GATM Certification guidance/direction issued by AFPEO/AT and SAF/AQR on ruary September 23, 2002. This final direction states that the SPO will certify that aircraft meet operational performance and safety criteria and that implementing and validating compliance with GATM requirements will be through the Operational Safety, Suitability, and Effectiveness (OSS&E) process. Aeronautical Systems Center/Aging Aircraft (ASC/AA), Aeronautical Systems Center/Engineering (ASC/EN) and ESC/GATO are working the details for these certification efforts.

THRUST REVERSER MAINTENANCE: Multiple actions have been initiated to address premature wear issues with Nacelle/Engine Affordability Team (N/EAT) Fan Thrust Reverser (FTR) slider and insert assemblies. Initial Thrust Reverser repairs

7. Executive Summary (Cont'd):

are being scheduled in conjunction with Global Reach Improvement Program (GRIP) and Analytical Condition Inspection (ACI) aircraft at both the Boeing Aerospace Support Center (BASC) and Warner Robins Air Logistics Center (WR/ALC), and some marked improvements in reliability have been noted. Also, the SPO and Boeing continue to move forward with a N/EAT FTR slider/insert redesign. In November 2002, the SPO authorized Boeing to proceed with a 4-month effort to further develop and evaluate the effectiveness of alternative design solutions. In February 2003, Boeing will present business cases for the most effective solutions. These business cases will be reviewed and the most effective design solution for production implementation and retrofit will be identified.

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 1981	N/A	AUG 1981
Contract Award	JUL 1982	N/A	JUL 1982
Start FSED	FEB 1985	N/A	FEB 1985
Milestone II (DSARC)	NOV 1987	FEB 1985	FEB 1985
First Full Funded Production Lot	JAN 1988	JAN 1988	JAN 1988
Milestone IIIA (DAB)	NOV 1987	JAN 1989	JAN 1989
Low-Rate Initial Production	N/A	JAN 1989	JAN 1989
First Flight	JUN 1991	N/A	SEP 1991
T-1 First Flight	N/A	JUN 1991	SEP 1991
IOC (Delivery of 12 A/C to sqdn)	JUN 1993	JAN 1995	JAN 1995

9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Complete DT&E/IOT&E	JUN 1993	N/A	N/A
DT&E			
Start	N/A	JUN 1991	SEP 1991
Complete	N/A	DEC 1994	DEC 1994
IOT&E			
Start	N/A	DEC 1994	DEC 1994
Complete	N/A	JUN 1995	JUN 1995
Full Rate Production Contract Award	N/A	FEB 1996	FEB 1996
RM&AE (Formerly ORE)	N/A	JUL 1995	AUG 1995
Milestone IIIB	SEP 1993	NOV 1995	NOV 1995
FOC	SEP 2001	TBD	APR 2008
Depot Support Date	N/A	TBD	TBD

Depot Support Date will be determined by the long-term sustainment Acquisition Strategy Planning outcome Jul 2003.

b. Current Change Explanations --  
None.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Maintenance Manhours Per Flying Hour (Air Vehicle)	14.6	N/A / N/A	7.1	10.0
Mean Time Between Maintenance Inherent (hrs) (MTBMI)	1.69	N/A / N/A	3.64	3.4
Mean Time Between Maintenance Corrective (hrs) (MTBMC)	.83	.78 / .75	2.01	1.8
Mean Time Between Removal (hrs) (MTBR)	5.37	2.8 / 2.5	5.9	8.4
Mean Manhours to Repair (hrs)	4.51	7.35 / 7.35	7.5	10.2
Maximum Take-off Gross Weight (lbs) (TOGW)	580000	N/A / N/A	585,000	585,000 (Ch-2)
Maximum Payload (lbs) Non-ER	172200	N/A / N/A	167,400	167,400 (Ch-2)
Maximum Payload (lbs) With-ER	N/A	N/A	TBD	164900 (Ch-1)
Payload at Range (lbs @ 2400 nm)	167006	N/A / N/A	152,790	152,790 (Ch-2)

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Range Unrefueled (nm)	2372	N/A	/ N/A	2,700	2,700	(Ch-2)
Landing Field Length (ft)	2541	3,000	/ 3,000	2,500	2,900	
Takeoff Field Length (ft)	7370	N/A	/ N/A	8,200	8,200	(Ch-2)
Cruise Speed (Mach) (450 KTAS)	.77	N/A	/ N/A	.74	.74	(Ch-2)
Backup Capability (% grade)	2	2	/ 1.5	3.8	3.8	
Mission Completion Success Probability (%)	94	N/A	/ N/A	93	93	(Ch-2)
Payload Range at 3200 nm (Non-ER)(lbs)	N/A	130,000 / 110,000		130,000	130,000	
Payload Range at 3200 nm With-ER (lbs)	N/A	N/A		127000	127000	
Turning Capability (ft for 180 degree turn)	N/A	96	/ 90	96	96	
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	
Lbs of heavy eqmt	N/A	110,000	/ 60,000	110,000	110,000	
No. of CDS bundles	N/A	40	/ 30	40	40	

The Demonstrated Performance column now represents a moving three month average based on G081 maintenance records. These values may vary from period to period due to variations in flying hours and operational requirements. Each value in the Demonstrated Performance column currently represents the moving three month average for the months of Sep, Oct, and Nov 2002. Prior to Dec 2001, values in this column were based on the Reliability, Maintainability, and Availability Evaluation (RM&AE) performance as measured and agreed upon by the C-17 System Program Office, Contractor, and AFOT&E organizations.

The Current Estimate column now represents cumulative values based on G081 maintenance records that reflect 437,000 fleet flying hours. As a cumulative value, only minor variations may be experienced. Prior to Dec 2001, values in this column represent estimates expected at 100,000 fleet flying hours. That milestone was exceeded in Aug 1998.

Total mean manhours to repair remains slightly above the APB threshold due to removal and reinstallation of thrust reversers, cleaning fuel system

10a. Performance Characteristics (Cont'd):

compensators, replacing OBIGGS components, inspection and repair of main landing gear, and aircraft recoveries. All of these issues are currently being addressed through product improvement initiatives.

b. Current Change Explanations --

(Ch-1) An Extended Range (ER) fuel tank was incorporated into the C-17 at production aircraft P-71. This table has been updated to note the differences in maximum payload capability based on this configuration change.

(Ch-2) In previous submissions of this document, many of the characteristics was listed as N/A in the Demonstrated Performance and Current Estimate columns. For this submission, the SPO incorporated the appropriate values to better describe the capabilities of the aircraft and to ultimately provide a better product.

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)	6463.2	8382.0	8592.5
Procurement	34419.2	46456.6	48589.9
Airframe	(22158.8)		(32365.8)
Engines	(5478.3)		(3387.9)
Avionics	(1168.8)		(1178.7)
ECO			(0.0)
Product Improvement			(705.2)
Non Recurring			(957.0)
Total Flyaway	(28805.9)		(38594.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(2267.0)		(9154.5)
Initial Spares	(3346.3)		(840.8)
Construction (MILCON)	368.5	726.2	797.5
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1996 Base-Year \$	41250.9	55564.8	57979.9
Escalation	561.0	3128.6	2361.5
Development (RDT&E)	(-1122.3)	(-809.9)	(-1038.2)
Procurement	(1673.7)	(3867.9)	(3331.6)
Construction (MILCON)	(9.6)	(70.6)	(68.1)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	41811.9	58693.4	60341.4

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

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>210</u>	<u>180</u>	<u>180</u>
Total	210	180	180

NOTES:

The quantity excludes one RDT&E aircraft (T-1) which is fully configured as a test article. It is not maintained in the current production configuration.

c. Foreign Military Sales --

"A commercial lease arrangement between the United Kingdom (UK) and Boeing resulted in the lease of four(4)C-17 aircraft to the UK. They were delivered in June, July, August and September 2001.

The United Kingdom Ministry of Defense signed a Letter of Offer and Acceptance (LOA), totaling \$206.6M with the United States government and managed at the C-17 SPO. The LOA provides support to the UK leased C-17 aircraft.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (FEB 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	55564.8	57979.9	
(2) Quantity	180	180	
(3) Unit Cost	308.693	322.111	+4.35
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	46456.6	48589.9	
(2) Quantity	180	180	
(3) Unit Cost	258.092	269.944	+4.59

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	+60.4	-1035.2	-35.8	-990.6
Quantity	-	-3725.7	-	-3725.7
Schedule	-	-4380.1	+10.1	-4390.2
Engineering	+168.2	+109.4	-	+277.6
Estimating	+1674.4	+9413.9	+447.8	+11536.1
Other	+170.0	+242.0	-	+412.0
Support	-21.8	+5308.6	-	+5286.8
Subtotal	+2051.2	-14693.1	+442.1	-17186.4
Current Changes:				
Economic	-188.9	-505.9	-9.1	-703.9
Quantity	-	-	-	-
Schedule	-42.2	-110.6	-	-152.8
Engineering	-	+57.1	-	+57.1
Estimating	+393.3	+1378.6	+54.5	+1826.4
Other	-	-	-	-
Support	-	+316.3	-	+316.3
Subtotal	+162.2	-1135.5	-45.4	+1343.3
Total Changes	+2213.4	+15828.6	+437.5	+18529.5
Current Estimate	7554.3	51921.5	865.6	60341.4

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	-	-2512.0	-	-2512.0
Schedule	-	+1016.1	-	+1016.1
Engineering	+158.0	+109.0	-	+267.0
Estimating	+1469.1	+9750.1	+382.2	+11601.4
Other	+171.6	+239.4	-	+411.0
Support	-28.7	+4145.6	-	+4117.5
Subtotal	+1770.6	+12748.2	+382.2	+14901.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-32.7	-	-	-32.7
Engineering	-	+48.1	-	+48.1
Estimating	+391.2	-1138.0	+46.8	-1576.0
Other	-	-	-	-
Support	-	+236.4	-	+236.4
Subtotal	+358.5	+1422.5	+46.8	+1827.8
Total Changes	-2129.1	+14170.7	+429.0	+16728.3
Current Estimate	8592.3	48589.9	797.5	57979.7

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-188.9
	Adjustment for Current and Prior Inflation. (Estimating)	+201.3	+167.6
	Congressional and general program office reductions (Schedule)	-32.7	-42.2
	FY08-FY09 Baseline Extension (e.g., additional funding for systems engineering project management, contractor furnished equipment, and mission support) (Estimating)	+189.9	+225.7
	RDT&E Subtotal	<u>-358.5</u>	<u>+162.2</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-505.9
	FY03-FY08 affected by acceleration of annual procurement buy profile. (Schedule)	N/A	-110.6
	Additional Product Improvements (parts obsolescence and covert lighting) (Engineering)	+48.1	+57.1
	Adjustment for Current and Prior Inflation. (Estimating)	+116.8	+127.9
	FY08-FY09 Baseline Extension (added funding for C-17 flexible sustainment) (Estimating)	+1270.5	+1526.7
	Change in estimating methodology to reflect production multi-year restructure (Estimating)	-234.4	-259.7
	Congressional Recissions (Estimating)	-14.9	-16.3
	Adjustment for Current and Prior Inflation. (Support)	+32.8	+36.1
	Change in Initial Spares (Support)	+12.0	+12.9
	Change in Peculiar Support (Support)	-191.6	+267.3
	Procurement Subtotal	<u>+1422.5</u>	<u>+1135.5</u>
(3)	<u>MILCON</u>		
	Revised escalation indices. (Economic)	N/A	-9.1
	Adjustment for Current and Prior Inflation. (Estimating)	+0.9	-1.1
	Congressional adds for additional aircraft bed-down (Estimating)	+38.7	+44.6
	FY08-FY09 Baseline Extension (added funding for C-17 continuous sustainment) (Estimating)	+7.2	+8.3
	MILCON Subtotal	<u>+46.8</u>	<u>+45.4</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	Changes								PAUC
Prod Est.	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
189.10	-9.41	-12.48	+23.54	-1.96	-74.24	+2.29	+31.13	-136.13	335.23

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									
PUC	Changes								PUC
Prod Est.	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
171.87	-8.56	-7.95	+23.72	+0.925	+59.96	+1.34	-31.25	+16.59	288.45

c. Schedule, Cost, and Quantity History

Item/Event	SAR		SAR		SAR		Current Estimate
	Planning Estimate (PE)		Development Estimate (DE)		Production Estimate (PdE)		
Milestone I	N/A		N/A		N/A		N/A
Milestone II	NOV 1987		N/A		NOV 1987		FEB 1985
Milestone III	NOV 1987		N/A		NOV 1987		JAN 1989
IOC	JAN 1992		N/A		JUN 1993		JAN 1995
Total Cost	39753.8		N/A		41811.9		60341.4
Total Quantity	210		N/A		210		180
Prog Acq Unit Cost	189.3		N/A		199.1		335.2

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

a. RDT&E -- Performance Improvement: Boeing Airlift & Tankers, Long Beach, CA F33657-95-D-2026, OPAF Award: July 9, 1995 Definitized: July 9, 1995	Initial Contract Price		
	Target	Ceiling	Qty
	\$71.3	N/A	0

Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$555.8	N/A	0	\$542.5		\$536.7

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.0	\$-9.0
Cumulative Variances To Date (11/28/02)	<u>\$-16.1</u>	<u>\$-9.7</u>
Net Change	\$-8.1	\$-0.7

Explanation of Change:

The primary driver of the unfavorable cost variance is the performance on the SKE Follow-On project. Technical issues discovered with the legacy SKE system have driven significant additional design activity on the SKE Follow-On project. Also, both the Terrain Awareness Warning System (TAWS) and the Global Air Traffic Management (GATM) are experiencing cost overruns that contribute to the overall unfavorable rating. Anomalous conditions were discovered on both projects during system test and have required additional work to correct the deficiencies.

Contract Comments:

Current Contract Price changed from the previous SAR due to additional funding for the following Performance Improvement projects: Terrain Awareness Warning System (TAWS), Global Air Traffic Management (GATM), and Station Keeping Equipment (SKE) 2000 Follow-On.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>Performance Improvement:</u> Boeing Airlift & Tankers, Long Beach CA F33657-01-D-2000, CPAP Award: January 30, 2001 Definitized: January 30, 2001	\$1.5	N/A	0

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$44.2	N/A	0	\$47.1	\$47.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/28/02)	<u>\$-3.1</u>	<u>\$-0.6</u>
Net Change	\$-3.1	\$-0.6

Explanation of Change:

The net \$3.1M unfavorable cost and \$0.6M schedule variance changes are primarily due to issues with the Mobility 2000 (M2K), Airline Operational Control (AOC), and printer project. M2K currently accounts for the entire negative schedule variance -\$0.6M and -\$2.5M of the cost variance. Higher than anticipated software development costs resulted from the integration of the ANC Tactical Air Control Center (TACC) message set requirements into the planned software design. A \$2.4M contract modification is pending to cover this cost growth. The LAIKCM project has also experienced higher than projected costs in the design effort associated with the side mounted fairing transmitter, the aft turret truss and the forward turret pressure

15. Contract Information (Cont'd):

box which contributed to -\$1.6M of the negative cost variance change.

Contract Comments:

Contract added from the previous SAR and currently has 4 Delivery Orders.

This is the first time this contract is being reported in the SAR.

b. Procurement --		Initial Contract Price	
Prod. Enhancements:		Target	Ceiling
Boeing Airlift & Tankers, Long Beach, CA			Qty
F33657-95-D-2026, CPAF		\$123.4	N/A
Award: July 9, 1995			0
Definitized: July 9, 1995			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$400.4	N/A	0	\$397.1	\$411.2
Previous Cumulative Variances			Cost Variance	Schedule Variance
			\$-14.1	\$-2.5
Cumulative Variances To Date (11/28/02)			\$-14.9	\$-0.2
Net Change			\$-0.8	\$2.3

Explanation of Change:

The net -\$3.8M cost variance change is mainly due to the Cargo Winch Cable Load Reduction project, which experienced significant technical issues. The project was cancelled and a stop work order was issued. The baseline is in process of being reconciled to the activities completed at the time of the issuance of the stop work order.

The primary driver of the net \$2.3M positive schedule variance change is the completion of previous scheduled milestones. This contract is nearing completion and thus accomplishment of the remaining baseline has occurred over the past year for the following delivery orders. Multi Function Display, ATSF Bucket, Nacelle/Engine Affordability and Pollution Prevention.

Contract Comments:

Current Contract Price changed from the previous SAR due to the deobligation of funds on Affordability Projects.

15. Contract Information (Cont'd):

<u>Aircraft MYR (FY97-03):</u>		Initial Contract Price	
		<u>Target</u>	<u>Ceiling</u>
Boeing Airlift & Tankers, Long Beach, CA			<u>Qty</u>
F33657-96-C-2059, FFP		\$14209.4	N/A
Award: May 31, 1996			80
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>
\$16614.2	N/A	80	\$16614.2	\$16614.2

Explanation of Change:

None.

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

Contract Comments:

Increase in contract price due to Engineering Change Proposals resulting from implementation of Producibility Enhancement/Performance Improvement (PE/PI) contract efforts. The increase in the obligated value was due to additional Full Funding dollars for Lot XIV and Advance Buy for Lot XV.

<u>Aircraft MYBII (FY02-08):</u>		Initial Contract Price	
		<u>Target</u>	<u>Ceiling</u>
Boeing Airlift & Tankers, Long Beach CA			<u>Qty</u>
F33657-02-C-2001, FFP		\$9762.0	N/A
Award: August 15, 2002			60
Definitized: August 15, 2002			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$9762.0	N/A	60	\$9762.0	\$9762.0

Explanation of Change:

None.

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

Contract Comments:

The contract amount reflects the total Firm Fixed Price (FFP) prior to any future Engineering Change Proposals (ECP).

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 Years</u> (FY81-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-09)	<u>Total</u>
RDT&E	6668.3	184.1	200.2	501.7	7554.3
Procurement	36004.8	3449.0	3846.1	8621.6	51921.5
MILCON	483.8	70.0	61.8	250.0	865.6
O&M	-	-	-	-	-
<b>Total</b>	<b>43156.9</b>	<b>3703.1</b>	<b>4108.1</b>	<b>9373.3</b>	<b>60341.4</b>

b. Annual Summary -- C-17

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1996 Dollars Nonrec</u>	<u>Flyaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1981				56.5	33.4
1982					
1983				88.0	59.6
1984				38.1	26.8
1985				166.4	121.0
1986				469.1	350.4
1987				815.5	625.5
1988				1394.2	1101.4
1989				1138.7	938.3
1990				1054.7	903.9
1991				888.0	748.3
1992				275.5	252.9
1993				174.2	164.3
1994				232.3	223.5
1995				188.0	184.2
1996				72.0	72.0
1997				64.9	66.3
1998				98.0	101.3
1999				115.3	119.4
2000				145.9	153.3
2001				152.1	162.7
2002				98.3	106.0
2003				141.5	153.8
2004				166.9	184.1
2005				178.7	200.2
2006				124.3	141.5
2007				74.7	86.4
2008				101.9	120.0
2009				128.3	153.8

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

Appropriation: 3600 - Research, Development, Test - Eval, AF

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal				8592.5	7554.3

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987		32.2		74.3	61.2
1988	2	90.9	660.9	848.6	733.4
1989	4	17.2	1002.8	1329.3	1186.3
1990	4	77.2	1252.9	1642.0	1571.7
1991		80.3		244.7	233.7
1992	4	43.3	1291.6	1855.7	1804.5
1993	6	19.5	1923.4	1986.7	1959.4
1994	6	155.7	1749.3	2176.2	2180.5
1995	6	380.9	1645.7	2359.1	2399.6
1996	8	7.6	1929.2	2490.0	2565.6
1997	8	6.0	1801.7	1992.4	2073.1
1998	9		1911.4	2154.8	2256.7
1999	13		2541.5	2784.6	2947.3
2000	15		2752.9	3147.0	3379.9
2001	12	46.2	2285.7	2651.1	2871.3
2002	15		2693.8	3337.0	3648.0
2003	15		2436.5	3784.7	4192.6
2004	11		1876.6	3066.0	3449.0
2005	14		2476.0	3364.6	3846.1
2006	15		2781.0	3101.5	3606.2
2007	13		2699.0	2663.4	3151.4
2008			26.6	856.8	1032.0
2009			3.2	678.5	852.0
Subtotal	190	957.0	37637.6	43589.9	51921.5

The recurring flyaway in FY08-09 is related to aircraft product improvement.

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

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				6.6	5.7
1990				5.4	5.0
1991				31.2	29.5
1992				79.2	76.1
1993				31.7	31.1
1994				15.2	15.2
1995					
1996				6.7	6.9
1997				78.2	80.9
1998				6.2	6.5
1999				67.2	71.0
2000				24.3	26.1
2001				14.5	15.7
2002				37.4	41.0
2003				65.9	73.7
2004				62.1	70.0
2005				53.9	61.8
2006				79.2	92.4
2007				125.4	148.8
2008				6.1	7.4
2009				1.1	1.4
Subtotal				797.5	865.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	180	957.0	37637.6	57979.9	60341.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	96	96

Percent Total Program Quantities Delivered: 53.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 40078.8

Percent Total Program Expended: 66.4%

**18. Operating and Support Costs:**

**a. Assumptions and Ground Rules --**

The average annual cost per C-17 squadron was derived from the most current System Program Office Operating and Support (O&S) Estimate (dated December 31, 2002). The total (O&S) cost was divided by the fifteen operational squadrons and further divided by the number of years covered by the estimate (30 years, from FY04 through FY33). This estimate was developed in FY96 Base Year dollars.

The O&S costs were based on a total of 180 aircraft, 171 Primary Authorized Aircraft (PAA) and 9 Backup Aircraft Inventory (BAI).

The estimate includes direct and indirect costs, as described below:

(1) Direct costs include: unit mission personnel, unit-level consumption, contractor logistics support (CLS), and sustaining support costs. Unit mission personnel consist of aircrew, maintenance personnel, squadron staff, weapon system security personnel and Air National Guard Force requirements. Unit-level consumables include: petroleum, oil and lubricants; consumables; depot-level reparable; and temporary duty. Contractor logistics support includes the Flexible Sustainment Contract and includes costs previously captured under depot maintenance. Sustaining support includes: support equipment; modification kits; software maintenance; and aircrew training including simulator operations.

(2) Indirect costs include personnel support and installation support activities. Personnel support covers permanent change of stations costs. Installation support covers base operating and support, other pay and benefits, and installation support non-pay.

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 outside cargo similar to the C-5, airdrop similar to the C-141, and operate in small austere environments similar to the C-130.

Total O&S cost are for the period FY04 to FY33.

**c. Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)**

Cost Element	C-17 Avg Annual Cost Per C-17 Squadron	Avg Annual Cost for Antecedent System
Mission Pay & Allowances	26.7	0.0
Unit Level Consumption	40.4	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	91.3	0.0

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

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

Cost Element	C-17 Avg Annual Cost Per C-17 Squadron	Avg Annual Cost for Antecedent System
Sustaining Support	3.3	0.0
Indirect Costs	9.2	0.0
Total	170.9	0.0

Total O&S Cost	C-17	Avg Annual Cost for
BYS (In Millions)	76914.1	N/A
TYS (In Millions)	129112.0	N/A

Report Creation Date: 03/25/2003 12:58:53 PM

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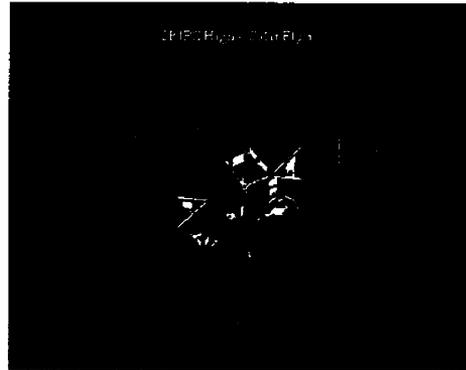
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: SBIRS High**

CONGRESSIONAL

**AS OF DATE:** December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Space Based Infrared System (SBIRS) High Program
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  
 SMC/MT Col Mark S. Borkowski  
 185 Discoverer Blvd. Assigned: June 25, 2001  
 Suite 2512 DSN 833-1807; COMM (310) 363-1807  
 El Segundo, CA 90245-4695 mark.borkowski@losangeles.af.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0640441  
 PROCUREMENT:  
 (U) APPN 3020 ICN MSSBIR (Air Force)  
 MILCON:  
 (U) PE 0640441  
 O&M:  
 (U) PE 0350915

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DEPARTMENT OF DEFENSE

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Downgrade instructions not subject to automatic downgrade  
Declassify on: October 1, 2007~~

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated March 19, 1998.

Approved Program:

(U) USECAF Approved Acquisition Program Baseline (APB) dated September 2, 2002.

**6. (U) Mission and Description:**

(U) The Space Based Infrared System (SBIRS) program is intended to satisfy key requirements delineated in the SBIRS Operational Requirements Document dated August 15, 1996, with Annex 1 dated July 17, 1998, within the available budget and schedule. SBIRS is an integrated system 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) and Geosynchronous Earth Orbits (GEO), in addition to the following ground elements: a CONUS-based Mission Control Station (MCS) and backup (MCSB), overseas Relay Ground Stations, Multi-Mission Mobile Processor, 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.

**7. (U) Executive Summary:**

(U) Program Restructure: The SBIRS restructure activities are complete. The Under Secretary of the Air Force (USECAF) approved the Acquisition Program Baseline and the Single Acquisition Management Plan on September 2, 2002, and September 13, 2002, respectively. The FY04 President's Budget fully funds the restructured SBIRS program and directs the Geosynchronous Earth Orbit (GEO) 3-5 procurement to slip two years, from FY04 to FY06. The slip of GEO 3-5 will require the System Program Office (SPO) to reassess and replan the sparing strategy for GEO 2. On September 5, 2002, the government and Lockheed Martin Space Systems Company (LMSSC) signed a contract restructure modification that definitized the program technical content and incentive structure. The contract face value is \$4.4B; the total potential value, including unexercised options, is \$4.86B. LMSSC completed negotiations with its major subcontractor, Northrop Grumman (NG), in December 2002. The negotiations encompassed all three segments of the program (space, ground, systems engineering), as well as a restructured fee plan that is substantially similar to the revised incentive structure between LMSSC and the government. LMSSC and NG defined a work scope for each segment that ensures accountability and removes ambiguity.

SBIRS High Executive Committee (EXCOM): Lt Gen Arnold, Air Force Space and Missile Center (AF/SMC) Commander and Program Executive Officer for Space, chaired an EXCOM on July 2, 2002, to review SBIRS progress toward implementing the May 2, 2002, Acquisition Decision Memorandum, and again on October 23, 2002, to review SBIRS progress in executing the restructured program and

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

maintaining baseline control. Senior leaders from LMSSC and NG, as well as representatives from USecAF, United States Space Command (USSPACECOM), Air Force Space Command (AFSPC), Air Force Materiel Command, Air Force Directorate of Operations and Integration, Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence, Central Measurement and Signature Intelligence Office, National Reconnaissance Office, Defense Contract Management Agency (Sunnyvale), United States Strategic Command (USSTRATCOM), Missile Defense Agency, AF/SMC, and the Aerospace Corporation attended the meetings.

SBIRS Presidents' Meeting: The USecAF, Mr. Teets, chaired SBIRS program reviews with government and industry leaders on August 15, 2002, at Peterson AFB, CO, and on November 15, 2002, at Los Angeles, CA. Mr. Teets reviewed program cost, schedule, and technical progress. Participants confirmed their commitment to the success of the program.

Baseline Update 1 (BLU1): The SPO and contractor conducted a successful BLU1 on September 19-20, 2002. The event demonstrated to the attendees that the program maturity is at the appropriate level and that the system complies with the High component specification and user requirements. The review updated the technical baseline consistent with the Nunn-McCurdy certified program; incorporated the incremental development approach; and resolved the Critical Design Review action items.

Integrated Baseline Review (IBR): The program office completed an IBR on November 26, 2002. Approximately 100 project officers, engineers, Aerospace professionals and business operations personnel conducted a comprehensive review of the detailed contractor work plans for FY03. The IBR focused on current year work scope and schedule, but also reviewed the work plans for future years. Detailed work plans were scrutinized through data review and interviews with contractor cost account managers. In total, over \$2B of planned effort, throughout the life of the contract, was reviewed.

Attack and Launch Early Reporting to Theater (ALERT) Closure: The second sustainment release of Increment 1 hardware and software was installed at the Mission Control Station (MCS) and the Survivable MCS. This release provides the theater commanders with tactical warning and complies with the stringent Integrated Tactical Warning and Attack Assessment criteria. Subsequently, USSPACECOM issued the order for the 11th Missile Warning Squadron to cease operations at the ALERT facility in Colorado Springs. The SBIRS MCS at Buckley AFB, CO, is now the primary peacetime missile-warning site for the President and his Combatant Commanders. This completes the closure of legacy Defense Support Program fixed site facilities.

SBIRS Mission Control Station Backup (MCSB) Ground Breaking: On July 19, 2002, SPO representatives participated in a ground-breaking ceremony held at Schriever AFB, CO, for the MCSB. Construction will be complete in September 2003 and equipment installation and test will begin in FY04. When certified for operational use, this facility will serve as a fully functional backup to the MCS at Buckley AFB, CO, and the Interim Mission

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

Control Station Backup (IMCSB) will revert to a dedicated development and testing facility.

Interim Mission Control Station Backup Certification: The SBIRS team successfully completed the first program effectivity under the restructured program. The Air Force Operational Test and Evaluation Center (AFOTEC) 40-day Operational Utility Evaluation and 14-day Joint AFSPC and North American Aerospace Defense Command/USSTRATCOM Trial Period concluded on October 29, 2002. The USSTRATCOM Operational Approval Board granted conditional operational acceptance on October 31, 2002. The final AFOTEC test report rated the IMCSB "Effective and Suitable" on December 16, 2002. HQ AFSPC formally certified the site for operational use on January 22, 2003.

Status on Highly Elliptical Orbit (HEO) Message Certification: This effectivity is scheduled for completion in November 2004 and requires both on-orbit and ground processing assets. As a result of earlier FY02 hardware test failures, the Common Gyro Reference Assembly (CGRA) was redesigned and successfully passed qualification testing. The flight CGRA unit was integrated into the payload on December 23, 2002. The HEO 1 payload is now fully integrated and undergoing system level testing. Initial Electromagnetic Interference (EMI) testing revealed radiated emission levels that were significantly over the limits prescribed by the host. Root cause analysis, correction and retest are in progress. The EMI emission levels and other hardware related issues are manifestations of first time integration challenges. In addition to the EMI levels, we are also trying to close a few other liens, such as a clock circuit failure that we saw on HEO 2 (but not HEO 1), and a redesigned bonding process for the optical solar reflectors that the contractor has demonstrated but that the SPO has not yet validated. While we believe the liens are minor, we cannot confirm that until our analyses are complete. Resolution is slower than expected, putting pressure on the HEO Sensor 1 delivery date and the HEO Sensor 1 Delivery Acquisition Program Baseline threshold date of May 2003. We are working with the host to understand the latest need date and to mitigate schedule impacts. The ground team successfully executed System Segment Test 3701-1 (space/ground compatibility) on December 5, 2002, demonstrating the ground system could communicate with the payload. Execution of the ground software development plan continues to remain on schedule for the delivery of the HEO Early Orbit Test (EOT) software product for system test on April 30, 2003. Construction and fit up of the Interim Test Center, used for HEO EOT and initial flight operations, began in January 2003.

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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
High Component Milestone II	OCT 1996	OCT 1996	OCT 1996
High Component PDR (Space and Ground Increment 2)	DEC 1997	DEC 1997	DEC 1997
High Component CDR (Space and Ground Increment 2)	SEP 1999	AUG 2001	AUG 2001
Ground Segment Increment 1 Certification	AUG 1999	DEC 2001	DEC 2001
HEO Sensor 1 Delivery	SEP 2001	FEB 2003	MAY 2003 (Ch-1)
Ground Segment Increment 2 Certification	JAN 2002	N/A	N/A (Ch-2)
GEO Satellite 1 Launch	N/A	N/A	N/A (Ch-2)
GEO Satellite 2 Launch	JUN 2003	N/A	N/A (Ch-2)
HEO Sensor 2 Delivery	SEP 2003	JAN 2004	JAN 2004 (Ch-3)
SBIRS IOC	DEC 2003	N/A	N/A (Ch-4)
GEO Satellite 3 Launch	JUN 2004	N/A	N/A (Ch-2)
GEO Satellite 4 Launch	JUN 2005	N/A	N/A (Ch-2)
HEO Message Certification	N/A	NOV 2004	NOV 2004 (Ch-5)
GEO Satellite 1 Delivery	N/A	SEP 2006	SEP 2006 (Ch-5)
GEO Satellite 2 Delivery	N/A	SEP 2007	SEP 2007 (Ch-5)
GEO Message Certification	N/A	SEP 2007	SEP 2007 (Ch-5)
MCS Increment 2 Certification	N/A	OCT 2009	OCT 2009 (Ch-5)

(U) Note: IOC is currently being determined by AFSPC.

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

ACRONYMS:

CDR - Critical Design Review  
GEO - Geosynchronous Earth Orbit  
HEO - Highly Elliptical Orbit  
IOC - Initial Operational Capability  
MCS - Mission Control Station  
PDR - Preliminary Design Review

b. Current Change Explanations --

(U) (Ch-1): HEO 1 Sensor Delivery changed from February 2003 to May 2003. Technical issues identified during final testing delayed delivery by two months.

(Ch-2): The following milestones were deleted in the September 2, 2002, APB that reflects the restructured program:

Ground Segment Increment 2 Certification

GEO Satellite 1 Launch

GEO Satellite 2 Launch

GEO Satellite 3 Launch

GEO Satellite 4 Launch

(Ch-3): HEO Sensor 2 Delivery, unchanged in the Current Estimate, was modified in the September 2, 2002, APB that reflects the restructured program.

(Ch-4): SBIRS IOC changed from TBD to N/A. SBIRS IOC was deleted from the October 3, 1996, Development APB.

(Ch-5): The following milestones were added in the September 2, 2002, APB that reflects the restructured program:

HEO Message Certification

GEO Satellite 1 Delivery

GEO Satellite 2 Delivery

GEO Message Certification

MCS Increment 2 Certification

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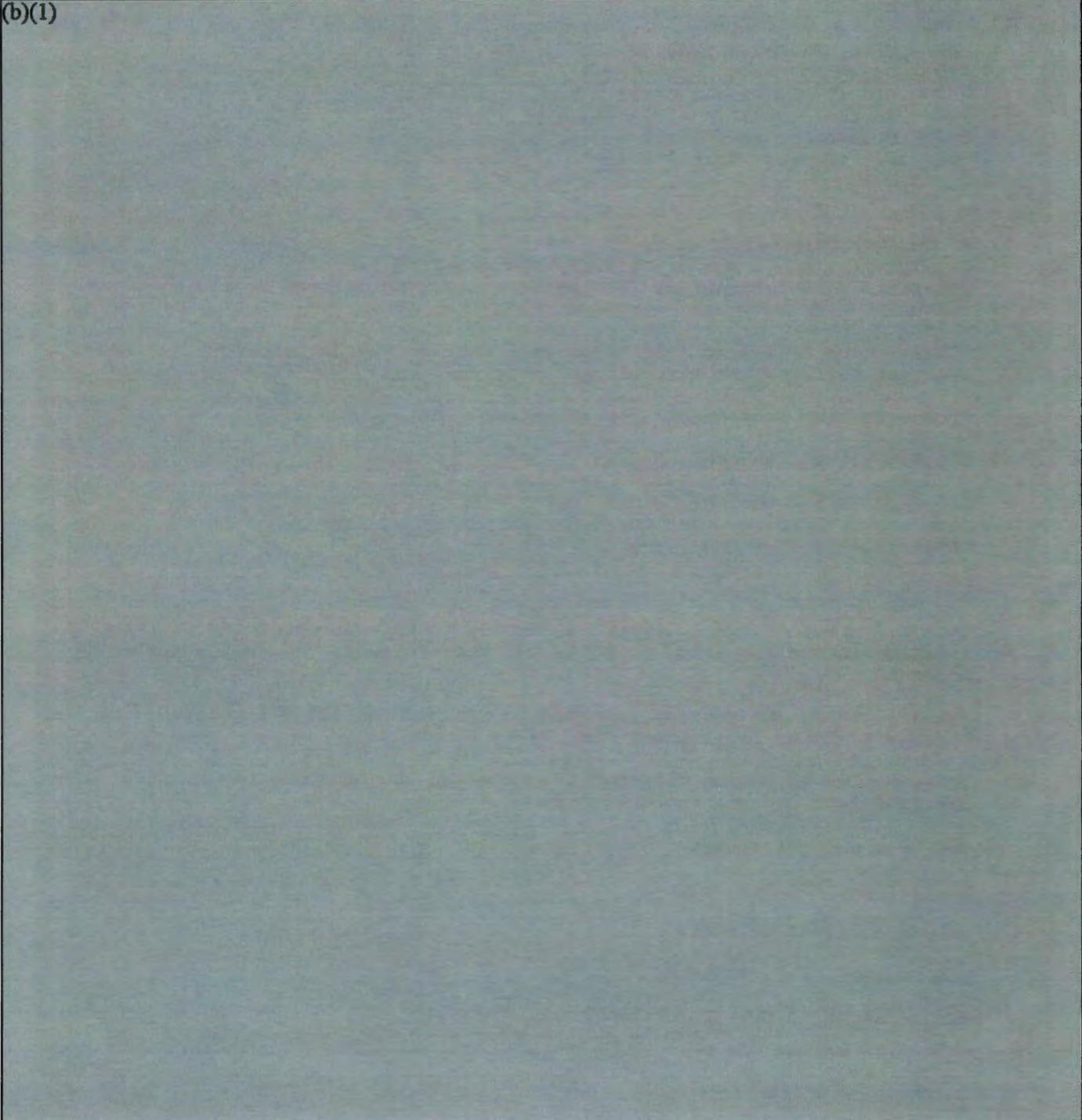
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10. (U) Performance Characteristics:

a. Performance --

(b)(1)



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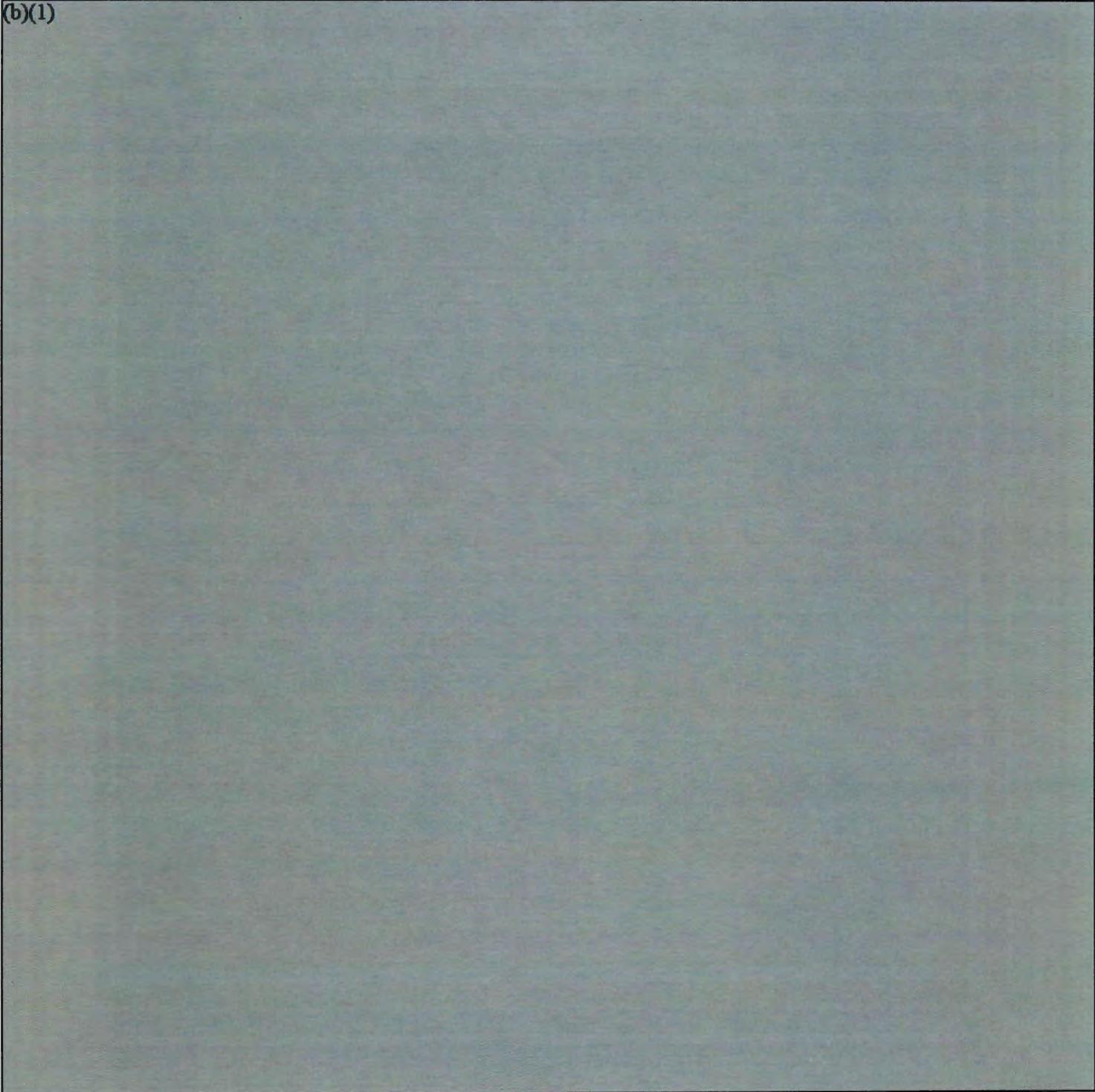
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10a. (U) Performance Characteristics (Cont'd):

(b)(1)



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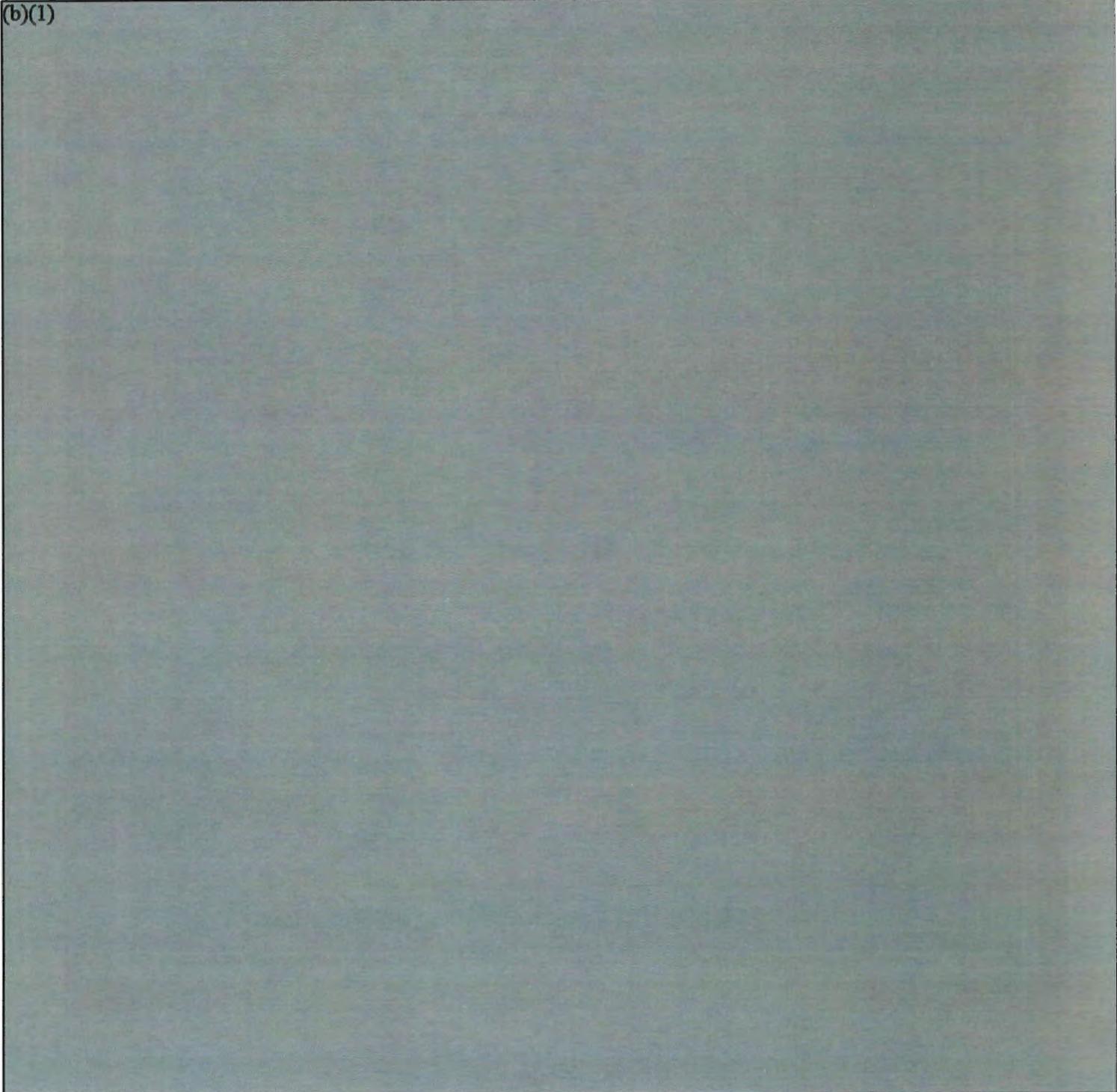
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10a. (U) Performance Characteristics (Cont'd):

(b)(1)



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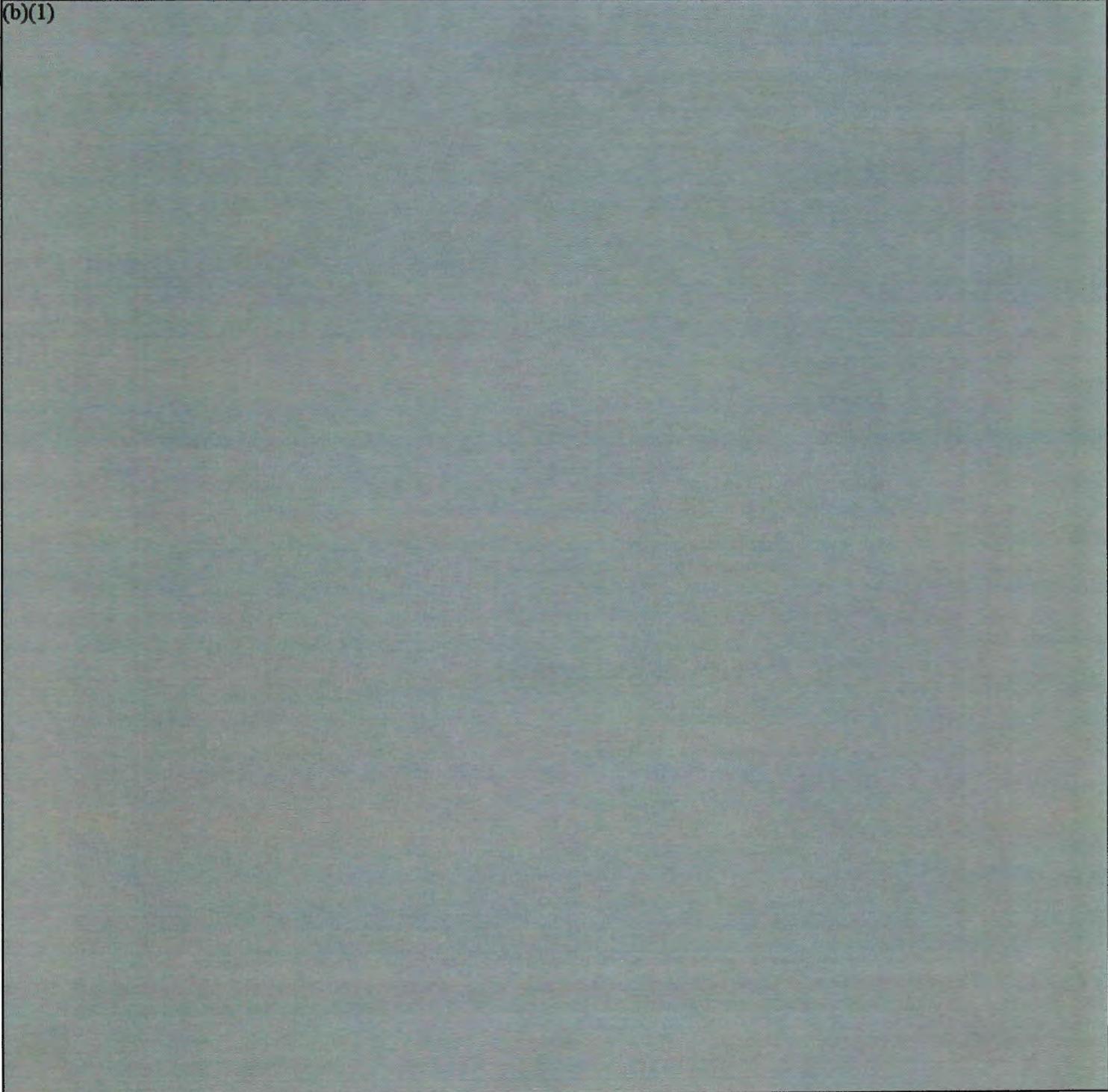
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10a. (U) Performance Characteristics (Cont'd):

(b)(1)



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

(b)(1)



(U) ACRONYMS:

AIRCRF - Aircraft  
CFLOS - Cloud-free Line of Sight  
FA - Focused Area  
MRC - Major Regional Conflict  
MSLs - Missiles  
MTR - Major Threat Region  
NLT - Not Later Than  
Pc - Probability of Collection  
Pw - Probability of Warning  
RV - Re-entry Vehicle  
TBD - To Be Determined

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

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	3016.6	5426.4	5670.2
Procurement	496.7	1261.5	1209.4
Flyaway	(496.7)		(1125.5)
Other Weapon Systems			(83.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	26.0	51.9	52.2
Acquisition O&M	140.2	598.4	603.4
Total FY 1995 Base-Year \$	<u>3679.5</u>	<u>7338.2</u>	<u>7535.2</u>
Escalation	467.8	1082.7	1071.1
Development (RDT&E)	(369.9)	(724.9)	(710.2)
Procurement	(87.8)	(235.9)	(244.3)
Construction (MILCON)	(2.5)	(5.1)	(4.8)
Acquisition O&M	(7.6)	(116.8)	(111.8)
Total Then Year \$	<u>4147.3</u>	<u>8420.9</u>	<u>8606.3</u>
b. (U) Quantity --			
Development (RDT&E)	3	2	2
Procurement	<u>2</u>	<u>3</u>	<u>3</u>
Total	5	5	5

(U) The SBIRS Single Acquisition Management Plan approved on September 13, 2002, identifies no Low Rate Initial Production.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR		Percent Change
	Baseline (SEP 2002 APB)	Current Estimate (Dec 2002 SAR)	
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	7338.2	7535.2	
(2) Quantity	5	5	
(3) Unit Cost	1467.640	1507.040	+2.68
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	1261.5	1209.4	
(2) Quantity	3	3	
(3) Unit Cost	420.500	403.133	-4.13

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	O&M	TOTAL
Development Estimate	3386.5	584.5	28.5	147.8	4147.3
Previous Changes:					
Economic	-100.2	-27.2	-1.2	-2.6	-131.2
Quantity	-152.7	+180.1	-	-	+27.4
Schedule	+494.5	-121.8	-	-	+372.7
Engineering	+441.1	-	+7.8	-15.6	+433.3
Estimating	+2082.1	+783.3	+21.9	+585.6	+3472.9
Other	-	-	-	-	-
Support	-	+98.5	-	-	+98.5
Subtotal	+2764.8	+912.9	+28.5	+567.4	+4273.6
Current Changes:					
Economic	-67.7	-22.7	-0.4	-14.3	-105.1
Quantity	-	-	-	-	-
Schedule	-	+48.2	-	-	+48.2
Engineering	+396.6	-	-	-	+396.6
Estimating	-99.8	-70.3	+0.4	+14.3	-155.4
Other	-	-	-	-	-
Support	-	+1.1	-	-	+1.1
Subtotal	+229.1	-43.7	-	-	+185.4
Total Changes	+2993.9	+869.2	+28.5	+567.4	+4459.0
Current Estimate	6380.4	1453.7	57.0	715.2	8606.3

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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	-128.4	+155.6	-	-	+27.2
Schedule	+416.6	-115.1	-	-	+301.5
Engineering	+387.9	-	+6.8	-13.5	+381.2
Estimating	+1733.7	+641.0	+19.1	+471.7	+2865.5
Other	-	-	-	-	-
Support	-	+83.3	-	-	+83.3
Subtotal	+2409.8	+764.8	+25.9	+458.2	+3658.7
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+320.5	-	-	-	+320.5
Estimating	-76.7	-52.7	+0.3	+5.0	-124.1
Other	-	-	-	-	-
Support	-	+0.6	-	-	+0.6
Subtotal	+243.8	-52.1	+0.3	+5.0	+197.0
Total Changes	+2653.6	+712.7	+26.2	+463.2	+3855.7
Current Estimate	5670.2	1209.4	52.2	603.4	7535.2

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	+4.8
Addition of Block II redesign funds, beginning in FY08 (Engineering)	+317.8	+393.5
Addition of Common Defense Support Program /SBIRS Telemetry, Tracking and Commanding (Engineering)	+2.7	+3.1
Adjustment for Current and Prior Inflation (Estimating)	+17.4	+20.3
Revised estimate due to Congressional concerns that the ground development Budget Request was too aggressive (Estimating)	-38.8	-45.6
Estimate at Completion change due to successful definitization of Restructured EMD Contract (Estimating)	-56.8	-76.2
Air Force/National Reconnaissance Organization National Program Cooperation funds added to SBIRS estimate (Estimating)	+1.5	+1.7
RDT&E Subtotal	+243.8	+229.1

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(2)	<u>Procurement</u>		
	Revised escalation indices (Economic)	N/A	-26.3
	Economic adjustment for negative program change (Economic)	N/A	+3.6
	Slip G3-G5 procurement two years, from FY05 to FY07 (Schedule)	0.0	+48.2
	Revised estimate due to inflation adjustments (Estimating)	-36.8	-48.9
	G3 through G5 Launch Support deleted from FY07-FY09 (Estimating)	-39.9	-53.6
	G5 Launch Support added in FY10 (Estimating)	+25.0	+33.6
	Minor adjustment to Program Cost Estimate (Estimating)	-1.0	-1.4
	Add Survivable Strategic Communications (Support)	+0.6	+1.1
	Procurement Subtotal	-52.1	-43.7
(3)	<u>MILCON</u>		
	Revised escalation indices (Economic)	N/A	-0.4
	Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.4
	MILCON Subtotal	+0.3	0.0
(4)	<u>O&amp;M</u>		
	Revised escalation indices. (Economic)	N/A	-14.3
	Adjustment for Current and Prior Inflation. (Estimating)	+1.3	+1.4
	Increased estimate due to rephasing of sustainment requirements (Estimating)	+3.7	+12.9
	O&M Subtotal	+5.0	0.0

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
829.46	-47.26	+5.48	+84.18	+165.98	+663.50	--	+19.92	+891.80	1721.26

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
292.25	-16.63	-37.39	-24.53	--	+237.67	--	+33.20	+192.32	484.57

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

Item/Event	SAR		SAR		Current Estimate
	Planning Estimate(PE)	Development Estimate(DE)	Production Estimate(PdE)		
Milestone I	N/A	N/A	N/A	N/A	N/A
Milestone II	N/A	OCT 1996	N/A	N/A	OCT 1996
Milestone III	N/A	N/A	N/A	N/A	N/A
IOC	N/A	DEC 2003	N/A	N/A	N/A
Total Cost	2670.3	4147.3	N/A	N/A	8606.3
Total Quantity	N/A	5	N/A	N/A	5
Prog Acq Unit Cost	N/A	829.5	N/A	N/A	1721.3

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

a. RDT&E --

(U) SBIRS High EMD Mod:  
 Lockheed Martin Space Sys, Sunnyvale CA  
 F04701-95-C-0017, CPAF  
 Award: November 8, 1996  
 Definitized: November 8, 1996

Target	Initial Contract Price		Qty
	Target	Ceiling	
\$1590.1	\$1590.1		2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$4414.8	N/A	2	\$4414.8	\$4757.2

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.7	\$-9.7
Cumulative Variances To Date (12/29/02)	<u>\$1.3</u>	<u>\$-11.5</u>
Net Change	\$0.6	\$-1.8

Explanation of Change:

(U) The interim plan referenced in the June 2002 SAR was formally incorporated into the contract budget baseline effective September 2002. Subsequently, an Integrated Baseline Review was successfully conducted in late 2002 to assess program technical work scope, schedule and cost at the level work was being performed. As a result, the Program Office Estimate of cost at completion is being updated with minor adjustments.

Performance against the Performance Measurement Baseline (previously known as the interim plan) reflects a favorable cumulative cost variance of \$1.3M compared to \$0.7M reported in the previous SAR. The net change of \$0.6M is mainly due to better than planned performance in System Engineering, Integration, and Test (SEIT) and Ground segments. The unfavorable Schedule Variance continued to erode and has reached \$11.5M, compared to \$9.7M reported in the previous SAR. The net Schedule Variance of \$1.8M since the previous SAR falls within the Highly Elliptical Orbit (\$3.8M) and Geosynchronous Earth Orbit (\$8.0M) payload areas. SEIT also has contributed an unfavorable cumulative Schedule Variance of \$1.9M, primarily in the areas of Requirements Allocations and Systems Integration. The Schedule Variance can be accommodated within program reserves. Program personnel are working closely with the contractor to mitigate any potential critical path schedule impacts to the program.

(U) Contract Comments:

Note: Initial Contract Price of \$80M reported in the previous SAR reflected only the Pre-EMD Contract Target Price. The revised Initial Contract Price reflects the EMD contract.

The current Engineering and Manufacturing Development contract Estimated Price, as reported in the December 2002 Cost Performance Report, is \$4,414.8M. This reflects adjustments to the previous Estimated Price of \$4,744.9M, resulting from negotiations completed on August 23, 2002, and contract definitization on September 6, 2002.

The Program Manager's Estimated Price at Completion of \$4757.2M, a net increase of \$12.3M from the previous SAR submission, is a result of contract negotiations and program restructure.

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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</u> (FY95-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-10)	<u>Total</u>
RDT&E	3560.5	617.2	508.9	1693.8	6380.4
Procurement	-	95.4	-	1358.3	1453.7
MILCON	57.0	-	-	-	57.0
O&M	106.7	59.2	62.5	486.8	715.2
Total	3724.2	771.8	571.4	3538.9	8606.3

b. Annual Summary -- SBIRS (High)

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1995 Dollars Nonrec</u>	<u>Flyaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				111.3	113.0
1996				158.8	164.0
1997				184.3	193.0
1998				320.6	337.9
1999				471.9	502.6
2000				370.0	400.0
2001				501.9	550.1
2002				474.2	524.5
2003				693.6	775.4
2004				543.8	617.2
2005				441.4	508.9
2006				320.5	375.6
2007				261.7	311.9
2008				314.8	381.9
2009				276.9	342.0
2010				224.5	282.4
Subtotal	2			5670.2	6380.4

Appropriation: 3020 - Missile Procurement, Air Force

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1995 Dollars Nonrec</u>	<u>Flyaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2006				230.0	273.0
2007	3		1125.5	870.5	1051.6
2008					
2009					
2010				25.0	31.9

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

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	3		1125.5	1125.5	1356.5

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				82.4	95.4
2005					
2006				0.6	0.7
2007				0.9	1.1
Subtotal				83.9	97.2

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				13.7	14.5
1998				13.1	14.0
1999					
2000					
2001				2.5	2.8
2002				16.8	18.8
2003				6.1	6.9
Subtotal				52.2	57.0

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				9.9	10.4
1999				16.0	17.0
2000				14.4	15.6
2001				16.1	17.6
2002				16.5	18.2
2003				25.0	27.9
2004				52.2	59.2
2005				54.3	62.5
2006				59.5	69.7

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

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				64.5	76.8
2008				66.4	80.5
2009				105.8	130.6
2010				102.8	129.2
Subtotal				603.4	715.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5		1125.5	7535.2	8606.3

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): \$ 2972.3

(U) Percent Total Program Expended: 34.5%

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 world wide sites. 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, the Mission Control Station Backup, OCONUS Relay Ground Stations, and Initial Qualification Training facility. Also supported with these funds are the repair and transportation of Government Furnished Equipment and Temporary Duty costs for training of the initial cadre of operators.

The SBIRS High profile reflects a 25-year Life Cycle Cost and is based upon the Estimate at Completion dated April 2002.

There is no antecedent system for this program.

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

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	SBIRS (High) Avg Annual Cost Per SBIRS High System	No Antecedent System
Mission Pay & Allowances	49.3	N/A
Unit Level Consumption	11.1	N/A
Intermediate Maintenance	17.2	N/A
Depot Maintenance	N/A	N/A
Contractor Support	23.0	N/A
Sustaining Support	15.7	N/A
Indirect Costs	0.4	N/A
Total	116.7	N/A

Total O&S Cost	SBIRS (High)	No Antecedent System
BY\$ (In Millions)	2917.0	N/A
TY\$ (In Millions)	3985.0	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 2002

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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 DAN SCHULTZ
AIR ASW ASSAULT AND SPECIAL MISSION	Assigned: June 14, 2001
47123 BUSE ROAD UNIT IPT SUITE 151	DSN 757-5161; COMM (301) 757-5161
PATUXENT RIVER, MD 20670-1547	SCHULTZD@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	(DoD)
APPN 3010 ICN 41318F	(Air Force)

MILCON:

PE 1120493BB
PE 1120547BB
PE M62470

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MAR 10 2003  
M. J. [Signature]  
Office of the Chief of Naval Operations  
Dept. of the Navy

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**5. References:**

SAR Baseline (Development Estimate):  
FY 1988/89 President's Budget.

Approved Program:  
DAE Approved Acquisition Program Baseline (APB) dated May 6, 2002.

**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 United States Special Operations Command (USSOCOM). The V-22 will replace the CH-46E and CH-53A/D in the Marine Corps (MV-22); replace the H-53, H-60 and augment the C-130 in the Air Force and USSOCOM (CV-22); and supplement the H-60 in the Navy (HV-22). The V-22 will be capable of flying over 2100 nautical miles with a single refueling, giving the services the advantage of a Vertical/Short Take-off and Landing (VSTOL) aircraft that could rapidly self-deploy to any location in the world.

**7. Executive Summary:**

On December 21, 2001 USD (AT&L) authorized the V-22 program to proceed with a much more comprehensive and rigorous "event driven" flight test program and at the minimum sustaining production rate pending a review of the technical progress during flight testing. USD (AT&L) also authorized the definitization of production Lots 5 and 6 (FY01 and FY02) and advanced procurement for Lot 7. Change 7 to the V-22 Upgrades Acquisition Program Baseline (APB) Agreement reflecting this guidance was approved by USD (AT&L) on May 6, 2002.

The program resumed Engineering Manufacturing Development (EMD) MV-22 flight testing on May 29, 2002 with Aircraft 10, a MV-22 at NAS Patuxent River, MD. As of December 22, 2002, five V-22 aircraft have returned to flight (RTF). As of January 24, 2003, 229.3 flight hours had been completed on the five aircraft. The projected flight rate required to complete testing as planned has been maintained to date. Flight test plans have been established for FY02 through FY04 that address all required testing prior to flight ops for training, for shipboard operations and OPEVAL Phase 2 in the first quarter of FY05. This testing will support a Milestone (MS) III decision in the first quarter of FY06.

Two CV-22 production representative test vehicles (PRTVs) are being procured with FY02 Air Force RDT&E funding. Scheduled delivery is in FY05.

As of November 2000, 10 aircraft were delivered to the fleet. Aircraft 21 to 24 will be modified to the EMD RTF configuration and used for flight testing. Aircraft 21 and Aircraft 22 were delivered to Pax River in October 2002 and

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

January 2003, respectively. The remaining LRIP aircraft continue to be fabricated and assembled but are not being delivered as a result of the requirement to modify them to a Block A configuration (updated configuration to return fleet aircraft to a safe operational and suitable configuration). Additional planned Block upgrades include Block B (Growth in Suitability and Effectiveness) and Block C (Preplanned Product Improvements). Delivered and production aircraft are being placed in preservation/storage condition awaiting modification. Aircraft modifications began in the first quarter of FY03 with first delivery to test in the fourth quarter of FY03. MV-22 Block A aircraft will be delivered to the fleet starting in the first quarter of FY04.

**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 0 (DEPSECDEF MEMO)	DEC 1981	DEC 1981	DEC 1981
Milestone I (DSARC I)	DEC 1982	DEC 1982	DEC 1982
Preliminary Design Contract Award	APR 1983	APR 1983	APR 1983
Milestone II (DSARC II)	APR 1986	APR 1986	APR 1986
FSD Contract Award	MAY 1986	MAY 1986	MAY 1986
Production Contract Award (Long Lead AAC)	JAN 1989	JAN 1989	MAR 1989
Operational Testing IIA	AUG 1989	N/A	N/A
Milestone IIIA (USMC Pil Prod)	DEC 1989	N/A	N/A
Operational Testing IIB	AUG 1990	N/A	N/A

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9a. Schedule (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone IIIB (All Serv Ltd Prod)	DEC 1990	N/A	N/A
Operational Testing IIIC (OPEVAL)	AUG 1991	N/A	N/A
Operational Testing IID (AF OPEVAL)	AUG 1991	N/A	N/A
First Fleet Deliveries	DEC 1991	N/A	N/A
Milestone IIIC (USN/MC/A Full Production)	DEC 1991	N/A	N/A
USMC IOC (5 Acft Trng Det)	SEP 1992	N/A	N/A
USAF IOC (6 Acft Mission Capable)	SEP 1994	N/A	N/A
USA IOC (First Operational Company Equipped)	SEP 1995	N/A	N/A
EMD Airframe Contract Award	N/A	OCT 1992	OCT 1992
EMD Engine Contract Award	N/A	DEC 1992	DEC 1992
EMD Trade Studies Complete	N/A	N/A	JAN 1994
SRR Complete	N/A	AUG 1993	AUG 1993
PDR Complete	N/A	APR 1994	APR 1994
MS II Plus Program Review	N/A	SEP 1994	SEP 1994
CDR Complete	N/A	DEC 1994	DEC 1994
DAB LRIP REVIEW	N/A	APR 1997	APR 1997
MV-22 TECHEVAL			
Start	N/A	JUL 1999	JUL 1999
Complete	N/A	SEP 1999	SEP 1999
MV-22 OPEVAL			
Start	N/A	NOV 1999	NOV 1999
Complete	N/A	JUL 2000	JUL 2000
LRIP 1 Contract Award (Long lead \$)	N/A	JUN 1996	JUN 1996
LRIP 1 First Delivery	N/A	MAY 1999	MAY 1999
LRIP 2 Contract Award (Long lead \$)	N/A	APR 1997	APR 1997
LRIP 2 First Delivery	N/A	APR 2000	JUL 2000 (Ch-1)
LRIP 3 Contract Award (Long Lead \$)	N/A	FEB 1998	MAR 1998
LRIP 3 First Delivery	N/A	FEB 2003	APR 2003 (Ch-2)
LRIP 4 Contract Award (Long Lead \$)	N/A	FEB 1999	MAR 1999
LRIP 4 First Delivery	N/A	OCT 2004	AUG 2003 (Ch-3)
LRIP 5 Contract Award (Long Lead \$)	N/A	JUN 2000	JUN 2000 (Ch-4)
LRIP 5 First Delivery	N/A	OCT 2003	OCT 2003 (Ch-4)
LRIP 6 Contract Award (Long Lead \$)	N/A	AUG 2001	JUN 2000 (Ch-4)
LRIP 6 First Delivery	N/A	NOV 2003	JAN 2004 (Ch-4)
LRIP 7 Contract Award (Long Lead \$)	N/A	MAR 2002	MAR 2002 (Ch-4)
LRIP 7 First Delivery	N/A	OCT 2004	NOV 2004 (Ch-4)
LRIP 8 Contract Award (Long Lead \$)	N/A	JAN 2003	MAR 2003 (Ch-4)
LRIP 8 First Delivery	N/A	OCT 2005	NOV 2005 (Ch-4)
LRIP 9 Contract Award (Long Lead \$)	N/A	JAN 2004	JAN 2004 (Ch-4)
LRIP 9 First Delivery	N/A	OCT 2006	NOV 2006 (Ch-4)
Full Rate Production Contract Award (Long lead \$)	N/A	JAN 2005	JAN 2005
Physical Configuration Audit (PCA)	N/A	DEC 1999	DEC 1999
MS III	N/A	OCT 2005	OCT 2005 (Ch-1)
MV-22 IOC	N/A	SEP 2004	SEP 2004
MV-22 Operational Test-IIF			

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Start	N/A	SEP 2003	SEP 2003 (Ch-4)
Complete	N/A	NOV 2003	NOV 2003 (Ch-4)
MV-22 OPEVAL Phase II			
Start	N/A	NOV 2004	NOV 2004 (Ch-4)
Complete	N/A	MAY 2005	MAY 2005 (Ch-4)
GSD	N/A	JAN 2009	JAN 2009
Modification to EMD Contract to Include CV-22 Efforts	N/A	AUG 1995	AUG 1995
CV-22 SRR	N/A	AUG 1996	AUG 1996
CV-22 PDR	N/A	DEC 1997	DEC 1997
CV-22 CDR	N/A	DEC 1998	DEC 1998
CV-22 Production Contract Award (Long lead \$)	N/A	JUN 2000	JUN 2000
CV-22 Flight Test			
Start	N/A	FEB 2000	FEB 2000
Complete	N/A	DEC 2005	DEC 2005
CV-22 IOT&E			
Start	N/A	JAN 2006	JAN 2006
Complete	N/A	JUN 2006	JUN 2006
CV-22 First Production Delivery	N/A	FEB 2006	FEB 2006
CV IOC	N/A	OCT 2009	OCT 2009
CV-22 First PRTV Delivery	N/A	APR 2005	APR 2005 (Ch-4)

ACRONYMS and Abbreviations List

AAC - Advanced Acquisition Contract  
CDR - Critical Design Review  
DAB - Defense Acquisition Board  
EMD - Engineering Manufacturing Development  
FSD - Full Scale Development  
GSD - Government Support Date  
IOC - Initial Operational Capability  
IOT&E - Initial Operational Test and Evaluation  
LRIP - Low Rate Initial Production  
PDR - Preliminary Design Review  
SRR - System Requirements Review

Note: Milestone 0 through USA IOC (First Operational Company Equipped) reflects the FSD program which was terminated in April 1989.

OPEVAL Phase II is currently scheduled to begin November 2004 and is reflected in the revised APB dated May 6, 2002. OPEVAL Phase II will provide a formal report of the operational suitability and effectiveness of the Block A aircraft in support of the MS III decision.

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) The following changes were made to reflect current planning in support of the approved APB dated May 6, 2002:

LRIP 2 First Delivery was changed from April 2000 to July 2000 to reflect actual delivery.

MS III is changed from September 2005 to October 2005 to reflect the Program Manager's current estimate.

(Ch-2) LRIP 3 First Delivery is changed from February 2003 to April 2003 and will be pre-Block A LRIP to the EMD program.

(Ch-3) LRIP 4 First Delivery is changed from October 2004 to August 2003 and is planned to be delivered as the first Block A aircraft.

(Ch-4) The following schedule milestones have been added to reflect current planning in support of the approved APB dated May 6, 2002:

LRIP 4 Contract Award (Long Lead \$)  
LRIP 4 First Delivery  
LRIP 5 Contract Award (Long Lead \$)  
LRIP 5 First Delivery  
LRIP 6 Contract Award (Long Lead \$)  
LRIP 6 First Delivery  
LRIP 7 Contract Award (Long Lead \$)  
LRIP 7 First Delivery  
LRIP 8 Contract Award (Long Lead \$)  
LRIP 8 First Delivery  
LRIP 9 Contract Award (Long Lead \$)  
LRIP 9 First Delivery  
MV-22 Operational Test-IIF (Start and Complete)  
MV-22 OPEVAL Phase II (Start and Complete)  
CV-22 First PRTV Delivery

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10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated 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:					
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
World-wide Self-Deployment (nm) (minimum distance)	2100	N/A	/ N/A	N/A	N/A
Continuous Cruise Speed (kts)	250	N/A	/ N/A	N/A	N/A
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 Interoperability	N/A	Satisfy all top level IERs desg in JORD Ch3, Table C	/ Satisfy all top level IERs desg as critical in JORD CH3, Table C	TBD	Satisfy all top level IERs desg in JORD Ch 3 Table C

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Cruise Speed (kts)	N/A	270 / 240	258	264	(Ch-1)
Mission Radius (NM)		/			
Land Trooplift	N/A	/ N/A	243X1	229X1	
Land External	N/A	110X1 / 50X1	50X1	64X1*	(Ch-1)
Sea Trooplift	N/A	/ N/A	80X2	92X2	
Sea External	N/A	/ N/A	50X1	112X1	
Amphibious	N/A	200X1 / 200X1	205X1nm	267**	
Pre-Assault/Raid Ops (NM)					
Payload					
Troops	N/A	24 / 24	24	24	
External Lift (lbs)	N/A	15,000 / 10,000	10,000	10,000	
Aerial Refuel Capable	N/A	/ N/A	yes	yes	
Self-Deployment (nm)	N/A	2100 w/ no / aerial refuel / refuel	2113 w/1 aerial refuel	2301 w/1 aerial refuel	(Ch-1)
Shipboard Compatible	N/A	/ N/A	yes	yes	
V/STOL Capable	N/A	/ N/A	yes	yes	
Survivability (mm API @90%vel)	N/A	14.5 / 12.7	12.7+	12.7	
Reliability					
MFHBF (log)	N/A	>=1.2 / >=0.9	TBD	>=1.1	
MFHBA	N/A	17 Hrs / 17 Hrs	TBD	19 Hrs	
Mission (%)	N/A	/ N/A	92	85	
MTBF	N/A	N/A / N/A	N/A	N/A	(Ch-3)
CV-22 Interoperability	N/A	Satisfy / Satisfy all top / all top level / level IERS / IERS desg in / desg as JORD / critical Ch3, / in JORD Table C / Ch3, / Table C	TBD	Satisfy all top level IERS desg in JORD Ch 3, Table C	
Cruise Speed (kts)	N/A	270 / 230	TBD	233	(Ch-2)
Mission Radius (nm)	N/A	750 / 500	TBD	525**	(Ch-2)
Payload - Troops	N/A	24 / 18	TBD	18	
Aerial Refuel Capable	N/A	/ N/A	TBD	yes	

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Self-Deployment (nm)	N/A	2100 w/0/ aerial / refuel /	2100 w/1 aerial refuel	TBD 2159 w/1 (Ch-2) aerial refuel yes
Shipboard Compatible Operational Environment	N/A	100' / TF/TA, Day/ Night, VMC/IMC /	300' TF/TA, Day/ Night, VMC/IMC	TBD 300' TF/TA, Day/ Night, VMC/IMC
Precision Naviga- tion (diameter @ MAX Combat Radius) Operational Enviroment DECM	N/A	Locate / LZ W/IN / 1 Rotor /	Locate LZ W/IN 2X Rotor	TBD Locate LZ W/IN 2X Rotor
MMR (TF/TA) Reliability MFHBF (LOG) MFHBA Weapon System (%) MTBF	N/A	SIRFC / w/RF / Jamming / DIRCM / 100 FT /	SIRFC w/RWR, MW, CMDS /	TBD SIRFC w/RF, Jamming DIRCM 100 FT
	N/A	>=1.2 /	>=0.9	TBD >=1.0
	N/A	15 Hrs /	15 Hrs	TBD 16 Hrs
	N/A	/	N/A	TBD 77
	N/A	N/A /	N/A	N/A (Ch-3)

All radius/range demonstrated and estimated performance are prior to incorporation of Way Forward items.

\*Aft Sponson Tank Kit not installed for MV-22 Land External Mission.  
\*\*The Program Manager's estimate of the CV-22 Mission Radius is 525NM, using agreed to clarification of ambient operating temperatures for ORD mission.

b. Current Change Explanations --

(CH-1) MV-22 data has been updated based on latest analysis and test. Summary of changes are as follows:

MV-22	Demonstrated Perf	Current Estimate
Cruise Speed (kts)	No Change	From 265 To 264
Mission Radius (nm)		
Land External	No Change	From 54X1* To 64X1*
Self-Deployment (nm)	No Change	From 2298 w/1 aerial refuel To 2301 w/1 aerial refuel

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10b. Performance Characteristics (Cont'd):

(Ch-2) CV-22 data has been updated based on latest analysis and test. Summary of changes are as follows:

CV-22	Demonstrated Perf	Current Estimate
Cruise Speed (kts)	No Change	From 235 To 233
Mission Radius (nm)	No Change	From 503** To 525**
Self-Deployment (nm)	No Change	From 2340 w/l aerial refuel To 2159 w/l aerial refuel

(Ch-3) The following Performance Characteristics were replaced in the May 6, 2002 APB by MFHBF:

MV-22 MTBF  
CV-22 MTBF

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2443.7	7021.6	7168.5
Procurement	20493.1	22447.6	24030.0
Flyaway	(15517.1)		(0.0)
Recurring Flyaway			(19291.6)
Nonrecurring Flyaway			(510.1)
Total Flyaway	(15517.1)		(19801.7)
Other Weapon Systems Cost	(3299.6)		(1634.0)
Peculiar Support	(0.0)		(1276.2)
Initial Spares	(1676.4)		(1318.1)
Construction (MILCON)	136.2	35.5	34.7
Acquisition O&M	0.0	0.0	0.0
Total FY 1986 Base-Year \$	23073.0	29504.7	31233.2
Escalation	6589.3	16736.1	17029.5
Development (RDT&E)	(181.5)	(1984.1)	(2052.4)
Procurement	(6371.1)	(14732.6)	(14956.9)
Construction (MILCON)	(36.7)	(19.4)	(20.2)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	29662.3	46240.8	48262.7
b. Quantity --			
Development (RDT&E)	0	2	2
Procurement	913	456	456
Total	913	458	458

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

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

Quantities: Deleted 11 development aircraft from the APB baseline because they are not fully configured.

The Initial LRIP review was April 1997. The Initial MV-22 LRIP quantities were as follows: 5 (FY97), 7 (FY98), 7 (FY99), and 10 (FY00). Current MV-22 LRIP quantities are as follows: 5 (FY97), 7 (FY98), 7 (FY99), 11 (FY00), 9 (FY01), 11 (FY02 - includes 9 MV and 2 PRTV CV aircraft), and 11 MV aircraft (FY03). An additional LRIP Lot 8 of 11 aircraft (9 MV and 2 CV) is requested for FY04.

This LRIP is more than 10% of the total program buy because of the MS III slip caused by the December 00 mishap and the subsequent program restructure. MS III is currently scheduled for FY05.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAY 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1986 BY\$)	29504.7	31233.2	
(2) Quantity	458	458	
(3) Unit Cost	64.421	68.195	+5.86
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1986 BY\$)	22447.6	24030.0	
(2) Quantity	456	456	
(3) Unit Cost	49.227	52.697	+7.05

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2625.2	26864.2	172.9	29662.3
Previous Changes:				
Economic	-155.4	-5954.1	-8.1	-6117.6
Quantity	+103.0	+11715.9	-	+11818.9
Schedule	+28.2	-2819.3	+7.8	-2783.3
Engineering	+710.9	+577.6	-	+1288.5
Estimating	+5693.8	+5911.7	-117.7	+11487.8
Other	-	-	-	-
Support	-	+884.2	-	+884.2
Subtotal	+6380.5	+10316.0	-118.0	+16578.5
Current Changes:				
Economic	-12.3	-910.8	+2.1	-921.0
Quantity	-	-	-	-
Schedule	-	+56.5	-	+56.5
Engineering	+138.2	+925.8	-	+1064.0
Estimating	+89.3	+1403.6	-2.1	+1490.8
Other	-	-	-	-
Support	-	+331.6	-	+331.6
Subtotal	+215.2	+1806.7	-	+2021.9
Total Changes	+6595.7	+12122.7	-118.0	+18600.4
Current Estimate	9220.9	38986.9	54.9	48262.7

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	+50.0	-506.2	-	-456.2
Schedule	+16.9	-400.5	-	-383.6
Engineering	+475.3	+361.7	-	+837.0
Estimating	+4035.7	+3461.1	-100.7	+7396.1
Other	-	-	-	-
Support	-	-961.6	-	-961.6
Subtotal	+4577.9	+1954.5	-100.7	+6431.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+90.2	+547.6	-	+637.8
Estimating	+56.7	+820.9	-0.8	+876.8
Other	-	-	-	-
Support	-	+213.9	-	+213.9
Subtotal	+146.9	+1582.4	-0.8	+1728.5
Total Changes	+4724.8	+3536.9	-101.5	+8160.2
Current Estimate	7168.5	24030.0	34.7	31233.2

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices - Navy/Air Force/USSOCOM (Economic)	N/A	-12.3
	Requirement for additional CV test asset - Navy (Engineering)	+64.6	+98.0
	TCAS/CAMS/REMIS/Block 20 development - Air Force (Engineering)	+25.6	+40.2
	Adjustment for current and prior inflation - Navy/Air Force/USSOCOM (Estimating)	+3.9	+5.4
	Updated estimates for flight tests - Navy (Estimating)	+39.8	+61.6
	Updated estimates for Way Forward - Navy (Estimating)	+3.1	+4.6
	CV IOT&E - Air Force (Estimating)	+10.0	+16.5
	Offset for escalation - USSOCOM (Estimating)	-0.1	+1.2
	RDT&E Subtotal	+146.9	+215.2
(2)	<u>Procurement</u>		
	Revised escalation indices - Navy/Air Force/USSOCOM (Economic)	N/A	-910.8
	Stretchout of annual procurement buy profile by shifting quantities to later years - Navy (Schedule)	0.0	+44.3
	Stretchout of annual procurement buy profile by shifting quantities to later years - Air Force (Schedule)	0.0	+12.2
	Addition of Block A requirements - Navy (Engineering)	+58.8	+99.3
	Addition of scope for Block B requirements - Navy (Engineering)	+104.7	+178.9
	Addition of Block C requirements - Navy (Engineering)	+279.4	+474.5
	Addition of parts obsolescence requirements - Navy (Engineering)	+44.0	+70.5
	Addition of Block A requirements - Air Force (Engineering)	+8.0	+13.6
	Addition of scope for Block B requirements - Air Force (Engineering)	+16.5	+27.8
	Addition of Block C requirements - Air Force (Engineering)	+36.2	+61.2
	Adjustment for current and prior inflation - Navy/Air Force/USSOCOM (Estimating)	+28.0	+41.2
	Estimating update to Block B - Navy (Estimating)	-19.5	-30.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Estimating update to cost reduction initiatives (CRIs) - Navy (Estimating)	-56.1	-100.0
Estimating updates to engines and engine accessories - Navy (Estimating)	+60.1	+101.4
Estimating update to Recurring Flyaway Items (GFE Electronics, ECOs, Non-Recurring, Ancillary Equipment, Resolution Matrix) - Navy (Estimating)	+157.9	+257.9
Adjustment to learning curves for labor and labor rates to reflect actuals - Navy (Estimating)	+328.0	+569.1
Adjustment to learning curves for material and labor rates to reflect actuals - Navy (Estimating)	+231.6	+399.4
Adjustment to learning curves for labor and labor rates to reflect actuals - Air Force (Estimating)	+43.6	+75.9
Adjustment to learning curves for material and labor rates to reflect actuals - Air Force (Estimating)	+96.9	+160.7
Update to engine and engine accessories - Air Force (Estimating)	-11.9	-20.7
Estimating update to cost reduction initiatives - Air Force (Estimating)	-20.4	-35.6
Estimating update to Recurring Flyaway Items (CFE Mission Electronics, GFE Electronics, ECOs, Non-Recurring) - Air Force (Estimating)	+11.8	+21.9
Estimating update to Recurring Flyaway Items (Airframe CFE, CFE Mission Electronics, GFE Electronics, ECOs) - USSOCOM (Estimating)	-8.7	-7.8
Increase in initial spares - USSOCOM (Support)	+118.5	+211.9
Increase in peculiar support - USSOCOM (Support)	+20.0	+33.7
Decrease in other weapon systems cost - USSOCOM (Support)	-49.1	-88.7
Adjustment for current and prior inflation - Navy/Air Force/USSOCOM (Support)	+11.8	+17.4
Increase in initial spares - Navy (Support)	+100.3	+166.2
Increase in peculiar support - Navy (Support)	+77.1	+119.1
Decrease in other weapon systems cost - Navy (Support)	-61.6	-110.6
Increase in initial spares - Air Force (Support)	+16.2	+36.7
Decrease in peculiar support - Air Force (Support)	-25.9	-46.4

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
Decrease in other weapon systems cost - Air Force (Support)		-13.8	-36.9
Adjustment to align Flyaway and support costs from prior report. (Estimating) (Support)		-20.4 +20.4	-29.2 +29.2
Procurement Subtotal		<u>+1582.4</u>	<u>+1806.7</u>
(3) MILCON			
Revised escalation indices - Navy/Air Force/USSOCOM (Economic)		N/A	+2.1
Adjustment for current and prior inflation - Navy/Air Force/USSOCOM (Estimating)		-0.3	-0.5
Offset for escalation - Navy (Estimating)		-0.3	-0.7
Offset for escalation - USSOCOM (Estimating)		-0.2	-0.9
MILCON Subtotal		<u>-0.8</u>	<u>0.0</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	
32.49	-15.37	+58.08	-5.95	+5.14	+28.34	--	+2.65	+72.89	105.38

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	-15.05	+55.17	-6.06	+3.30	+16.04	--	+2.67	+56.07	85.50

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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 1982	DEC 1982	N/A	DEC 1982
Milestone II	MAY 1985	APR 1986	N/A	APR 1986
Milestone III	JUL 1989	N/A	N/A	OCT 2005
IOC	DEC 1991	N/A	N/A	SEP 2004
Total Cost	24467.0	0.0	N/A	48262.7
Total Quantity	609	0	N/A	458
Prog Acq Unit Cost	40.2	0.0	N/A	105.4

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

a. RDT&E --

EMD (Airframe):  
Bell-Boeing JPO, Patuxent River MD  
N00019-93-C-0006, CPAF  
Award: October 22, 1992  
Definitized: May 3, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$2650.0	N/A	4

Current Contract Price		
Target	Ceiling	Qty
\$3641.2	N/A	4

Estimated Price At Completion	
Contractor	Program Manager
\$4032.2	\$4032.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-61.8	\$-32.2
Cumulative Variances To Date (11/30/02)	\$-2.3	\$-10.3
Net Change	\$59.5	\$21.9

Explanation of Change:

Net change in Variance due to implementation of Overtarget Baseline (OTB) for EMD Legacy, Return to Flight, Block A in-scope effort, CV Block 0 and CV Block 10. The OTB sets variances to zero. The OTB was implemented in phases for the five efforts above, beginning in June 2002, and the current variance reflects fact of life changes incurred by various efforts between their initial rebaselining and the final OTB implementation in November 2002.

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15b. Contract Information (Cont'd):

b. Procurement --  
 V-22 Engine:  
 Rolls Royce, Indianapolis, IN  
 N00019-95-C-0209, FFP  
 Award: October 11, 1996  
 Definitized: May 8, 1998

	<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>
	\$19.5	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>
\$253.0	N/A	128	\$253.0	\$253.0

Explanation of Change:

None.

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

Contract Comments:

N00019-95-C-0209 was awarded to Rolls-Royce Company in October 1996, subsequently definitized on May 8, 1998. The contract provides for the two (2) base years (FY97 & FY98) and five (5) option years for procurements through FY03. The contract CLIN's provide for award of engines for installation into V-22 aircraft, spares, and logistics support.

FY99 LRIP 3 (AIRFRAME):

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Bell-Boeing JPO, Patuxent River MD N0001996C0054, CPIF Award: March 27, 1998 Definitized: March 27, 1998	\$555.5	N/A	7

<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>
\$547.0	N/A	7	\$562.0	\$563.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-15.3	\$-8.7
Cumulative Variances To Date (11/30/02)	\$-17.0	\$-3.1
Net Change	\$-1.7	\$5.6

Explanation of Change:

Net change to Cost Variance is due to Bell rate increases. Schedule variance improvement is primarily due to a Bell transfer of budget from the Aircraft Integration IPT to undistributed budget to reflect work scope that will not be accomplished until the Lot 3 aircraft are modified to

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V-22 (OSPREY), December 31, 2002

15. Contract Information (Cont'd):

incorporate Block A changes.

<u>FY00 LRIP 4 (AIRFRAME):</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Bell-Boeing JPO, Patuxent River MD			\$687.0	N/A	10
N0001999C1090, FPI					
Award: March 31, 1999					
Definitized: December 20, 1999					

<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>
\$746.3	N/A	11	\$802.8	\$813.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-37.1	\$-14.6
Cumulative Variances To Date (11/30/02)	\$-61.4	\$-15.1
Net Change	\$-24.3	\$-0.5

Explanation of Change:

Cost Variance has been negatively impacted by increased cost of composite parts and rate increases. Schedule Variance was negatively impacted by parts shortages.

Contract Comments:

Lot 4 aircraft will continue to be fabricated up through wing/fuselage mate. "Smart Manufacturing" is being implemented to stop fabrication and assembly activities that will be subsequently changed in anticipation of the BLOCK A design incorporation (Safe and Operational MV-22 for the Fleet).

<u>FY01/FY02 LRIP 5/6 Airfr:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Bell-Boeing JPO, Patuxent River MD			\$48.0	N/A	20
N0001993C0183, AAC					
Award: June 20, 2000					
Definitized: August 1, 2002					

<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>
\$1257.3	N/A	0	\$1483.3	\$1483.5

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V-22 (OSPREY), December 31, 2002

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/02)	\$-16.0	\$2.7
Net Change	\$-16.0	\$2.7

Explanation of Change:

Cost Variance has been negatively impacted by increased material costs and rate increases. Schedule Variance improved primarily due to favorable manufacturing at Boeing.

Contract Comments:

The FY01 (Lot 5) and FY02 (Lot 6) negotiations for those efforts on the V-22 aircraft which will not be significantly impacted by the Block A program were definitized in August 2002. All funding associated with the definitized aspects of the V-22 aircraft has been obligated. A proposal has been requested from Bell-Boeing in February 2003 to price the incorporation of the Block A efforts to the Lot 5 and 6 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> (FY82-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-15)	<u>Total</u>
RDT&E	8078.0	543.3	364.9	234.7	9220.9
Procurement	6646.8	1300.3	1511.5	29528.3	38986.9
MILCON	19.9	2.3	2.6	30.1	54.9
O&M	-	-	-	-	-
Total	14744.7	1845.9	1879.0	29793.1	48262.7

b. Annual Summary -- V-22 OSPREY

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1986 Dollars Nonrec</u>	<u>Flyaway FY 1986 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991				6.6	8.0
1992				12.0	15.0
1993					
1994				11.3	14.7
1995					

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V-22 (OSPREY), December 31, 2002

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

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996					
1997					
1998					
1999					
2000				23.6	33.5
2001				28.0	40.2
2002				62.1	90.8
2003				40.4	59.8
2004				24.3	36.5
2005				27.1	41.4
2006				14.8	22.9
2007					
Subtotal				250.2	362.8

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

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				1.5	1.3
1983				37.2	34.4
1984				86.7	83.1
1985				171.5	169.5
1986				516.5	525.1
1987				402.9	421.7
1988				375.2	405.8
1989				239.5	269.9
1990				174.1	204.2
1991				174.6	212.2
1992				606.0	758.0
1993				557.3	713.3
1994				6.7	8.7
1995				340.0	451.8
1996				530.2	716.4
1997				442.6	605.5
1998				353.3	487.5
1999				240.5	335.8
2000				124.1	175.9
2001				151.7	218.0
2002				284.3	415.8
2003				277.7	410.8
2004				293.7	441.1
2005				201.2	307.0

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V-22 (OSPREY), December 31, 2002

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

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

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				74.4	115.4
2007				28.2	44.6
Subtotal				6691.6	8532.8

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 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
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002				99.6	145.6
2003				7.6	11.2
2004				43.7	65.7
2005				10.8	16.5
2006				17.8	27.6
2007				6.1	9.6
2008				4.4	7.1
2009				4.6	7.5
Subtotal	2			226.7	325.3

Note: The FY02 Appropriations Act provided funding for two CV Production Representative Test Vehicles.

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V-22 (OSPREY), December 31, 2002

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

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				2.8	4.0
2000				2.5	3.6
2001				5.7	8.2
2002				12.5	18.2
2003			0.1	38.7	57.4
2004			34.9	72.3	108.8
2005			45.9	87.1	133.2
2006			45.0	80.7	125.6
2007			29.6	101.2	160.3
2008			66.6	138.1	222.6
2009			64.3	123.6	202.9
2010			63.9	175.9	293.9
2011			64.7	167.8	285.4
2012			64.7	94.9	164.3
2013			64.0	108.8	191.8
2014			63.4	93.6	168.0
2015			39.4	69.9	127.6
Subtotal			646.5	1376.1	2275.8

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 Special Operations Forces (SOF) unique equipment.

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				196.7	231.4
1990					
1991					
1992					
1993					
1994					
1995					
1996			0.2	30.0	41.1
1997	5	40.4	386.7	514.1	709.4
1998	7	15.7	426.7	507.7	708.7
1999	7	16.5	402.1	483.5	683.5
2000	11	20.5	526.5	689.7	987.4
2001	9	62.0	477.9	698.5	1010.1

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V-22 (OSPREY), December 31, 2002

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

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	9	35.4	433.0	608.3	889.2
2003	11	83.1	534.4	720.3	1067.5
2004	9	35.7	436.2	632.3	951.6
2005	8	21.2	378.4	675.6	1033.4
2006	17	33.5	777.2	1096.3	1705.9
2007	29	27.7	1201.7	1469.8	2327.9
2008	30	27.3	1193.9	1471.3	2372.1
2009	33	24.9	1278.7	1472.6	2417.0
2010	37	17.1	1346.3	1420.2	2372.8
2011	40	1.7	1450.9	1532.2	2606.2
2012	40	2.1	1478.1	1563.6	2707.4
2013	40	2.0	1473.5	1555.3	2741.6
2014	40	2.0	1477.9	1549.0	2779.6
2015	26	2.3	1013.8	983.2	1796.0
Subtotal	408	471.1	16694.1	19870.2	32139.8

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				15.6	22.0
2000			13.9	28.6	40.9
2001		10.6	10.1	38.2	55.3
2002					
2003			0.1	73.5	108.9
2004	2		98.4	159.4	239.9
2005	3	4.8	145.5	225.5	344.9
2006	3	4.3	141.2	192.1	298.9
2007	2	9.7	85.4	180.6	286.0
2008	5	9.6	205.5	320.7	517.0
2009	6		240.5	318.8	523.2
2010	5		186.4	259.6	433.7
2011	5		183.8	243.0	413.4
2012	5		187.7	235.8	408.3
2013	5		187.7	213.4	376.1
2014	5		188.3	203.9	365.8
2015	2		76.5	75.0	137.0
Subtotal	48	39.0	1951.0	2783.7	4571.3

Note: FY01 Aircraft Procurement, Air Force funding was reduced by the FY01 supplemental appropriation, and the CV production quantity was eliminated.

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V-22 (OSPREY), December 31, 2002

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

Appropriation: 0500 - Military Construction, Defense Wide

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				0.1	0.2
2001				0.2	0.3
2002				6.7	10.2
2003				1.4	2.1
2004					
2005				0.6	0.9
2006				0.9	1.4
2007				11.8	19.6
Subtotal				21.7	34.7

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 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				0.3	0.5
2001				0.5	0.8
2002					
2003				0.6	1.0
2004				1.5	2.3
2005				1.1	1.7
2006					
2007				0.4	0.7
2008				0.8	1.3
2009					
2010				2.3	4.1
2011					
2012					
2013					
2014					
2015				1.5	3.0
Subtotal				13.0	20.2

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V-22 (OSPREY), December 31, 2002

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD			646.5	1648.0	2673.3
Navy	408	471.1	16694.1	26574.8	40692.8
USAF	50	39.0	1951.0	3010.4	4896.6
Grand Total	458	510.1	19291.6	31233.2	48262.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	12	12

Percent Total Program Quantities Delivered: 2.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 9622.3

Percent Total Program Expended: 19.9%

Aircraft continue to be fabricated and assembled but are not being delivered as a result of the requirement to modify them to a Block A configuration. Twenty-five aircraft will require this modification prior to final delivery.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

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	323	32	44
Aircraft per Operating Squadron	12(18squad)	16(2squad)	0
Aircraft per Operating Squadron CONUS			13(2squad)
Aircraft per Operating Squadron OVERSEAS			9(2squad)
A/C per Training Squadron(FRS)	40	0	0
A/C per Training Squadron (AETC)	0	0	6(1squad)
Aircraft per Special Squadron	19	0	0
Aircraft per Reserve Squadron	12(4squad)	0	0
Flight Hours per Month	35	35	36
Flight Hours per Year	420	420	432

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V-22 (OSPREY), December 31, 2002

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

JP-5 Cost per Gallon (FY03)	\$0.86	\$0.86	\$0.86
JP-5 Cost per Barrel (42 gal)	\$36.12	\$36.12	\$36.12
Consumption Rate	402 gal/hr	402 gal/hr	402 gal/hr
Lubricating Oil Cost per Gallon	\$2.20	\$2.20	\$2.20
Lube Oil Consumption Rate	0.16 gal/hr	0.16 gal/hr	0.16 gal/hr
Flyaway cost (FY94\$)	\$54.7M	\$52.3M	\$68.5M
Airframe Unit Weight (AUW) lbs	29433 lbs	29433	29433
Weight Empty lbs. Blk A/Blk 10	33531 lbs	33531 lbs	35869 lbs
Total Operating Years	40 (FY02-FY41)	40 (FY04-FY43)	31 (FY93-FY43)

Date of estimate: January 2003  
 There is no antecedent for the V-22 program.

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Thousands)

Cost Element	V-22 OSPREY Average Annual Cost Per Aircraft	No Antecedent Prog.
Mission Pay & Allowances	559.7	N/A
Unit Level Consumption	902.2	N/A
Intermediate Maintenance	243.9	N/A
Depot Maintenance	191.8	N/A
Contractor Support	142.0	N/A
Sustaining Support	225.5	N/A
Indirect Costs	334.5	N/A
Total	2599.6	N/A

Total O&S Cost	V-22 OSPREY	No Antecedent Prog.
BY\$ (In Millions)	27004.6	N/A
TY\$ (In Millions)	58512.3	N/A

Report Creation Date: 03/14/2003 8:35:43

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: LHD - 1

AS OF DATE: December 31, 2002

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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:  
 NAVAL SEA SYSTEMS COMMAND                      CAPT. RICHARD W. HOOPER  
 PROGRAM EXECUTIVE OFFICE, SHIPS              Assigned: September 20, 2002  
 AMPHIBIOUS WARFARE PROGRAM OFFICE        DSN 326-0940; COMM (202)781-0940  
 WASHINGTON, DC 20376-                              HOOPERRW@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, S0857  
 PROCUREMENT:  
   (U) APPN 1611 ICN 3035 (Navy)

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LHD - 1, December 31, 2002

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 August 15, 1985.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 24, 2000.

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.

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. LHD 5 was delivered to the Navy in June 1997. The options for LHD 6 and 7 were exercised on a sole source basis on December 1992 and December 1995, respectively. LHD 6 was delivered to the Navy in May 1998. LHD 7 was delivered to the Navy in April 2000. Congress added funds in FY99, FY00, FY01 and authorized incremental funding to accelerate construction of LHD 8 from FY05 to FY02. A contract for detail design of the gas turbine propulsion plant and an all-electric auxiliary system was awarded to Northrop Grumman Shipbuilding Systems, Ingalls Operations (NGSSIO) in July 2000. A sole source detail design and construction contract for LHD 8 was awarded to NGSSIO in April 2002.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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 --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I	OCT 1981	OCT 1981	OCT 1981
Milestone II SAIP	JUL 1982	JUL 1982	JUL 1982
Start Contract Design	AUG 1982	AUG 1982	AUG 1982
Milestone IIIA Production-Decision	JUN 1983	JUN 1983	JUN 1983
Award Lead Ship Contract	DEC 1983	FEB 1984	FEB 1984
Milestone IIIB Production-Decision	JUL 1985	AUG 1985	AUG 1985
Approve Full-Production (AFP)	AUG 1985	AUG 1985	AUG 1985
Launch First Ship	AUG 1987	AUG 1987	AUG 1987
Acceptance Trials (Lead Ship)	FEB 1989	FEB 1989	MAR 1989
Lead Ship Delivery	MAR 1989	MAR 1989	MAY 1989
Material Support Date	MAR 1989	MAR 1989	JUL 1989
Naval Support Date	MAY 1990	MAR 1993	MAR 1993
IOC	MAY 1990	MAY 1990	NOV 1990

(U) IOC - Reflects date the lead ship was ready for operational deployment.

b. Current Change Explanations -- None

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>	
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	Gas Turbine (LHD 8 only)	(Ch-1)
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	
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) (Ch-1) The Propulsion current estimate changed from Steam for LHD 1-7 to Gas Turbine for LHD 8.

(U) The 1873 troop estimate was based on actual in place berthing accommodations on LHD 1. The 26'/39,400 draft and displacement estimates were values provided during the design development phase. The 26'8" and 40,533 reflects the full load weight estimate at the completion of the contract design.

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	39.9	42.3	42.3
Procurement	2891.9	7463.7	7283.2
Sailaway	(2872.5)		(7261.0)
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	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1982 Base-Year \$	2931.8	7506.0	7325.5
Escalation	1519.2	2746.6	2558.5
Development (RDT&E)	(3.7)	(5.4)	(5.4)
Procurement	(1515.5)	(2741.2)	(2553.1)
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 \$	4451.0	10252.6	9884.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>3</u>	<u>8</u>	<u>8</u>
Total	3	8	8

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline <u>(JUL 2000 APB)</u>	Current Estimate <u>(Dec 2002 SAR)</u>	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1982 BY\$)	7506.0	7325.5	
(2) Quantity	8	8	
(3) Unit Cost	938.250	915.688	-2.40
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1982 BY\$)	7463.7	7283.2	
(2) Quantity	8	8	
(3) Unit Cost	932.962	910.400	-2.42

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	-1186.9	-	-1187.3
Quantity	-	+6952.9	-	+6952.9
Schedule	+4.5	-907.0	-	-902.5
Engineering	-	+40.5	-	+40.5
Estimating	-	+416.4	-	+416.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.1	+5315.9	-	+5320.0
Current Changes:				
Economic	-	-34.1	-	-34.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+54.3	-	+54.3
Estimating	-	+92.8	-	+92.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+113.0	-	+113.0
Total Changes	+4.1	+5428.9	-	+5433.0
Current Estimate	47.7	9836.3	-	9884.0

(U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.9	2891.9	-	2931.8
Previous Changes:				
Quantity	-	+4225.6	-	+4225.6
Schedule	+3.4	-92.7	-	-89.3
Engineering	-	+28.7	-	+28.7
Estimating	-1.0	+138.7	-	+137.7
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.4	+4303.1	-	+4305.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+33.1	-	+33.1
Estimating	-	+55.1	-	+55.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+88.2	-	+88.2
Total Changes	+2.4	+4391.3	-	+4393.7
Current Estimate	42.3	7283.2	-	7325.5

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-34.1
Increase to restore descope items for LHD 8 Construction Contract award (Engineering)	+33.1	+54.3
Adjustment for Current and Prior Inflation. (Estimating)	+10.8	+17.0
Revised economic assumptions (FY02-FY03) (Estimating)	-1.8	-2.8
Inflation adjustment on savings, restoration and other issues (FY03-FY06) (Estimating)	+4.1	+6.8
Transfer of funds from FY03 Advance Procurement to LHA(R)RDT&E (Estimating)	-6.2	-10.0
Adjustments for Business Process Reform and across the board reductions (FY04-FY06) (Estimating)	-1.5	-2.3
Increase to fund partial CAIG estimate (Estimating)	+38.6	+65.0
Actual outfitting and post delivery cost on completed portion of program (Estimating)	-0.4	-0.6
Revised outfitting and post delivery cost on completed portion of for LHD 8 (Estimating)	+0.8	+2.6
Increase based on revised shipbuilding estimate (Estimating)	+10.7	+17.1
Procurement Subtotal	+88.2	+113.0

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1483.67	-152.68	-58.18	-112.81	+11.85	+63.65	--	--	-248.17	1235.50

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	-152.62	-49.10	-113.38	+11.85	+63.65	--	--	-239.60	1229.54

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	OCT 1981	N/A	OCT 1981
Milestone II	N/A	JUL 1982	N/A	JUL 1982
Milestone III	N/A	AUG 1985	N/A	AUG 1985
IOC	N/A	MAY 1990	N/A	NOV 1990
Total Cost	N/A	4451.0	N/A	9884.0
Total Quantity	N/A	3	N/A	8
Prog Acq Unit Cost	N/A	1483.7	N/A	1235.5

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

a. Procurement --  
 (U) LHD 8 Design&Procurement:  
 Northrup Grumman Ship Sys, Pascagoula MS  
 N00024-00-C-2217, FPI  
 Award: April 19, 2002  
 Definitized: April 19, 2002

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1359.7	\$1512.9	1	\$1359.7	\$1359.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.6	\$-15.6
Cumulative Variances To Date (12/28/02)	<u>\$-5.7</u>	<u>\$-27.1</u>
Net Change	\$-6.3	\$-11.5

Explanation of Change:

(U) Cost Variance: The net unfavorable change in cost is primarily attributed to over budget General and Administrative (G&A) due to bid and proposal effort on DD(X) Program.

Schedule Variance: The net unfavorable change in schedule is primarily due to later than planned Progress Billings on material.

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

The PM's Estimated Price at Completion takes the variances into consideration.

(U) Contract Comments:

Increase in the current target price is due to award of the detail design and construction contract and contract modifications required to address specification deficiencies and obsolescence.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY81-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-09)	<u>Total</u>
RDT&E	47.7	-	-	-	47.7
Procurement	9093.1	355.0	236.3	151.9	9836.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	9140.8	355.0	236.3	151.9	9884.0

b. Annual Summary -- LHD

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 1982 Dollars Nonrec</u>	<u>Sailaway FY 1982 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

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LHD - 1, December 31, 2002

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

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1982 Dollars Nonrec	Sailaway FY 1982 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				41.3	45.0
1983				48.4	53.7
1984	1	150.0	1110.7	1159.2	1310.1
1985				34.0	39.2
1986	1		765.2	705.9	832.7
1987				29.7	35.8
1988	1		629.2	608.3	755.4
1989	1		602.5	578.7	740.4
1990				35.2	46.4
1991	1		907.5	872.0	1180.0
1992				20.5	28.4
1993				240.7	337.5
1994	1		843.0	643.6	924.1
1995				44.0	63.9
1996	1		949.5	864.6	1268.9
1997				8.5	12.6
1998				9.3	14.0
1999				41.3	63.0
2000				233.8	361.5
2001				303.9	476.6
2002	1		1303.4	167.1	265.9
2003				147.3	238.0
2004				216.2	355.0
2005				141.5	236.3
2006				51.7	87.9
2007				18.4	31.9
2008				9.7	17.1
2009				8.4	15.0
Subtotal	8	150.0	7111.0	7283.2	9836.3

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	8	150.0	7111.0	7325.5	9884.0

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	7	7

(U) Percent Total Program Quantities Delivered: 87.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7842

(U) Percent Total Program Expended: 79.3%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
O&S costs for LHD 1 Class Ships were developed from historical data (VAMOSC) for thirteen classes of Amphibious Ships and Conventional Aircraft Carriers (1984-2000). Antecedent Program is LHA 1 Class.

LHD 1 Class assumed to include LHD 1 through 8. Class O&S cost is a weighted average of the O&S cost for LHD 1-7 (\$56.6M) and for LHD 8 (\$52.8). The LHD 8 O&S estimate assumes reduced manning relative to LHD hulls 1-7 due to the replacement of the legacy steam propulsion plant with a gas turbine-based system. Assumed service life is stated as 40 years for ships of the LHD 1 Class. All costs are in FY82 constant dollars. (Cost estimate dated December 2002.)

LHA 1 Class total O&S costs are based on assumed decommissioning dates as projected in July 2001 by the LHA Life Cycle Manager, PMS470. Assumed decommissioning dates for ships of the LHA 1 Class will likely be driven by delivery to the Fleet of replacement Big Deck Amphibious Assault Ships (starting with LHD 8), based on the requirement to support twelve Amphibious Ready Groups (ARGs).

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	LHD Avg Annual Cost Per Ship	LHA 1 Avg Annual Cost Per Ship
Mission Pay & Allowances	25.3	22.1
Unit Level Consumption	9.4	8.7
Intermediate Maintenance	0.7	0.7
Depot Maintenance	14.7	16.9
Contractor Support	0.0	0.0
Sustaining Support	3.6	5.9
Indirect Costs	2.5	2.2
<b>Total</b>	<b>56.2</b>	<b>56.5</b>

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

Total O&S Cost	LHD	LHA 1
BY\$ (In Millions)	17966.6	11016.1
TY\$ (In Millions)	51007.0	18779.8

Report Creation Date: 03/11/2003 10:46:21 AM

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A-3 ATIRCM/CMWS

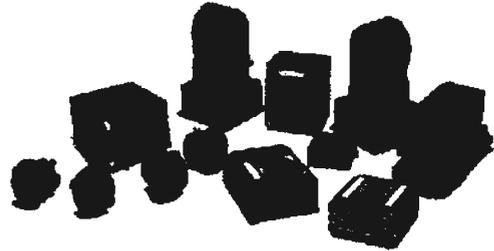
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: ATIRCM/CMWS

AS OF DATE: December 31, 2002

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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:  
Special Operations Command

3. (U) Responsible Office and Telephone Number:

PM Aviation Electronic Systems	Mr. Wesley F. McElveen
ATTN: SFAE-IEW&S-AES	Assigned: August 20, 2001
Redstone Arsenal, Bldg 5681	DSN 897-4419; COMM 256-313-4419
Huntsville, AL 35898-5000	wesley.mcelveen@peoavn.redstone.army.mil

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

RDT&E:

- (U) PE 0604270A
- (U) PE 0604270F
- (U) PE 0604270N

PROCUREMENT:

- (U) APPN 0300 ICN 1160444BB (DoD)
- (U) APPN 2031 ICN AA0722 (Army)
- (U) APPN 2031 ICN AA0980 (Army)
- (U) APPN 2031 ICN AZ3507 (Army)

**CLEARED AS AMENDED**  
FOR OPEN PUBLICATION

MAR 19 2003 10

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: [redacted] for ATIRCM/CMWS dated 29 Jun 98  
Downgrade instructions:  
Declassify on: X-3~~

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03.c 0428

5. (U) References:

SAR Baseline (Development Estimate):

(U) AAE Approved Acquisition Program Baseline dated March 29, 1996.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated April 2, 2001.

6. (U) Mission and Description:

(U) The ATIRCM/CMWS is a US 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 US Army operational requirements concept for IR countermeasure systems is known as the Suite of Integrated Infrared Countermeasures (SIIRCM). It is an integrated warning and countermeasure system to enhance aircraft survivability against IR guided threat missile systems. The core element of the SIIRCM concept is the Advanced Threat Infrared Countermeasure (ATIRCM), Common Missile Warning System (CMWS) Program. The ATIRCM/CMWS, a subsystem to a host aircraft, is an integrated ultraviolet (UV) missile warning system and an IR Lamp/Laser Jamming and Improved Countermeasure Dispenser (ICMD).

The Advanced Infrared Countermeasures Munitions (AIRCMM) is designed to provide more effective protection against IR-guided missile weapon systems than current decoys by better emulating the aircraft's IR signature. The AIRCMM solution consists of three expendable flares: the current M-206, the M-211, and the M-212, as well as interfaces with the ICMD.

The CMWS functions also as a stand-alone system with the capability to detect missiles and provide audible and visual warnings to the pilot(s), and, when installed with the ICMD, activates expendables to provide a degree of protection. ATIRCM/CMWS is the key infrared survivability system for Objective Force Army Aircraft.

7. (U) Executive Summary:

(U) The program is currently experiencing a schedule and procurement cost breach. Schedule has been realigned, including operational testing, to support Special Operations Forces (SOF) requirements. Organic and depot support has moved to FY 2019 due to revised program and stretch out of production quantities. This revision is subject to the completion of the Core Depot Assessment scheduled for November 2003.

A procurement cost breach has occurred due to the instability of requirements and program funding, including reduction of funding in the Extended Planning Period (EPP). Following FY03 President's Budget, Army's commitment for the program was not certain. Army withdrew procurement funding and it appeared that the ATIRCM/CMWS was a SOF unique system. Army has restored funding to the program in the FY 2004 budget.

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

The number of platforms on which the ATIRCM/CMWS will be installed is still the unit of measure for this program. The ATIRCM/CMWS platform A-kit requirement has increased from 1047 to 2679. The B-kit quantities required to support the 2679 are 631 ATIRCM and 631 CMWS. This increase along with funding instability has extended the program a number of years. These factors contribute to the current procurement cost breach.

Separate Milestone C LRIP decisions are now scheduled for the ATIRCM and the CMWS. The first LRIP (ATIRCM) decision is now scheduled for May 2003.

The Acquisition Program Baseline (APB) is being updated to reflect changes to the program as a result of schedule and cost changes brought on by changes in the FY 2004-2009 President's Budget. The final APB will be forwarded to the Department of the Army for staffing in anticipation of the ATIRCM LRIP decision.

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:

The PM's current estimate has been revised for start and completion of Operational Testing to realign with the new SOF requirements.

The PM's current estimate for Organic Support Available and Depot Level Maintenance Support Established have been moved from 2013 to 2019 due to revised program funding and parallel stretch out of production quantities. It has been determined that it is not cost effective for the Army to set up a depot until there is at least 300 fielded systems. This revision reduces the economical quantity to support, therefore, delaying the requirement for stand

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

up of a depot six years. This revision is subject to the completion of the Core Depot Assessment scheduled for November 2003.

The procurement cost breach to the approved April 2001 APB is due to an increase in requirements from 1,047 A-kits to 2,679 A-kits as well as the recent instability of program funding. The ATIRCM/CMWS platform A-kit requirement has increased from 1047 to 2679. The B-kit quantities required to support the 2679 are 631 ATIRCM and 631 CMWS. The reduction of funding in the FY 2004 President's Budget EPP has extended the program a number of years, therefore adding additional fixed costs.

Schedule and cost breach will be addressed in a revised APB. A Program Deviation Report is in process and a revised APB addressing the changes to the program will be submitted third quarter FY 2003.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	SEP 1991	SEP 1991	SEP 1991
DEMVAL Contract Award			
Technical Test			
Start	JUL 1994	JUL 1994	JAN 1994
Complete	DEC 1995	DEC 1995	JUN 1994
Milestone I/II	JUN 1995	JUN 1995	JUN 1995
EMD Contract Award	SEP 1995	SEP 1995	SEP 1995
Preliminary Design Review Complete	JUN 1996	JUN 1996	JUN 1996
Critical Design Review Complete	SEP 1996	SEP 1996	FEB 1997
First Prototype Delivery	JUL 1997	JUN 1998	APR 1998
Developmental Testing			
Start	MAY 1998	NOV 2000	NOV 2000
Complete	FEB 1999	JAN 2002	JAN 2002
Operational Testing			
Start	JAN 1999	MAR 2002	JAN 2004 (Ch-1)
Complete	JAN 2000	MAY 2002	AUG 2004 (Ch-1)
LRIP Decision	N/A	JAN 2002	FEB 2002
Lot I LRIP Contract Award	N/A	JAN 2002	MAR 2002
Milestone III	FEB 2000	FEB 2003	MAY 2003 (Ch-1)
Lot II Production Contract Award	APR 2000	MAR 2003	FEB 2004
First Production Delivery	APR 2001	JUL 2003	DEC 2002
First Unit Equipped without Obstacle Avoidance System	NOV 2001	AUG 2003	JAN 2003
Initial Operational Capability	(b)(1)		
Organic Support Available	FEB 2005	SEP 2006	SEP 2019 (Ch-1)
Depot Level Maintenance Support Established	FEB 2005	SEP 2006	SEP 2019 (Ch-1)

(U) Acronyms:

DEMVAL - Demonstration and Validation  
EMD - Engineering, Manufacturing and Development

**AS AMENDED**

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

LRIP - Low Rate Initial Production  
MS - Milestone

Notes:

1. LRIP Decision approved for a quantity of 37. Lot I LRIP contract awarded for CMWS (SOA) Limited Production Urgent requirement for a quantity of 32 CMWS.
2. MS III - now LRIP MS C for ATIRCM, scheduled for May 2003.
3. Lot II Production contract award is now in support of the CMWS.
4. Additional milestones to be added upon approval of revised APB are:
  - \* CMWS LRIP MS C - Jan 2004
  - \* CMWS Full Rate Production - Jan 2005
  - \* ATIRCM Full Rate Production - Mar 2005

All changes will be reflected in the revised APB, scheduled to be submitted to Department of the Army third quarter FY 2003.

b. Current Change Explanations --

(U) Schedule milestones have changed due to the following:

(Ch-1) The PM's current estimate has been revised for start and completion of Operational Testing to realign with the new SOF requirements. Due to the revised program, Milestone III is for ATIRCM only and depot stand up has moved to FY 2019. The PM's current estimate for Organic Support Available and Depot Level Maintenance Support Established has been adjusted accordingly.

MILESTONE:	FROM:	TO:
Operational Testing		
Start	OCT 2003	JAN 2004
Completion	DEC 2003	AUG 2004
Milestone III	JAN 2004	MAY 2003
Organic Support Available	SEP 2013	SEP 2019
Depot Level Maintenance	SEP 2013	SEP 2019
Support Established		

10. ~~(U)~~ Performance Characteristics:  
 a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate	
<del>(S)</del> SIIRCM Minimum Probability (in the aggregate for each type aircraft) of the host aircraft successfully countering the tier one missiles (Mistral desired) as listed in the CMWS attachment to the SIIRCM ORD (percent)	(b)(1)				(Ch-1)
<del>(S)</del> ATIRCM/CMWS False Alarm Rate (per flight hour)					
ATIRCM/CMWS Jamming Capability System Weight (lb)	125	139.4 / 139.4	145.3	145.3	(Ch-1)
CMWS Missile Warning Sensor Weight (lbs)	3.5	2.7 / 2.7	2.78	2.78	(Ch-1)
CMWS Processor Weight (lbs)	22	16.24 / 16.24	16	16	(Ch-1)
CMWS Missile Warning Sensor Size (Length and diameter) (in)	4.25/ 4.75	4.25x5.2/ 5 / 5	4.25x5.2 4.25x5.3	4.25/ 5.3	(Ch-1)
CMWS Processor Size (in)	11x9.8x 5.5	9.8x11x5/ 5 / 5	9.8x11x5 9.1x10.7	9.1x10.7 9.1x10.7	(Ch-1)
<del>(S)</del> CMWS False Alarm Rate (per flight hour)	(b)(1)				
<del>(S)</del> CMWS Number of Simultaneous Missiles Declared and Number in Same Quadrant	(b)(1)				
<del>(S)</del> CMWS Percent Declaration of Aggregate Valid Tier One Missiles within 3 seconds or 1/2 Time of Flight Time to Intercept	(b)(1)				(Ch-2)
CMWS Mission Reliability	99.0	99.0 / 97.5	TBD	99.0	

**AS AMENDED**

**AS AMENDED**

10b. ~~(S)~~ Performance Characteristics (Cont'd):

b. Current Change Explanations --

~~(S)~~ Performance characteristics have changed due to the following:

(Ch-1) The PM's performance characteristics have been updated to reflect the actual performance characteristics demonstrated during DT/OT.

CHARACTERISTICS:

	FROM	TO
<del>(S)</del> SIIRCM Minimum probability in the aggregate for each type aircraft) of the host aircraft successfully countering the tier one missiles Mistral desired) as listed in the CMWS attachment to the SIIRCM ORD (percent)	(b)(1)	(b)(1)
ATIRCM/CMWS Jamming Capability System Weight (lb)	139.4	145.3
CMWS Missile Warning Sensor Weight (lbs)	2.7	2.78
CMWS Processor Weight (lbs)	16.24	16
CMWS Missile Warning Sensor Size (Length and diameter) (in)	4.25/5.25	4.25/5.3
CMWS Processor Size (in)	9.8x11x5.5	9.1x10.7x5.5

**AS AMENDED**

(Ch-2) ~~(S)~~ The following performance characteristic is a unique requirement to the Air Force and no longer required for this program.

CHARACTERISTICS:

~~(S)~~ CMWS Percent Declaration of Aggregate Valid Tier One Missiles within 3 seconds or 1/2 Time of Flight Time to Intercept

FROM	TO
(b)(1)	(b)(1)

**AS AMENDED**

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	516.0	546.5
Procurement	2112.0	1872.7	2448.4
Recurring Flyaway	(1772.2)		(1907.0)
Nonrecurring Flyaway	(142.6)		(168.2)
Total Flyaway	(1914.8)		(2075.2)
Other Wpn System Costs	(131.0)		(292.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.2)		(81.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	<u>2628.4</u>	<u>2388.7</u>	<u>2994.9</u>
Escalation	733.2	715.2	908.6
Development (RDT&E)	(43.4)	(18.5)	(26.3)
Procurement	(689.8)	(696.7)	(882.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3361.6</u>	<u>3103.9</u>	<u>3903.5</u>
b. (U) Quantity --			
Development (RDT&E)	25	25	25
Procurement	<u>3069</u>	<u>1047</u>	<u>2679</u>
Total	3094	1072	2704

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 platforms upon which the ATIRCM/CMWS units will be installed.

LRIP quantity of 37 approved Feb 2002. LRIP contract awarded Mar 2002 and Sep 2002 respectively for a total quantity of 32. This is less than ten percent of the total procurement buy.

c. (U) Foreign Military Sales --  
None.

d. (U) Nuclear Costs --  
None.

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ATIRCM/CMWS, December 31, 2002

12. (U) Unit Cost Summary:

	UCR Baseline (APR 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	2388.7	2994.9	
(2) Quantity	1072	2704	
(3) Unit Cost	2.228	1.108	-50.27
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	1872.7	2448.4	
(2) Quantity	1047	2679	
(3) Unit Cost	1.789	0.914	-48.91

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	+1.1	-146.7	-	-145.6
Quantity	-	-1362.9	-	-1362.9
Schedule	-	-164.0	-	-164.0
Engineering	+113.0	-	-	+113.0
Estimating	-164.9	+1210.4	-	+1045.5
Other	-	-	-	-
Support	-	+3.8	-	+3.8
Subtotal	-50.8	-459.4	-	-510.2
Current Changes:				
Economic	-0.9	+214.1	-	+213.2
Quantity	-	+386.8	-	+386.8
Schedule	-	-24.6	-	-24.6
Engineering	+63.8	-	-	+63.8
Estimating	+0.9	+126.7	-	+127.6
Other	-	-	-	-
Support	-	+285.3	-	+285.3
Subtotal	+63.8	+988.3	-	+1052.1
Total Changes	+13.0	+528.9	-	+541.9
Current Estimate	572.8	3330.7	-	3903.5

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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	516.4	2112.0	-	2628.4
Previous Changes:				
Quantity	-	-987.0	-	-987.0
Schedule	-	-246.4	-	-246.4
Engineering	+109.2	-	-	+109.2
Estimating	-134.6	+924.7	-	+790.1
Other	-	-	-	-
Support	-	-22.7	-	-22.7
Subtotal	-25.4	-331.4	-	-356.8
Current Changes:				
Quantity	-	+352.1	-	+352.1
Schedule	-	-	-	-
Engineering	+54.6	-	-	+54.6
Estimating	+0.9	+117.0	-	+117.9
Other	-	-	-	-
Support	-	+198.7	-	+198.7
Subtotal	+55.5	+667.8	-	+723.3
Total Changes	+30.1	+336.4	-	+366.5
Current Estimate	546.5	2448.4	-	2994.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+0.9
Restoration of funding for Tier 2/3 threats, miniaturization, all band laser capabilities, and incorporation of multi-band fiber optic. (Engineering)	+54.6	+63.8
RDT&E Subtotal	+55.5	+63.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-64.8
Economic adjustment for negative program change. (Economic)	N/A	+278.9
Quantity increase from 1047 to 2679 units. (Quantity)	+352.1	+386.8
Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+33.9	+35.9
Acceleration of annual procurement buy profile. Production starts a year earlier (FY02). (Schedule)	0.0	-24.6

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+1.7
Increased estimate for non recurring costs to support Tier 2/3 threat. (Estimating)	+30.7	+35.3
Increased estimate for ATIRCM hardware cost based on revised Program Office Estimate (POE), which increases first unit cost. (Estimating)	+50.9	+53.8
Adjustment for Current and Prior Inflation. (Support)	-0.5	-0.6
Addition of storage containers. (Support)	+26.5	+34.7
Change in Initial Spares due to stretch out of program from FY 2018 to FY 2024. (Support)	-0.1	+8.3
Addition of 90 trainers. (Support)	+120.4	+168.1
Additional 11 years of Contractor logistic support (CLS) for a total 18 years. (Support)	+52.4	+74.8
Procurement Subtotal	+667.8	+988.3

QR = Quantity 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	
1.09	+0.025	-0.204	-0.070	+0.065	+0.434	--	+0.107	+0.357	1.44

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	
0.913	+0.025	-0.232	-0.070	--	+0.499	--	+0.108	+0.330	1.24

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

c. ~~(S)~~ 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 1995	N/A	JUN 1995
Milestone II	N/A	JUN 1995	N/A	JUN 1995
Milestone III	N/A	FEB 2000	N/A	MAY 2002
IOC	(b)(1)			
Total Cost				
Total Quantity	0	3094	0	2704
Prog Acq Unit Cost	0.0	1.1	0.0	1.4

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

(U) Contract DAAB07-95-C-D606 complete Feb 02 and variances no longer reported.

a. Procurement --  
 (U) CMWS - SOA:  
 BAE Systems, Nashua, NH  
 DAAB07-02-C-B213, FFP  
 Award: March 1, 2002  
 Definitized: September 10, 2002

Target	Initial Contract Price	
	Ceiling	Qty
\$0.0	\$25.4	26

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$24.3	\$24.3	32	\$24.3	\$24.3

Explanation of Change:

None.

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

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ATIRCM/CMWS, December 31, 2002

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 (FY90-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-24)</u>	<u>Total</u>
RDT&E	507.8	7.2	7.2	50.6	572.8
Procurement	85.7	75.7	86.7	3082.6	3330.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	593.5	82.9	93.9	3133.2	3903.5

b. Annual Summary -- ATIRCM/CMWS

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

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				8.8	8.9
1997				16.0	16.4
1998				11.6	12.0
1999				1.5	1.6
Subtotal	9			37.9	38.9

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

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				0.7	0.6
1991				3.1	2.8
1992				15.6	14.6
1993				8.3	8.0
1994				7.7	7.5
1995				7.7	7.7
1996				15.6	15.8
1997				20.2	20.7
1998				31.5	32.6
1999				37.3	39.0
2000				44.6	47.3
2001				35.6	38.2
2002				36.3	39.3
2003					
2004				6.5	7.2
2005				6.4	7.2
2006				9.4	10.8

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ATIRCM/CMWS, December 31, 2002

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

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

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				12.4	14.5
2008				12.2	14.5
2009				8.9	10.8
Subtotal	7			320.0	339.1

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				21.5	21.4
1996				35.7	36.2
1997				33.9	34.8
1998				22.6	23.4
1999				29.1	30.4
2000				45.8	48.6
Subtotal	9			188.6	194.8

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002		33.8		33.8	36.8
2003	6		19.5	21.6	23.8
Subtotal	6	33.8	19.5	55.4	60.6

(U) Funding line in support of SOF.

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997		8.8		8.8	9.1
1998		7.0		7.0	7.3
1999					
2000		4.8		4.8	5.1
2001					
2002		3.3		3.3	3.6

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ATIRCM/CMWS, December 31, 2002

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

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003					
2004	8	28.8	35.4	67.5	75.7
2005	45	4.8	60.2	76.0	86.7
2006	55	1.8	67.3	84.4	97.9
2007	58	1.0	67.0	86.1	101.6
2008	89	2.6	77.3	113.7	136.7
2009	108	9.9	82.4	106.2	129.9
2010	124	1.6	82.2	101.1	125.9
2011	129	1.6	85.4	101.5	128.7
2012	134	1.5	87.1	101.9	131.5
2013	133	1.5	86.2	102.3	134.4
2014	134	1.5	85.8	102.7	137.4
2015	134	1.6	85.4	103.1	140.4
2016	134	1.5	86.1	103.5	143.5
2017	134	1.6	86.3	103.9	146.6
2018	138	1.5	85.5	104.3	149.8
2019	247	9.9	155.6	204.8	299.5
2020	247	9.9	153.9	189.3	281.9
2021	225	10.0	146.8	182.0	275.8
2022	205	9.9	139.3	173.2	267.2
2023	192	1.7	132.3	155.3	243.9
2024		6.3		6.3	10.0
Subtotal	2673	134.4	1887.5	2393.0	3270.1

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	9			37.9	38.9
Army	2680	134.4	1887.5	2713.0	3609.2
USAF	9			188.6	194.8
OSD	6	33.8	19.5	55.4	60.6
Grand Total	2704	168.2	1907.0	2994.9	3903.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	25	25
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.9%

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

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 537.3

(U) Percent Total Program Expended: 13.8%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
Average of twenty-year operational life (FY2004-2038) of 1047 baseline quantity. Baseline quantity assumes system composite configuration for the sum of the airframes. Based on a total ATIRCM system Mean Time Between Mission Affecting Failure (MTBMAF) of 300 hours. No airframe (group-A) operations and support costs are associated with the system (group-B).

Unit Level Consumption includes replenishment spares and repair parts. Contractor Support is maintenance of the Software Support Activity (SSA). Sustaining Supports includes system engineering and program management throughout the life of the program.

There is no antecedent system for ATIRCM/CMWS.

Source of estimate is the Army Cost Position, approved April 2001.

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

Cost Element	ATIRCM/CMWS Average Annual Cost Per Aircraft System	Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.1	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.0	N/A
Indirect Costs	N/A	N/A
Total	0.2	0.0

Total O&S Cost	ATIRCM/CMWS	Antecedent System
BY\$ (In Millions)	197.7	N/A
TY\$ (In Millions)	365.2	N/A

Report Creation Date: 03/11/2003 9:24:14 AM

AF-8 C-130J

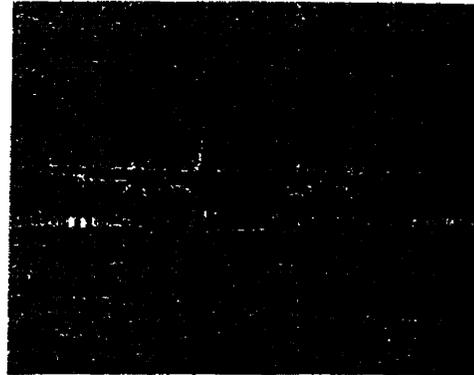
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: C-130J Hercules

AS OF DATE: December 31, 2002

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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	Col Gregory M. Postulka
Robins AFB, GA 31098-1647	Assigned: July 15, 2001
	DSN 468-2322; COMM 912-926-2322
	gregory.postulka@robins.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
 PE 0401132F Project 5061  
 PE 0603852F Project 4025

PROCUREMENT:  
 APPN 3010 ICN C-130J (Air Force)  
 APPN 3010 ICN C130J (Air Force)

MILCON:  
 PE 0401132F

O&M:  
 PE 0401132F

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C-130J Hercules, December 31, 2002

5. References:

SAR Baseline (Production Estimate):

AFAE Approved Acquisition Program Baseline dated October 25, 1996.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated July 27, 2001.

6. Mission and Description:

The C-130J is a medium-range, tactical airlift aircraft designed primarily for transport of cargo and personnel within a theater of operations. Variants of the C-130J perform other missions including rescue and recovery, air refueling, special operations, and weather reconnaissance.

The C-130J can carry more than 40,000 pounds of cargo (pallets or a varied number of wheeled vehicles) or be configured to carry up to 84 paratroopers. The enhanced cargo handling system reduces crew workload and can be quickly adapted to accommodate any combination of passenger, cargo, or aero-medical airlift mission. Two primary methods of aerial delivery are used for equipment delivery: parachutes pulling the load from the aircraft; and the Container Delivery System that uses the force of gravity to pull supplies from the aircraft. The C-130J can also operate out of austere landing zones with as little as 3,000 feet of dirt runway.

7. Executive Summary:

On December 31, 2001, the Under Secretary of Defense (Comptroller) approved PB FY03 titled: C-130J Multiyear Procurement. PB FY03 calls for the Air Force to procure 40 aircraft from FY03 to FY08. USAF C-130J logistics support and necessary training systems will be fully funded through FY04-09. As a result of the aircraft procurement cost savings generated by the multiyear procurement.

The Multiyear Procurement (MYP) team continues to work collaboratively to meet OSD and Congressional requirements for budgeting and savings to award a MYP contract to Lockheed-Martin. Completing negotiation of the contract rests on resolution of a Navy funding constraint; the team is aggressively working the issue and anticipates resolution and award of contract in March 2003.

The tenth (10) and last WC-130J was delivered in November 2002. All Block Upgrade (BU)5.3 software modifications have been completed.

The AN/APN 241 Low Power Color Radar installed on all variants of the C-130J (and the C-130H) was designed to provide precision

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C-130J Hercules, December 31, 2002

7. Executive Summary (Cont'd):

ground mapping and avoidance of severe weather formations. Testing of this radar on the WC-130J revealed significant shortfalls in the capability of the radar to enable effective penetration of hurricane weather in support of the WC-130J's weather reconnaissance mission. In 2002, the C-130 System Program Office, in conjunction with Lockheed Martin, Northrop Grumman (APN-241 manufacturer) and users from the 53rd Weather Reconnaissance Squadron completed an exhaustive technical study of the capabilities and limitations of the radar to support the weather mission. As a result, a spiral development program was initiated to enhance radar capability. A requirements definition phase was contracted for in November 2002. The first spiral will install radar software enhancements designed to improve the aircrew's ability to navigate through hurricanes. This spiral is to be tested during the CY03 storm season. The second spiral will install a more powerful radar transmitter that will further enhance the WC-130J's ability to penetrate severe weather and, if initiated in FY03, could be available for testing in the CY04 storm season. At present neither spiral is funded; total costs are estimated to be up to \$50M. If FY03 funding is not identified very soon, the software and transmitter will not be available for CY03 and CY04 storm season testing.

Corrective measures for the propeller de-icing boot erosion deficiency were installed on two WC-130Js at Keesler AFB in November 2002 and will be functionally demonstrated during the CY03 storm season. Preliminary flight testing has had positive results.

Nine (9) KC-130Js have been accepted. Navy approval for the Marine Corps to participate in the proposed C-130J Multiyear contract was received on April 4, 2002.

The Commander, USAF Air Mobility Command (AMC) has been personally involved in the resolution of C-130J deficiencies and upgrades developments. He evaluates progress at least monthly via an "AMC Top 10 Issues" presentation and a "Top 10 Deficiency Review."

In December 2002, the C-130 System Program Director formally established the C-130J System Support Manager (SSM) position, responsible for sustainment of C-130Js. The SSM assumed responsibility for refining the annual Interim Contractor Support actions, and planning and executing a Long-Term Sustainment contract with Lockheed (projected to start in January 2006).

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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
Program Initiation	JUN 1996	JUN 1996	JUN 1996
FY96 Basic Aircraft Contract	NOV 1996	NOV 1996	NOV 1996
First Delivery	OCT 1997	MAR 1999	MAR 1999

b. Current Change Explanations --

No changes in current scheduled milestones from previous SAR.

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Cockpit Crew (All Missions)	2	2 / 2	TBD	2
Maximum Payload (lbs)	39311	39311 / 38910	TBD	38910
Normal Maximum Take-off Gross Weight (lbs)	155000	155000 / 155000	155000	155000
Design Landing Gross Weight (lbs)	130000	130000 / 130000	130000	130000

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C-130J Hercules, December 31, 2002

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Take-off Distance at Max Take-off Weight over 50 ft Obstacle (ft)	4530	4530 / 5142	4660	5142
Landing Distance at Design Landing Weight Over 50 ft Obstacle (ft)	2500	2500 / 2550	2483	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	1295	1800
IMC Airdrop Accuracy - Total System Error (ft)	158	158 / 158	TBD	158
Cruising Speed at 100,000 lbs @25,000 ft (KTAS)	342	342 / 315	361	315
Max Range with 42,764 lbs fuel & 29,722 lbs Payload (NM)	3070	3070 / 2350	3139	2350
Environmental Factors - Operational Ambient Temperature (deg F)	-40 - +120	-40 - / +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

Notes:

1. IMC is Instrument Meteorological Conditions.
2. Demonstrated performances are based on the Performance Compliance

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C-130J Hercules, December 31, 2002

10a. Performance Characteristics (Cont'd):

Report (LG98ER0362 Rev 1, May 99).

b. Current Change Explanations --

No current performance characteristics reported as changed from previous SAR.

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

	Production <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	8.9	9.1	204.8
Procurement	721.8	12612.2	13218.5
Fly Away	(540.1)		(10417.2)
OTHER COSTS	(122.2)		(1448.2)
Aircraft Modification			(441.1)
Total Other Wpn Sys	(122.2)		(1889.3)
Peculiar Support	(9.4)		(65.6)
Initial Spares	(50.1)		(846.4)
Construction (MILCON)	0.0	0.0	153.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>45.0</u>
Total FY 1996 Base-Year \$	730.7	12621.3	13621.3
Escalation	109.0	3423.3	2880.0
Development (RDT&E)	(0.3)	(0.1)	(33.1)
Procurement	(108.7)	(3423.2)	(2810.8)
Construction (MILCON)	(0.0)	(0.0)	(29.4)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(6.7)</u>
Total Then Year \$	839.7	16044.6	16501.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>11</u>	<u>168</u>	<u>168</u>
Total	11	168	168

There was no low rate initial production for the C-130J.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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C-130J Hercules, December 31, 2002

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	13443.9	13621.3	
(2) Quantity	168	168	
(3) Unit Cost	80.023	81.079	+1.32
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	13041.0	13218.5	
(2) Quantity	168	168	
(3) Unit Cost	77.625	78.682	+1.36

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	9.2	830.5	-	-	839.7
Previous Changes:					
Economic	-0.5	-0.4	-	-	-0.9
Quantity	-	+13411.0	-	-	+13411.0
Schedule	-	-372.7	-	-	-372.7
Engineering	+0.4	-	-	-	+0.4
Estimating	+0.1	-896.1	-	-	-896.0
Other	-	-	-	-	-
Support	-	+2689.7	-	-	+2689.7
Subtotal	0.0	+14831.5	-	-	+14831.5
Current Changes:					
Economic	+0.3	-383.4	-	-	-383.1
Quantity	-	-	-	-	-
Schedule	-	-4.6	-	-	-4.6
Engineering	-	-	-	-	-
Estimating	+228.4	+250.8	+182.4	+51.7	+713.3
Other	-	-	-	-	-
Support	-	+504.5	-	-	+504.5
Subtotal	+228.7	+367.3	+182.4	+51.7	+830.1
Total Changes	+228.7	+15198.8	+182.4	+51.7	+15661.6
Current Estimate	237.9	16029.3	182.4	51.7	16501.3

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

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	8.9	721.8	-	-	730.7
Previous Changes:					
Quantity	-	+10530.5	-	-	+10530.5
Schedule	-	-239.7	-	-	-239.7
Engineering	+0.4	-	-	-	+0.4
Estimating	+0.1	-637.4	-	-	-637.3
Other	-	-	-	-	-
Support	-	+2237.0	-	-	+2237.0
Subtotal	+0.5	+11890.4	-	-	+11890.9
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+195.4	+223.7	+153.0	+45.0	+617.1
Other	-	-	-	-	-
Support	-	+382.6	-	-	+382.6
Subtotal	+195.4	+606.3	+153.0	+45.0	+999.7
Total Changes	+195.9	+12496.7	+153.0	+45.0	+12890.6
Current Estimate	204.8	13218.5	153.0	45.0	13621.3

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+0.3
Adjustment for current and prior inflation. (Estimating)	-0.3	-0.3
Adjustment for current and prior inflation. (Estimating)	-2.2	+1.0
Additional funds required for Global Air Traffic Management (GATM) (Estimating)	+197.9	+227.7
RDT&E Subtotal	+195.4	+228.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-384.0
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Acceleration of annual procurement buy profile. (Schedule)	0.0	-4.6
Adjustment for current and prior inflation. (Estimating)	+5.2	+5.6
Inflation adjustment (Estimating)	-2.1	-2.4
Refinement of cost assumptions and techniques for the multiyear procurement funding. (Estimating)	+220.6	+247.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for current and prior inflation. (Support)	+7.8	+8.5
Increase in initial spares to support multiyear procurement. (Support)	+298.1	+350.2
Refinement of peculiar support requirements. (Support)	+5.6	+6.2
Decrease in other weapon system support cost in training, training devices and logistics support. (Support)	-370.0	-411.3
Aircraft modification funding added for block upgrades. (Support)	+441.1	+550.9
Procurement Subtotal	+606.3	+367.3
(3) <u>MILCON</u>		
Added Military Construction funding for facilities requirement. (Estimating)	+153.0	+182.4
MILCON Subtotal	+153.0	+182.4
(4) <u>O&amp;M</u>		
Added Operation and Maintenance funding for training systems requirement. (Estimating)	+45.0	+51.7
O&M Subtotal	+45.0	+51.7

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	-2.29	+8.50	-2.25	+0.002	-1.09	--	+19.01	+21.89	98.22

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C-130J Hercules, December 31, 2002

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	
75.50	-2.28	+9.27	-2.25	--	-3.84	--	+19.01	+19.91	95.41

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	JUN 1996	JUN 1996
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	N/A	839.7	16382.9
Total Quantity	N/A	N/A	11	168
Prog Acq Unit Cost	N/A	N/A	76.3	97.5

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

a. RDT&E --

C-130J Production: Lockheed Martin, Marietta, GA F33657-00-C-0018, FFP Award: N/A Definitized: N/A	Initial Contract Price		
	Target	Ceiling	Qty
	\$734.5	N/A	12

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1365.0	N/A	19	\$1365.0	\$1365.0

Explanation of Change:

None.

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

Contract Comments:

As of Dec 31, 2002, \$1,364.6M has been obligated on the contract from \$805.4 as reflected in the Dec 31, 2001 SAR.

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C-130J Hercules, December 31, 2002

15b. Contract Information (Cont'd):

b. Procurement --  
C-130J - Production:  
Lockheed Martin, Marietta, GA  
F33657-95-C-2055, FFP  
Award: November 6, 1996  
Definitized: November 6, 1996

		Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$115.0	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>
\$2029.9	N/A	35	\$2029.9	\$2029.9

Explanation of Change:

None.

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

Contract Comments:

Contract F33657-95-C-2055 is over 90% complete and will not be reporting in future SARs.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-19)	<u>Total</u>
RDT&E	20.1	13.8	37.8	166.2	237.9
Procurement	3102.2	456.8	982.5	11487.8	16029.3
MILCON	36.0	25.2	5.0	116.2	182.4
O&M	8.7	6.7	8.1	28.2	51.7
Total	3167.0	502.5	1033.4	11798.4	16501.3

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C-130J Hercules, December 31, 2002

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

b. Annual Summary -- C-130J

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				5.1	5.1
1996				0.4	0.4
1997				1.0	1.0
1998				3.6	3.7
1999					
2000					
2001					
2002					
2003				9.0	9.9
2004				12.4	13.8
2005				33.5	37.8
2006				11.8	13.6
2007				48.4	56.6
2008				23.0	27.4
2009				56.6	68.6
Subtotal				204.8	237.9

Additional RDT&E funds required for Global Air  
Traffic Management (GATM).

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994	2		66.7	66.7	66.8
1995					
1996	5		214.5	245.9	253.3
1997	9		418.1	481.0	500.7
1998	7		330.5	429.3	449.5
1999	5		262.0	487.2	515.5
2000	1		53.8	139.2	149.5
2001	3		175.9	295.5	320.0
2002	5		371.2	504.1	551.0
2003	1		101.7	267.1	295.9
2004	4		271.4	406.0	456.8
2005	11		676.3	859.6	982.5
2006	9		501.8	712.1	828.2
2007	9		493.5	695.6	822.9

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C-130J Hercules, December 31, 2002

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

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008	9		547.2	739.5	891.1
2009	12		804.4	1013.3	1242.3
2010	12		792.7	926.9	1156.8
2011	12		784.5	928.3	1179.9
2012	12		785.3	922.8	1194.1
2013	12		785.7	934.5	1230.8
2014	12		786.6	915.1	1227.2
2015	12		817.5	876.4	1196.3
2016	4		375.9	353.1	490.4
2017				6.4	9.1
2018				6.5	9.3
2019				6.4	9.4
Subtotal	168		10417.2	13218.5	16029.3

Recurring flyaway in FY03 includes: procurement of one (1) EC-130J. Also, included is Advance Procurement (AP) and Economic Order Quantity (EOQ) for the multiyear procurement.

Aircraft modification funding has been included within the aircraft procurement total program funding.

Fiscal years 2017-2019 requirements are within the other weapon system support cost category.

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				9.6	10.5
2003				23.0	25.5
2004				22.3	25.2
2005				4.4	5.0
2006				25.3	29.5
2007				17.4	20.7
2009				1.6	2.0
2011				3.1	4.0
2012				46.3	60.0
Subtotal				153.0	182.4

Military Construction funding is an added requirements as reflected in FY04

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C-130J Hercules, December 31, 2002

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

PB.

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002					
2003				7.9	8.7
2004				6.0	6.7
2005				7.2	8.1
2006				4.9	5.6
2007				6.3	7.4
2008				6.3	7.5
2009				6.4	7.7
Subtotal				45.0	51.7

The Operation & Maintenance funding in this SAR is only for ASC/YW,  
Training Systems Product Group for Contractor Logistics Support (CLS).

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	168		10417.2	13621.3	16501.3

17. Delivery/Expenditure Information:

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 0.0

Percent Total Program Expended: 0.0%

RDT&E deliveries to date are N/A

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C-130J Hercules, December 31, 2002

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The information for Operating and Support (O&S) costs through FY 2046 is based on the May 2000 program office developed estimates for the C-130J life cycle costs:

- Estimates are based on commercial buy prices, as applicable.
- O&S costs are based on sustainment of 168 C-130J aircraft through FY 2046.
- Two-level maintenance is planned.
- Interim Contractor Support (ICS) will be required for the first ten years after contract award.
- The depot will be fully activated by the end of the ICS period.

The O&M funding in the SAR reflects the FY04 PB and is only for ASC/YW, Training Systems Product Group for Contractor Logistics Support (CLS) and not part of the O&S estimate stated in this section.

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

Cost Element	C-130J O&S Cost/Squadron per Year	C-130E, C-130H O&S Cost/Squadron per Year
Mission Pay & Allowances	114.9	N/A
Unit Level Consumption	113.4	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	24.5	N/A
Contractor Support	0.0	N/A
Sustaining Support	20.1	N/A
Indirect Costs	51.2	N/A
	N/A	N/A
<b>Total</b>	<b>324.1</b>	<b>N/A</b>

Total O&S Cost	C-130J	C-130E, C-130H
BY\$ (In Millions)	15873.8	N/A
TY\$ (In Millions)	35958.0	N/A

Report Creation Date: 03/20/2003 4:39:32 PM

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

PROGRAM: CVN 21 Class

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Future Aircraft Carrier (CVNX)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

Program Executive Office	CAPT. Dudley Berthold
Aircraft Carriers	Assigned: January 26, 2001
614 Sicard Street SE Stop 7007	DSN 326-0443; COMM (202) 781-0443
Washington, DC 20376-7007	BertholdDB@navsea.navy.mil

4. Program Elements/Procurement Line Items:

RDT&E:							<b>CLEARED</b>
PE 0603512N	Project 29181,	42208,	42693,	44004,	44006		<b>FOR OPEN PUBLICATION</b>
PE 0603570N	Project S2692						
PE 0604567N	Project 42301,	44007,	44008				

5. References:

CVN 21 (formerly CVNX1)

**DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE**

SAR Baseline (Planning Estimate):

DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

MAR 24 2003 6

**No Security Objection  
to Open Publication  
(AS AMENDED)**  
*03-C-0117*  
**MAR 24 2003**  
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 Office of the Chief of  
 Naval Operations  
 Dept. of the Navy

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**5. References (Cont'd):**

Follow-on Ship (CVNX2)

SAR Baseline (Planning Estimate):

DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

**6. Mission and Description:**

Program Decision Memorandum (PDM) dated December 12, 2002, redesignated the CVNX program as CVN 21, and restructured the program, pulling forward technologies originally planned for CVNX 2 and incorporating additional technologies.

The Future Aircraft Carrier (CVN 21) is the planned successor to the NIMITZ-class (CVN 68) aircraft carrier. The Joint Requirements Oversight Council approved Mission Need Statement for the 21st Century Tactical Aviation Sea-Based The Future Carrier Program's CVN 21 evolutionary approach is being replaced by the CVN 21 spiral development and modified repeat approach.

The CVN 21 mission is to provide credible, sustainable, independent forward presence during peacetime without access to land bases; operate as the cornerstone of a joint and/or allied maritime expeditionary force in response to crises; and carry the war to the enemy through joint multi-mission offensive operations by: (a) being able to operate and support aircraft in attacks on enemy forces ashore, afloat, or submerged independent of forward-based land facilities, (b) protecting friendly forces from enemy attack through the establishment and maintenance of battle space dominance independent of forward-based land facilities, and (c) engaging in sustained operations in support of the United States and its allies independent of forward-based land facilities.

The CVN 21 missions are derived from Joint Publication 0-2, Unified Action Armed Forces and from Department of Defense Directive 5100.1. Under Department of Defense Directive 5100.1, the primary function of the Navy and Marine Corps is to organize, train, equip and provide forces for "prompt and sustained combat incident to operations at sea, including operations of sea-based aircraft." This includes requirements to "seek out and destroy enemy naval forces and to suppress enemy sea commerce, to gain and maintain general naval supremacy, to control vital sea areas and to protect vital sea lines of commerce, to establish and maintain local superiority (including air) in an area of naval operations, to support seizure and defense of advanced naval bases, and to conduct such land, air, and space operations as may be essential to the prosecution of a naval campaign." The CVN 21 program meets the defense guidance to accomplish dominant maneuver through crisis stabilization, rapid joint force projection, battle space control, and decisive combat operations.

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CVN 21 Class, December 31, 2002

## 7. Executive Summary:

As a result of the Program Decision Memorandum (PDM) dated December 12, 2002, the CVNX program was redesignated CVN 21, and restructured, pulling forward technologies originally planned for CVNX 2 and incorporating additional technologies. This pull-forward of technology resulted in the program migrating from an evolutionary approach to a single step acquisition approach. With increases in sortie generation rate requirements, additional manpower reduction requirements, and insertion of technologies previously slated for CVNX 2, such as Advanced Weapons Handling and Material Movement pulled forward into the lead ship, the follow on CVN 21 is now considered a modified repeat.

The design and integration efforts for planned CVNX1 technologies, which began early in the Integrated Product and Process Development contract, will continue under an Advanced Procurement contract prior to issuance of the ship construction contract. Major efforts include Nuclear Propulsion/Electric Plant Design, Electromagnetic Aircraft Launch Systems and all electric and auxiliary systems. Additional design features/new technologies were also added as part of the December 12, 2002, PDM and include: improved/Enlarged Flight Deck, improved Weapons Handling Capabilities, and improved Survivability.

CVN 21 will heavily leverage other program development efforts particularly in the warfare system area. Major warfare system components for the CVN 21 will be acquired by the government and provided as government furnished equipment. As with past carrier construction programs, the program office intends to leverage other ongoing Navy procurement efforts on the part of other Navy program offices, known as participating acquisition resource managers. This approach offers significant affordability advantages over procuring these components through the prime shipbuilding contractor by taking advantage of large Navy economic order quantity buys.

The September 2002 quarterly exception SAR was submitted due to a schedule delay (August 2002 to February 2003) in the Early Operational Assessment (EOA) of greater than six months from the milestone date reported in the December 31, 2001 SAR. The December 2002 SAR further updates these estimates for the EOA to complete by June quarter FY 2003 due to further delays in the process of validating the Operational Requirements Document (ORD). The Program Deviation Report (PDR) is being submitted and a revised Acquisition Program Baseline (APB) is being prepared to reflect updated objective and threshold values. This APB will be prepared for the Milestone B Defense Acquisition Board (DAB) currently planned for June FY2003.

The FY 2004 President's Budget submission funds the CVN 21 design that includes many of the improvements intended for CVNX 2, such as a new/enlarged flight deck, allowance for future technologies, advanced weapons and material handling and storage, advanced arresting gear, and additional manpower reductions. President's Budget 2004 is a significant increase over the President's Budget 2003 with additional RDT&E funding to support the accelerated development of new technologies and associated design for CVN 21 as well as additional SCN funding for Detail Design and Construction.

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

This SAR reports on a Development program only, in accordance with Title 10, United States Code, Section 2432, which allows limited reporting for Pre-Milestone B programs.

**8. Threshold Breaches:**

CVN 21 (formerly CVNX1)

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- 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:

Because of the Navy's decision to delay the program one year due to resource limitations, the start construction date has changed from January 2006 to January 2007, and Initial Operational Capability (IOC) has changed from March 2014 to March 2015.

Also, due to program restructuring, program funding in President's Budget 2004 has increased from the Acquisition Program Baseline (APB).

(Note that Milestone II will be replaced by Milestone B)

Milestone B Defense Acquisition Board (DAB) is currently planned for third quarter FY 2003 and the Early Operational Assessments are scheduled to be completed in support of the DAB. A Program Deviation Report (PDR) is being developed for submission along with a revised CVN 21 Acquisition Program Baseline (APB) in support of the Milestone B DAB, and will reflect the updated objective, threshold and cost values of the restructured CVN 21 Program.

8c. Threshold Breaches (Cont'd):

Follow-on Ship (CVNX2)

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

c. Explanation of Breach:

Milestone B DAB is currently scheduled for third quarter FY 2003 and the Early Operational Assessments are scheduled to be completed in support of the DAB. The revised CVN 21 APB is presently under development in support of the Milestone B DAB planned for the third quarter of FY 2003 and will reflect updated objective and threshold values.

9. Schedule:

CVN 21 (formerly CVNX1)

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	JUN 2000	JUN 2000	JUN 2000
CVNX1 Early Operational Assessment	FEB 2002	FEB 2002	JUN 2003 (Ch-1)
Milestone II	APR 2002	APR 2002	JUN 2003 (Ch-1)
CVNX1 Start Construction	JAN 2006	JAN 2006	JAN 2007
CVNX1 Initial Operational Capability	MAR 2014	MAR 2014	MAR 2015
Milestone III	MAR 2020	MAR 2020	MAR 2020

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

CVN 21 (formerly CVNX1)

b. Current Change Explanations --

(Ch-1) Early Operational Assessment changed from February 2002 to June 2003, and Milestone B changed from April 2002 to June 2003, both due to delay in Operational Requirements Document (ORD) approval.

Follow-on Ship (CVNX2)

a. Milestones --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I	JUN 2000	JUN 2000	JUN 2000
CVNX2 Early Operational Assessment	FEB 2002	FEB 2002	JUN 2003 (Ch-1)
Milestone II	APR 2002	APR 2002	JUN 2003 (Ch-1)
CVNX2 Start Construction	MAR 2011	MAR 2011	MAR 2011
CVNX2 Initial Operational Capability	MAR 2019	MAR 2019	MAR 2019
Milestone III	MAR 2020	MAR 2020	MAR 2020

b. Current Change Explanations --

(Ch-1) Early Operational Assessment changed from February 2002 to June 2003, and Milestone B changed from April 2002 to June 2003, both due to delay in Operational Requirements Document (ORD) approval.

**10. Performance Characteristics:**

CVN 21 (formerly CVNX1)

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
CVNX1 Interoperability	Note 1	Note 1 / Note 1	TBD	Note 1
CVNX1 Sustained Sortie Rate	140	140 / 140	TBD	140
CVNX1 Surge Sortie Rate	210	210 / 210	TBD	210
CVNX1 Ship Service Electrical Generating Capacity	2.5	2.5 / 2.5	TBD	2.5
CVNX1 Weight Service Life Allowance	7.5	7.5 / 4.0	TBD	4.0
CVNX1 Stability Service Life Allowance	2.5	2.5 / 1.5	TBD	1.5

Note 1 - For additional description regarding interoperability and other performance characteristics, see Table 4.1, Key Performance, page 22, of the Future Aircraft Carrier (CVNX) Operational Requirements Document Ser 522-88-00 dated 12 April 2000.

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CVN 21 Class, December 31, 2002

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

CVN 21 (formerly CVNX1)

b. Current Change Explanations -- None

Follow-on Ship (CVNX2)

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
CVNX2 Interoperability	Note 1	Note 1	/ Note 1	TBD	Note 1
CVNX2 Sustained Sortie Rate	220	220	/ 160	TBD	160
CVNX2 Surge Sortie Rate	310	310	/ 270	TBD	270
CVNX2 Ship Service Electrical Generating Capacity	2.5	2.5	/ 2.5	TBD	2.5
CVNX2 Weight Service Life Allowance	7.5	7.5	/ 5.0	TBD	5.0
CVNX2 Stability Service Life Allowance	2.5	2.5	/ 1.5	TBD	1.5

Note 1 - For additional description regarding interoperability and other performance characteristics, see Table 4.1, Key Performance, page 22, of the Future Aircraft Carrier (CVNX) Operational Requirements Document Ser 522-88-00 dated April 12, 2000.

b. Current Change Explanations -- None

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CVN 21 Class, December 31, 2002

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

CVN 21 (formerly CVNX1)

a. Cost --	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2121.5	2121.5	2884.6
Procurement	0.0	N/A	0.0
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	N/A	0.0
Total FY 2000 Base-Year \$	2121.5	2121.5	2884.6
Escalation	192.6	192.6	238.9
Development (RDT&E)	(192.6)	(192.6)	(238.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(N/A)	(0.0)
Total Then Year \$	2314.1	2314.1	3123.5
b. 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 --

Nuclear costs will be added at Milestone B decision (Third Quarter FY 2003).

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CVN 21 Class, December 31, 2002

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

Follow-on Ship (CVNX2)

a. Cost --	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	1038.3	1038.3	447.4
Procurement	0.0	N/A	0.0
Unknown			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	N/A	0.0
Total FY 2000 Base-Year \$	<u>1038.3</u>	<u>1038.3</u>	<u>447.4</u>
Escalation	235.2	235.2	64.9
Development (RDT&E)	(235.2)	(235.2)	(64.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(N/A)	(0.0)
Total Then Year \$	<u>1273.5</u>	<u>1273.5</u>	<u>512.3</u>
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	N/A	N/A	0
Total	<u>N/A</u>	<u>N/A</u>	<u>0</u>

c. Foreign Military Sales -- None.

d. Nuclear Costs --

Nuclear costs will be added at Milestone B decision (Third Quarter FY 2003).

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**12. Unit Cost Summary:**

CVN 21 (formerly CVNX1)

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

Follow-on Ship (CVNX2)

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

There are no procurement dollars for this program; as this is an RDT&E SAR, there are no associated quantities.

**13. Cost Variance Analysis:**

CVN 21 (formerly CVNX1)

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2314.1	-	-	2314.1
Previous Changes:				
Economic	-2.6	-	-	-2.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+232.8	-	-	+232.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+230.2	-	-	+230.2
Current Changes:				
Economic	-44.8	-	-	-44.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+266.4	-	-	+266.4
Estimating	+357.6	-	-	+357.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+579.2	-	-	+579.2
Total Changes	+809.4	-	-	+809.4
Current Estimate	3123.5	-	-	3123.5

**13a. Cost Variance Analysis (Cont'd):**  
CVN 21 (formerly CVNX1)

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2121.5	-	-	2121.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+201.0	-	-	+201.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+201.0	-	-	+201.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+217.9	-	-	+217.9
Estimating	+344.2	-	-	+344.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+562.1	-	-	+562.1
Total Changes	+763.1	-	-	+763.1
Current Estimate	2884.6	-	-	2884.6

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E	Base-Year	Then-Year
Revised escalation indices. (Economic)	N/A	-44.8
Adjustment for Current and Prior Inflation. (Estimating)	+8.3	+10.7
Revised Estimate for CVN 21 program restructure to include developmental technologies formerly for CVNX2 (Estimating)	+335.9	-346.9
Additional funding for advanced technologies design and development that transform the CVNX 1 design to the CVN 21 design (Engineering)	+217.9	+266.4
RDT&E Subtotal	+562.1	+579.2

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CVN 21 Class, December 31, 2002

13. Cost Variance Analysis (Cont'd):

Follow-on Ship (CVNX2)

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1273.5	-	-	1273.5
Previous Changes:				
Economic	-5.9	-	-	-5.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.3	-	-	+19.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.4	-	-	13.4
Current Changes:				
Economic	-6.8	-	-	-6.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-767.8	-	-	-767.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-774.6	-	-	-774.6
Total Changes	-761.2	-	-	-761.2
Current Estimate	512.3	-	-	512.3

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

Follow-on Ship (CVNX2)

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1038.3	-	-	1038.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.9	-	-	-4.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.9	-	-	-4.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-586.0	-	-	-586.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-586.0	-	-	-586.0
Total Changes	-590.9	-	-	-590.9
Current Estimate	447.4	-	-	447.4

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E	Base-Year	Then-Year
Revised escalation indices. (Economic)	N/A	-36.5
Economic adjustment for negative program change. (Economic)	N/A	+29.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Revised Estimate for restructuring program to pull forward developmental technologies from CVNX2 to CVN 21. (Estimating)	-335.9	-346.9
Revised estimate for follow-on ship reflects Program Manager's estimate for only FYDP and prior vice total program. (Estimating)	-250.2	-421.0
RDT&E Subtotal	-586.0	-774.6

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

CVN 21 (formerly CVNX1)

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

Not required for Pre-Milestone B 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	JUN 2000	N/A	N/A	JUN 2000
Milestone II	APR 2002	N/A	N/A	JUN 2003
Milestone III	MAR 2020	N/A	N/A	MAR 2020
IOC	MAR 2014	N/A	N/A	MAR 2015
Total Cost	2314.1	N/A	N/A	3123.5
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

Follow-on Ship (CVNX2)

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

Not required for Pre-Milestone B 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	JUN 2000	N/A	N/A	JUN 2000
Milestone II	APR 2002	N/A	N/A	JUN 2003
Milestone III	MAR 2020	N/A	N/A	MAR 2020
IOC	MAR 2019	N/A	N/A	MAR 2019
Total Cost	1273.5	N/A	N/A	512.3
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

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CVN 21 Class, December 31, 2002

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

a. RDT&E --  
 CVNX1 IPPD: Initial Contract Price  
 Target Ceiling Qty  
 NGNN, Newport News, VA \$161.3 \$161.3 0  
 N00024-00-C-2108, CPIF  
 Award: October 12, 2000  
 Definitized: January 14, 2002

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$161.3	\$161.3	0	\$148.1	\$148.1
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/31/02)			\$-1.4	\$-2.6
Net Change			\$-4.3	\$-3.6
			\$-2.9	\$-1.0

Explanation of Change:

Unfavorable cost variance is primarily due to accounting adjustments for work performed in previous year and for shifts in personnel from R&D work.

Unfavorable schedule variance is primarily due to various design activities being behind schedule and for under-progressing of work.

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</u> (FY01-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-15)	<u>Total</u>
RDT&E	1145.2	310.6	330.0	1850.0	3635.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1145.2	310.6	330.0	1850.0	3635.8

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CVN 21 Class, December 31, 2002

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

CVN 21 (formerly CVNX1)

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

<u>Appropriation</u>	<u>Prior Years (FY01-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-15)</u>	<u>Total</u>
RDT&E	1140.2	310.6	330.0	1342.7	3123.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1140.2	310.6	330.0	1342.7	3123.5

Follow-on Ship (CVNX2)

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

<u>Appropriation</u>	<u>Prior Years (FY02-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	5.0	-	-	507.3	512.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5.0	-	-	507.3	512.3

b. Annual Summary -- CVN 21 (formerly CVNX1)

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2000 Dollars Nonrec</u>	<u>Flyaway FY 2000 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1998				46.9	46.1
1999				83.7	83.3
2000				176.1	177.8
2001				225.3	230.5
2002				271.3	280.1
2003				308.8	322.4
2004				293.1	310.6
2005				306.6	330.0
2006				281.8	308.3
2007				220.2	245.2
2008				187.8	212.8
2009				133.5	154.0
2010				114.8	134.8
2011				74.3	88.8
2012				61.5	74.8
2013				48.4	60.0

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CVN 21 Class, December 31, 2002

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

CVN 21 (formerly CVNX1)

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

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2014				34.9	44.0
2015				15.6	20.0
Subtotal				2884.6	3123.5
<b>Grand Total</b>				<b>2884.6</b>	<b>3123.5</b>

b. Annual Summary -- Follow-on Ship (CVNX2)

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

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				4.8	5.0
2008				169.1	191.7
2009				273.5	315.6
Subtotal				447.4	512.3
<b>Grand Total</b>				<b>447.4</b>	<b>512.3</b>

**17. Delivery/Expenditure Information:**

CVN 21 (formerly CVNX1)

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 979

Percent Total Program Expended: 31.3%

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CVN 21 Class, December 31, 2002

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

Follow-on Ship (CVNX2)

Follow-on Ship (CVNX2)

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&F	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 5

Percent Total Program Expended: 1.0%

**18. Operating and Support Costs:**

CVN 21 (formerly CVNX1)

Not applicable for Pre-Milestone B programs.

Follow-on Ship (CVNX2)

Not applicable for Pre-Milestone B programs.

Report Creation Date: 03/25/2003 11:41:48 AM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: STANDARD MISSILE-2**

**AS OF DATE:** December 31, 2002

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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:

PEO INTEGRATED WARFARE SYSTEMS 3A	CAPT M.A. OUTTEN
2341 JEFFERSON DAVIS HIGHWAY	Assigned: October 8, 2002
ARLINGTON, VA 22202-	DSN ; COMM (703) 872-3701
	OUTTENMA@NAVSEA.NAVY.MIL

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

RDT&E:

(U) PE 0603318N Project U01632

(U) PE 0604366N Project K00439

PROCUREMENT:

(U) APPN 1507 ICN 2234 (Navy)

MILCON:

(U) PE 0702096N

No Security Objection  
to Open Publication  
(AS AMENDED)

03-C-0100  
MAR 20 2003  
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Downgrade instructions: OPNAVINST S5513.3B  
Declassification: X3~~

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03-C-0100

5. (U) References:

SM-2 BLK I\II\III\A\B

SAR Baseline (Production Estimate):

(U) SM-2 Block II Milestone III Navy Program Decision Meeting of December 17, 1986. Block III Milestone IIIB NAVY Acquisition Review Board of May 12, 1988.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated March 10, 2003.

SM-2 BLK IV

SAR Baseline (Development Estimate):

(U) NAE Approved Acquisition Program Baseline (APB) dated November 20, 1990.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated August 4, 1999.

6. (U) Mission and Description:

(U) The STANDARD Missile Medium Range (SM-2 MR) and Extended Range (SM-2 ER) are solid propellant, tail controlled surface-to-air missiles with mid-course guidance, semi-active homing guidance and home-on jam capability. The SM-2 Block I ER missile was produced in FY 76 thru FY 83. The SM-2 Block I MR missile was produced in FY 80 thru FY 83. Both missiles incorporated command guidance, inertial reference system and monopulse receiver to improve range, accuracy and electronic countermeasure (ECM) resistance over the SM-1 missile.

(U) Block II SM-2 is a variation of Block I SM-2. Block II Medium Range (MR) and Extended Range (ER) Missiles incorporate increased kinematics, new conventional warhead, improved fuzing, and improved guidance to provide enhanced capability against high flying, steep diving anti-ship missiles (ASMs). Due to the addition of a MK-104 Dual Thrust Rocket Motor, Block II MR missile range is double that of Block I MR missiles and approximates range of Block II ER missiles. The SM-2 Block II 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.

(U) 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 III Missile with (b)(1) (b)(1) coupled with (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.

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.

(U) 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 1B/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 achieved IOC August 30, 1999 in USS O'KANE (DDG-77). FY99 was the final procurement year for the Block IV variant.

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.

(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 SM-2 Block IIIB TEMP was approved by OUSD(A&T) on April 26, 1994. The 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 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 the prime threat. On May 1, 1995 the SM-2 Block IV received DAB approval for

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

LRIP. The 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. The 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. The APB for the SM-2 Block Block I/II/III/A/B was approved on July 10, 1996. The APB for the SM-2 Block IV was approved on August 4, 1999 revising the schedule for IOC.

(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).

(U) SM-2 Block IV achieved First Production Delivery in November 1998. IOC was achieved August 30, 1999 in USS O'KANE (DDG-77). Two successful engineering tests were held December 14 and 16, 1999 at the Pacific Missile Range Facility, Barking Sands, Hawaii. The SM-2 Block IV performed flawlessly in all phases against stringent maneuvering targets.

(U) As of December 31, 2002 SM-2 Block IV has delivered 97 of 160 planned production rounds.

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

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

b. (U) Nunn-McCurdy Unit Cost:

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

SM-2 BLK IV

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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:

SM-2 BLK I\II\III\A\B

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
BLOCK II MR			
First Flt Test (development test)	FEB 1983	FEB 1983	FEB 1983
Pilot Production Approved	JUN 1983	JUN 1983	JUN 1983
Lot 1 Approval for Limited Prod	FEB 1984	FEB 1984	FEB 1984
DT/OT and OPEVAL	SEP 1984	SEP 1984	SEP 1984
Lot 2 Approval for Limited Prod	JUN 1985	JUN 1985	JUN 1985
FOT&E USS VINCENNES CG-49	NOV 1985	NOV 1985	NOV 1985
Lot 3 ALP	APR 1986	APR 1986	APR 1986
Milestone IIIE(AFP)	DEC 1984	DEC 1986	DEC 1986
BLOCK II ER			
FOT&E Vertical Launch Cruiser CG 54	DEC 1986	N/A	APR 1988
USS Antietam (Blk II MR)			
OPEVAL Complete	MAR 1983	MAR 1983	MAR 1983

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9a. (U) Schedule (Cont'd):  
SM-2 BLK I\II\III\A\B

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Pilot Production Approved	APR 1982	APR 1982	APR 1982
Lot 1 Approval for Limited Production	JUN 1983	JUN 1983	JUN 1983
Lot 2 Approval for Limited Production	FEB 1984	FEB 1984	FEB 1984
Lot 3 Approval for Limited Production	MAR 1985	MAR 1985	MAR 1985
FOT&E USS MAHAN DDG 42	MAR 1985	MAR 1985	MAR 1985
Lot 4 Approval for Limited Production	APR 1986	APR 1986	MAY 1986
Milestone III E (AFP)	DEC 1984	DEC 1984	DEC 1986
FOT&E USS Scott DDG 995 (Blk II ER)	DEC 1986	N/A	DEC 1989
<b>BLOCK III</b>			
Milestone II	JUN 1985	JUN 1985	JUN 1985
Prelim Design Review	JUN 1985	JUN 1985	JUN 1985
Critical Design Review	JUN 1986	JUN 1986	JUN 1986
Developmental Test			
Start	SEP 1987	SEP 1987	SEP 1987
Complete	JUN 1988	JUN 1988	JUN 1988
Release to Production	JUN 1988	JUN 1988	JUN 1988
IOC	SEP 1990	SEP 1990	AUG 1990
<b>BLOCK IIIA</b>			
Milestone II	JUN 1985	JUN 1985	JUN 1985
Prelim Design Review	DEC 1987	DEC 1987	DEC 1987
Critical Design Review	MAR 1990	MAR 1990	MAR 1990
Developmental Test	JUN 1991	JUN 1991	JUL 1991
Operational Test	JUN 1991	JUN 1991	AUG 1991
Milestone III	SEP 1991	SEP 1991	FEB 1992
IOC	SEP 1993	SEP 1993	JAN 1994
<b>BLOCK IIIB</b>			
Milestone II	JUN 1989	JUN 1989	JUN 1989
Prelim Design Review	SEP 1989	SEP 1989	SEP 1989
Critical Design Review	JUN 1991	FEB 1992	APR 1992
Milestone IIIA	SEP 1991	N/A	OCT 1995
LRIP Program Decision	N/A	OCT 1995	OCT 1995
Developmental Test (WSMR)	DEC 1991	DEC 1993	JUN 1994
ARB (Kit Release)	SEP 1992	N/A	N/A
Developmental Test (at Sea)	MAR 1993	DEC 1995	DEC 1995
Operational Test	JUN 1993	FEB 1996	APR 1996
IOC	JUN 1993	APR 1997	OCT 1997
Milestone IIIB	SEP 1993	N/A	N/A
Milestone III (Full Rate Production)	N/A	JUN 1996	JUL 1996

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

SM-2 BLK I\II\III\A\B

b. Current Change Explanations -- None

SM-2 BLK IV

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone II	AUG 1986	AUG 1986	AUG 1986
FSED Contract	JUL 1987	JUL 1987	JUL 1987
Preliminary Design Review	DEC 1988	DEC 1988	DEC 1988
Critical Design Review	JUL 1989	AUG 1989	AUG 1989
Development Test	NOV 1990	MAY 1994	JUL 1994
Milestone IIIA (NPDM) Pilot Production	DEC 1990	N/A	N/A
Operational Test	SEP 1991	JUL 1994	OCT 1994
Milestone IIIB (Full Production)	DEC 1991	N/A	N/A
LRIP Program Decision	N/A	JAN 1995	MAY 1995
First Production Delivery	FEB 1993	OCT 1998	NOV 1998
Milestone III (Full Rate Production)	N/A	TBD	TBD
IOC	MAR 1993	SEP 1999	AUG 1999

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

SM-2 BLK I\II\III\A\B

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
BLOCK II MR	(b)(1)			
Max Range (nm)	(b)(1)			
Min Range (nm)	(b)(1)			
Max Alt (k ft)	(b)(1)			
Miss Distance (ft)	(b)(1)			
Prob of Successful Engagement (%)	(b)(1)			
Flight Reliability	(b)(1)			
Launch Reliability	(b)(1)			
BLOCK II ER	(b)(1)			
Max Range (nm)	(b)(1)			
Min Range (nm)	(b)(1)			
Max Alt (k ft)	(b)(1)			
Miss Distance (ft)	(b)(1)			
Prob of Successful Engagement (%)	(b)(1)			
Flight Reliability	(b)(1)			
Launch Reliability	(b)(1)			
BLOCK III	(b)(1)			

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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	Demonstrated Perf	Current Estimate
11111 Intercept Altitude (ft)	(b)(1)	(b)(1)	[Redacted]	[Redacted]
11111 Prob of Air Target Kill (%)	[Redacted]	[Redacted]		
11111 Technical Reliability	[Redacted]	[Redacted]		
11111 Flight Reliability	[Redacted]	[Redacted]		
11111 Launch Availability (8 mon storage)	[Redacted]	[Redacted]		
11111 Compatability	N/A	[Redacted]		
BLOCK IIIA				
11111 Intercept Altitude (ft)	(b)(1)	[Redacted]	[Redacted]	[Redacted]
11111 Warhead Fragment Velocity (ft per sec)	[Redacted]			
11111 [Redacted]	[Redacted]			
11111 Prob of Air Target Kill (%)	[Redacted]			
11111 Technical Reliability	[Redacted]			
11111 Flight Reliability	[Redacted]			
11111 Launch Availability (8 mon storage)	[Redacted]	[Redacted]	[Redacted]	[Redacted]
11111 Compatability	N/A	[Redacted]	[Redacted]	[Redacted]
BLOCK IIIB				
11111 Unintegrated IR Seeker Sensitivity (pw/cm^2)	(b)(1)	(b)(1)	(b)(1)	(b)(1)
11111 Integrated IR Seeker Sensitivity (pw/cm^2)	N/A	[Redacted]	[Redacted]	[Redacted]
11111 Pointing Accuracy (deg)	(b)(1)	[Redacted]	[Redacted]	[Redacted]
11111 Track Rate (deg per sec)	[Redacted]	[Redacted]	[Redacted]	[Redacted]
11111 Prob of Air Target Kill (%)	[Redacted]	[Redacted]	[Redacted]	[Redacted]
11111 Technical Reliability	[Redacted]	/ N/A	[Redacted]	[Redacted]

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

SM-2 BLK I\II\III\A\B

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Flight Reliability	(b)(1)	(b)(1)		
Launch Availability (8 mon storage)	(b)(1)			
Compatibility	N/A	(b)(1)		

(U) Changes in demonstrated performance figures reflect latest reliability analyses based on aggregate annual fleet training and CSSOT firing data. Block IIIB data based on (b)(1)

b. Current Change Explanations -- None

SM-2 BLK IV

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Intercept Altitude (K ft)	(b)(1)			
Probability of Air Target Kill (%)	(b)(1)			
Technical Reliability	(b)(1)			
Flight Reliability	(b)(1)			
Launch Availability (8 month storage) (Objective not tested until FOT&E)	(b)(1)			
Compatibility	(b)(1)			

(U) Changes in demonstrated performance figures reflect latest reliability analyses based on flight test results in 2002.

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

SM-2 BLK IV

b. Current Change Explanations -- None

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

SM-2 BLK I\II\III\A\B

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	648.4	770.6	808.6
Procurement	5923.2	7145.7	7164.8
AUR Hardware	(4510.5)		(4740.5)
Other Flyaway	(500.0)		(1147.8)
Total Flyaway	(5010.5)		(5888.3)
Non-recurring Support	(388.9)		(598.4)
Fleet Support	(330.9)		(438.4)
Total Other Wpn Sys	(719.8)		(1036.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(239.7)
Construction (MILCON)	0.0	34.0	34.2
Acquisition O&M	0.0	0.0	0.0
Total FY 1984 Base-Year \$	<u>6571.6</u>	<u>7950.3</u>	<u>8007.6</u>
Escalation	1481.2	1960.8	1934.2
Development (RDT&E)	(53.2)	(86.6)	(96.1)
Procurement	(1428.0)	(1865.4)	(1829.5)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>8052.8</u>	<u>9911.1</u>	<u>9941.8</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	10778	11505	11505
Total	<u>10778</u>	<u>11505</u>	<u>11505</u>

(U) Excludes 88 RDT&E units that are not considered fully configured.

(U) There were no Block II/III/A/B LRIP All Up Round quantities procured.

**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 ordered 10 SM-2 Block IIIA and Japan ordered 5 SM-2 Block III missiles. In FY99,

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

SM-2 BLK I\II\III\A\B

Japan procured 16 SM-2 Block III missiles. In FY00, Japan procured 16 SM-2 Block III missiles, The Netherlands procured 24 SM-2 Block IIIA missiles, Spain procured 35 SM-2 Block IIIA missiles and Germany procured 14 SM-2 Block IIIA missiles. In FY01, Japan procured 16 SM-2 Block IIIA missiles and South Korea procured 32 SM-2 Block IIIA missiles. In FY02, South Korea procured 64 SM-2 Block IIIA missiles. In FY03, Canada procured 12 SM-2 Block IIIA missiles, Japan procured 32 SM-2 Block IIIA missiles and The Netherlands procured 14 SM-2 Block IIIA missiles.

d. Nuclear Costs -- None.

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	338.1	349.9
AUR Hardware	(1551.7)		(213.9)
Other Flyaway	(207.0)		(63.2)
Total Flyaway	(1758.7)		(277.1)
Fleet Support	(60.1)		(19.8)
Non-Recurring Support	(66.8)		(28.2)
Total Other Wpn Sys	(126.9)		(48.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(29.0)		(24.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1984 Base-Year \$	<u>2198.5</u>	<u>657.9</u>	<u>669.9</u>
Escalation	815.9	231.1	238.2
Development (RDT&E)	(56.2)	(72.1)	(71.9)
Procurement	(759.7)	(159.0)	(166.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3014.4</u>	<u>889.0</u>	<u>908.1</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3000	162	160
Total	<u>3000</u>	<u>162</u>	<u>160</u>

(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 Block IV LRIP Missiles to a maximum quantity of 180.

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11c. (U) Total Program Cost and Quantity (Cont'd):  
SM-2 BLK IV

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

SM-2 BLK I\II\III\A\B

	UCR Baseline (MAR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1984 BY\$)	7950.3	8007.6	
(2) Quantity	11505	11505	
(3) Unit Cost	0.691	0.696	+0.72
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1984 BY\$)	7145.7	7164.8	
(2) Quantity	11505	11505	
(3) Unit Cost	0.621	0.623	+0.32

SM-2 BLK IV

	UCR Baseline (AUG 1999 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1984 BY\$)	657.9	669.9	
(2) Quantity	162	160	
(3) Unit Cost	4.061	4.187	+3.10
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1984 BY\$)	338.1	349.9	
(2) Quantity	162	160	
(3) Unit Cost	2.087	2.187	+4.79

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

SM-2 BLK I\II\III\A\B

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	701.6	7351.2	-	8052.8
Previous Changes:				
Economic	-34.1	-923.0	+1.6	-955.5
Quantity	-	+271.6	-	+271.6
Schedule	-	+572.0	-	+572.0
Engineering	+5.1	+202.1	-	+207.2
Estimating	+196.9	+649.0	+41.2	+887.1
Other	-	-	-	-
Support	-	+131.9	-	+131.9
Subtotal	+167.9	+903.6	+42.8	+1114.3
Current Changes:				
Economic	-0.4	-40.4	-	-40.8
Quantity	-	-	-	-
Schedule	+4.8	+295.4	-	+300.2
Engineering	+30.5	-	-	+30.5
Estimating	+0.3	+126.2	-	+126.5
Other	-	-	-	-
Support	-	+358.3	-	+358.3
Subtotal	+35.2	+739.5	-	+774.7
Total Changes	+203.1	+1643.1	+42.8	+1889.0
Current Estimate	904.7	8994.3	42.8	9941.8

(U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	648.4	5923.2	-	6571.6
Previous Changes:				
Quantity	-	+289.6	-	+289.6
Schedule	-	+108.7	-	+108.7
Engineering	+16.1	+161.7	-	+177.8
Estimating	+122.2	+104.0	+34.2	+260.4
Other	-	-	-	-
Support	-	+162.5	-	+162.5
Subtotal	+138.3	+826.5	+34.2	+999.0
Current Changes:				
Quantity	-	-	-	-
Schedule	+2.7	+167.1	-	+169.8
Engineering	+19.0	-	-	+19.0
Estimating	+0.2	+46.7	-	+46.9
Other	-	-	-	-
Support	-	+201.3	-	+201.3
Subtotal	+21.9	+415.1	-	+437.0
Total Changes	+160.2	+1241.6	+34.2	+1436.0
Current Estimate	808.6	7164.8	34.2	8007.6

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13b. (U) Cost Variance Analysis (Cont'd):  
SM-2 BLK I\II\III\A\B

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Stretchout of Block IIIB profile from 2008 to 2013. (Schedule)	+2.7	+4.8
Increases in R&D due to addition of funding in FY04/05/06 for Block IIIB software modifications. (Engineering)	+19.0	+30.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
<b>RDT&amp;E Subtotal</b>	<u>+21.9</u>	<u>+35.2</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-40.4
Stretchout of annual procurement buy profile from 2008 to 2013. (Schedule)	0.0	+40.5
Adjustment for Current and Prior Inflation. (Estimating)	+3.8	+6.1
Increase in hardware pricing due to stretchout of procurement profile from 2008 to 2013 and procurement at minimum sustaining rate. (Estimating)	+42.9	+120.1
Net increase in procurement support due to stretchout of procurement profile from 2008 to 2013. (Schedule)	+167.1	+254.9
Adjustment for Current and Prior Inflation. (Support)	+1.3	+1.8
Change in Initial Spares due to program stretchout from 2008 to 2013. (Support)	+71.6	+127.1
Change in Non-recurring Support due to procurement profile stretchout from 2008 to 2013. (Support)	+67.6	+120.0
Change in Fleet Support due to procurement profile stretchout from 2008 to 2013. (Support)	+60.8	+109.4
<b>Procurement Subtotal</b>	<u>+415.1</u>	<u>+739.5</u>

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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	-10.4	-	-9.3
Quantity	-	-3038.9	-	-3038.9
Schedule	-	+1026.5	-	+1026.5
Engineering	-	+127.7	-	+127.7
Estimating	+50.7	-148.6	-	-97.9
Other	-	-	-	-
Support	-	-114.6	-	-114.6
Subtotal	+51.8	-2158.3	-	-2106.5
Current Changes:				
Economic	-	-0.8	-	-0.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+1.7	-	+1.7
Other	-	-	-	-
Support	-	-0.7	-	-0.7
Subtotal	-	+0.2	-	+0.2
Total Changes	+51.8	-2158.1	-	-2106.3
Current Estimate	391.9	516.2	-	908.1

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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	-	-1745.2	-	-1745.2
Schedule	-	+247.2	-	+247.2
Engineering	+41.2	-	-	+41.2
Estimating	-5.1	+15.2	-	+10.1
Other	-	-	-	-
Support	-	-82.6	-	-82.6
Subtotal	+36.1	-1565.4	-	-1529.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+1.2	-	+1.2
Other	-	-	-	-
Support	-	-0.5	-	-0.5
Subtotal	-	+0.7	-	+0.7
Total Changes	+36.1	-1564.7	-	-1528.6
Current Estimate	320.0	349.9	-	669.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.4
Increase in hardware pricing (Estimating)	+0.9	+1.3
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Change in Initial Spares requirement. (Support)	-0.7	-0.9
Procurement Subtotal	+0.7	+0.2

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STANDARD MISSILE-2, December 31, 2002

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	
0.747	-0.087	-0.024	+0.076	+0.021	+0.088	--	+0.043	+0.117	0.864

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	
0.682	-0.084	-0.019	+0.075	+0.018	+0.067	--	+0.043	+0.100	0.782

(U) Milestone events and IOC Current Estimate dates reflect SM-2 Block IIIB. Cost and quantity figures reflect SM-2 Block I/II/III/A/B combined.

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 1989	JUN 1989
Milestone III	N/A	N/A	SEP 1991	JUL 1996
IOC	N/A	N/A	JUN 1993	OCT 1997
Total Cost	N/A	N/A	8052.8	9941.8
Total Quantity	N/A	N/A	10778	11505
Prog Acq Unit Cost	N/A	N/A	0.8	0.9

(U) Milestone events and IOC Current Estimate dates reflect SM-2 Block IIIB. Cost and quantity figures reflect SM-2 Block I/II/III/A/B combined.

SM-2 BLK IV

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STANDARD MISSILE-2, December 31, 2002

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	-0.063	-1.16	+6.42	+0.798	-0.601	--	-0.721	+4.67	5.68

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	
0.891	-0.070	-3.17	+6.42	+0.798	-0.918	--	-0.721	+2.33	3.23

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 1986	N/A	AUG 1986
Milestone III	N/A	N/A	N/A	TBD
IOC	N/A	MAR 1993	N/A	AUG 1999
Total Cost	N/A	3014.4	N/A	908.1
Total Quantity	N/A	3000	N/A	160
Prog Acq Unit Cost	N/A	1.0	N/A	5.7

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

a. Procurement --

(U) SM-2 BLK IV FY95-98 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
\$294.7	N/A	117

Estimated Price At Completion	
Contractor	Program Manager
\$294.7	\$294.7

Explanation of Change:

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

None.

Cost and Schedule variance reporting is not required on this CPAF/FPIF contract.

(U) Contract Comments:

Total quantity includes FY95/96/97/98 procurements. Deliveries for FY95/96/97 buys are 100% complete. The FY98 portion is FFP and does not report earned value. The contract is 90% delivered. This will be the last SAR including this contract.

(U) <u>SM-2 BLK IV AUR:</u> RAYTHEON (RSC), TUCSON, AZ N00024-99-C-5373, FPAF Award: April 16, 1999 Definitized: April 21, 2000	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$43.4	\$43.4	43
	Current Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$44.1	\$44.1	43
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$44.1	\$44.1	

Explanation of Change:

None.

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

(U) Contract Comments:

Contract price includes only USN All Up Rounds.

(U) <u>SM-2 BLK IIIB AUR:</u> RAYTHEON (RSC), TUCSON, AZ N00024-99-C-5373, FPAF Award: April 16, 1999 Definitized: April 21, 2000	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$45.8	\$45.8	71
	Current Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$45.8	\$45.8	71
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$45.8	\$45.8	

Explanation of Change:

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STANDARD MISSILE-2, December 31, 2002

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

None.

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

(U) Contract Comments:

Contract price includes only USN All Up Rounds.

(U) <u>SM-2 Block IIIB AUR:</u> Raytheon (RSC), Tucson, AZ N00024-00-C-5399, FFP/PI Award: May 9, 2000 Definitized: March 26, 2001	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$112.2	\$112.2	75

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$250.9	\$250.9	150	\$250.9	\$250.9

Explanation of Change:

None.

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

(U) Contract Comments:

Contract includes FY00 and FY01 procurement buys for SM-2 Block IIIB AUR's.

(U) <u>SM-2 Block IIIB AUR's:</u> Raytheon (RSC), Tucson, AZ N00024-02-C-5312, FFP/PI Award: July 31, 2002 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$117.7	\$	96

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$273.2	\$	189	\$273.2	\$273.2

Explanation of Change:

None.

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

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

(U) Contract Comments:

This is a new FY02 SM-2 Block IIIB production 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 (FY76-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-13)</u>	<u>Total</u>
RDT&E	1254.3	11.5	12.6	18.2	1296.6
Procurement	7511.9	158.8	172.2	1667.6	9510.5
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	8809.0	170.3	184.8	1685.8	10849.9

SM-2 BLK I\II\III\A\B

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

<u>Appropriation</u>	<u>Prior Years (FY76-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-13)</u>	<u>Total</u>
RDT&E	862.4	11.5	12.6	18.2	904.7
Procurement	7004.6	155.1	169.2	1665.4	8994.3
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7909.8	166.6	181.8	1683.6	9941.8

SM-2 BLK IV

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STANDARD MISSILE-2, December 31, 2002

16a. (U) Program Funding Summary (Cont'd):  
SM-2 BLK IV

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

<u>Appropriation</u>	<u>Prior Years (FY87-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06)</u>	<u>Total</u>
RDT&E	391.9	-	-	-	391.9
Procurement	507.3	3.7	3.0	2.2	516.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	899.2	3.7	3.0	2.2	908.1

b. Annual Summary -- SM-2 BLK I\II\III\A\B

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1984 Dollars Nonrec</u>	<u>Flyaway FY 1984 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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				38.5	53.3
1995				9.3	13.2
1996				14.3	20.6
1997				6.3	9.2
1998				0.3	0.5
1999				0.8	1.2
2000				0.4	0.6
2001				0.3	0.5
2002				8.8	13.6
2003				0.8	1.3
2004				7.3	11.5
2005				7.9	12.6
2006				7.1	11.5
2007				0.6	1.0
2008				0.5	0.9
2009				0.5	0.9
2010				0.5	0.9

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STANDARD MISSILE-2, December 31, 2002

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

SM-2 BLK I\II\III\A\B

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

Fiscal Year	Qty	Flyaway FY 1984 Dollars Nonrec	Flyaway FY 1984 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2011				0.6	1.0
2012				0.6	1.0
2013				0.5	1.0
Subtotal				808.6	904.7

(U) Total Then Year (TY\$) Program amount for FY99 does not include Congressional plus-up for the Advanced Surface to Air Missile (ADSAM) Demo and Optical Correlator.

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1984 Dollars Nonrec	Flyaway FY 1984 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1976	22		88.0	92.4	48.4
1977					
1977T					
1977	36		62.2	73.9	42.9
1978	40		66.5	74.2	48.2
1979	40		57.1	66.1	47.3
1980	85		67.7	82.1	64.7
1981	345		156.2	198.2	174.3
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		125.0	157.5	222.7
1995	160		92.3	113.9	163.6
1996					
1997	80		54.5	70.0	102.8
1998	68		64.3	76.1	113.1
1999	71		45.1	65.9	99.1
2000	75		38.3	60.5	92.1
2001	75		53.2	71.3	109.8
2002	96		85.1	104.2	162.1

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STANDARD MISSILE-2, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):  
SM-2 BLK I\II\III\A\B

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1984 Dollars Nonrec	Flyaway FY 1984 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	93		82.8	101.2	159.5
2004	75		73.7	96.9	155.1
2005	75		74.6	104.0	169.2
2006	75		74.8	107.6	178.2
2007	75		74.0	105.7	178.1
2008	94		85.2	113.5	194.7
2009	110		94.4	124.7	217.8
2010	110		94.2	125.0	222.2
2011	110		91.2	122.1	220.9
2012	110		91.3	122.1	225.0
2013	108		90.9	121.9	228.5
Subtotal	11505		5888.3	7164.8	8994.3

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1984 Dollars Nonrec	Flyaway FY 1984 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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	11505		5888.3	8007.6	9941.8

b. Annual Summary -- SM-2 BLK IV

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

Fiscal Year	Qty	Flyaway FY 1984 Dollars Nonrec	Flyaway FY 1984 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

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STANDARD MISSILE-2, December 31, 2002

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

SM-2 BLK IV

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

Fiscal Year	Qty	Flyaway FY 1984 Dollars Nonrec	Flyaway FY 1984 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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 FY 1984 Dollars Nonrec	Flyaway FY 1984 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	28		60.4	53.7	77.1
1996	22		70.0	91.6	133.2
1997	47		67.2	76.3	112.1
1998	20		39.6	43.1	64.1
1999	43		39.9	56.9	85.6
2000				10.6	16.1
2001				5.1	7.9
2002				3.8	5.9
2003				3.4	5.3
2004				2.3	3.7
2005				1.8	3.0
2006				1.3	2.2
Subtotal	160		277.1	349.9	516.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	160		277.1	669.9	908.1

17. (U) Delivery/Expenditure Information:

SM-2 BLK I\II\III\A\B

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	10299	10242

(U) Percent Total Program Quantities Delivered: 89.0%

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STANDARD MISSILE-2, December 31, 2002

17b. (U) Delivery/Expenditure Information (Cont'd):  
SM-2 BLK IV

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7378.2

(U) Percent Total Program Expended: 74.2%

SM-2 BLK IV

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	140	101

(U) Percent Total Program Quantities Delivered: 63.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 706.3

(U) Percent Total Program Expended: 77.8%

18. (U) Operating and Support Costs:

SM-2 BLK I\II\III\A\B

a. (U) Assumptions and Ground Rules --

Since the SM-2 is a wooden round, Personnel Costs are unnecessary for missile operation. The O&S Consumables include Range and Target Cost as well as Post Flight Analysis. The Direct Maintenance consists of Intermediate and Depot Maintenance. The Sustaining Investment Category includes Replenishment Spares and Support Equipment, Equipment Modification, Receipt, Segregation Storage and Issue (RSSI). Direct Support consists of Transportation and Technical Support. There is no Antecedent System.

(U) \* Computation is based on the total cost to support the inventory objective at the end of the FY 2011 funded delivery period. Operations & support cost estimate as of Feb 2003.

NOTE: Other (1.9) = Other Direct Support (1.5) = Disposal (@ 24 years)

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK I\II\III\A\B Avg Annual Cost Per Missile *	No Antecedent Program
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	4.1	0.0
Intermediate Maintenance	3.4	0.0
Depot Maintenance	4.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	1.0	N/A
Indirect Costs	0.0	N/A
Other	3.4	N/A

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

SM-2 BLK I\II\III\A\B

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK I\II\III\A\B Avg Annual Cost Per Missile *	No Antecedent Program
Overhaul/Rework	5.6	N/A
Total	21.5	0.0

Total O&S Cost	SM-2 BLK I\II\III\A\B	No Antecedent
BY\$ (In Millions)	577.7	0.1
TY\$ (In Millions)	801.2	0.1

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.

(U) \* Computation is based on the total cost to support the inventory objective at the end of the FY 2011 funded delivery period. Operations and support cost estimate as of Feb 2003.

Note: Other (.08) = Other direct support; Other (.07) = Disposal (@ 24 years)

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK IV Avg Annual Cost Per Missile *	No Antecedent Program
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.2	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	0.1	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.1	0.0
Indirect Costs	0.0	N/A
Overhaul/Rework	0.5	N/A
Other	0.2	N/A
Total	1.2	0.0

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

SM-2 BLK IV

Total O&S Cost	SM-2 BLK IV	No Antecedent
BY\$ (In Millions)	8.0	0.1
TY\$ (In Millions)	13.2	0.1

Report Creation Date: 03/11/2003 12:06:13 PM

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AF-11 GBS

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

PROGRAM: GBS

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Global Broadcast Service (GBS)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

SMC/MC	SES Christine Anderson
2420 Vela Way, Suite 1467-A8	Assigned: January 8, 2001
Los Angeles AFB, CA 90245-4659	DSN 833-4877; COMM (310) 336-4877
	chris.anderson@losangeles.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603840F  
 PE 0603854F (Shared) Project 2679  
 PE 97X0833 (Shared)

PROCUREMENT:

APPN 1810 ICN 33109N (Navy) (Shared)  
 APPN 1109 ICN 463300 (Navy) (Shared)  
 APPN 3080 ICN 83678V (Air Force) (Shared)  
 APPN 2035 ICN BC4120 (Army) (Shared)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

SAFF/PAS

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03-C-0292

GBS, December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated November 14, 1997.

Approved Program:

USecAF Approved Acquisition Program Baseline (APB) dated February 14, 2003.

**6. Mission and Description:**

Global Broadcast Service (GBS) provides worldwide, high-capacity, one-way transmission of video, imagery, and other large data files in support of joint military forces in garrison, in transit, and in theater using satellite technology. GBS augments existing military satellite communication systems. Using wireless GBS satellite receiver systems, military users afloat and ashore receive live and recorded video information, large data files such as weather maps and high resolution imagery, and internet-like services to perform their missions, while retaining mobility afforded by satellite-based communication.

The GBS system includes fixed and transportable transmit suites that collect information products from national and in-theater sources. The transmit suites assemble these information products into broadcasts that are transmitted over communication payloads on government-owned and leased commercial satellite services. A GBS receive suite within the footprint of the GBS satellite beams receives the information products being broadcast and then disseminates information to local users.

**7. Executive Summary:**

GBS continues to be used in support of Operation ENDURING FREEDOM (OEF), Operation NOBLE EAGLE (ONE) and other real world operations. Combatant Commands (COCOMs) have identified GBS as a critical support element of their daily mission, as it provides invaluable wideband connectivity from information producers to deployed tactical units. GBS is providing 0.9 terabytes of information daily to Central Command (CENTCOM). GBS also provided support to Homeland Defense at the 2002 Winter Olympics in Salt Lake City.

GBS completed Development Test/Operational Test (DT/OT) #3 in May 2002. This was a significant milestone. Its completion signified that all Initial Operational Capability (IOC) 1 milestone requirements had been verified by test except for Satellite Broadcast Manager (SBM) commanding of Ultra High Frequency (UHF) Follow-On Satellite (UFO) GBS payload to permit frequent pointing of steerable, downlink antennas, which required an Extremely High Frequency (EHF) Satellite Communications (SATCOM) terminal that was not available. An EHF SATCOM terminal was successfully installed and operated at the Wahiawa, HI SBM site in October 2002, thus satisfying the remaining IOC 1 milestone requirement. The Air Force Operational Test and Evaluation Center (AFOTEC) is completing an Operational Assessment to support an Air Force Space Command IOC 1 declaration by September 2003.

The MILSATCOM Joint Program Office (MJPO) completed its evaluation of options

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

to improve the program's ability to take full advantage of commercial-off-the-shelf (COTS) products that have been developed since the start of the GBS in 1997. These COTS products will improve performance capabilities and result in a more cost-effective, sustainable, flexible system that can be refreshed with new technologies as they are developed. The current GBS system is based on Asynchronous Transfer Mode (ATM) technology and is a combination of commercial and customized technologies and extensive software development (~600K lines-of-code). The MJPO determined that migrating to a commercial standards based open architecture will more cost effectively satisfy remaining IOC 2/3 Operational Requirements Document (ORD) threshold requirements and significantly reduce GBS sustainment costs. DoD agreed with this evaluation and directed migration to a commercial standards based open architecture.

An additional \$7M was received from the Defense Emergency Response Funds (DERF) in PE 97X0833. These funds are being used to develop a transportable ground receive suite (TGRS) that better meets a 2-person lift requirement. The results to date have been outstanding. The old TGRS was transported in eight containers, five of which exceeded the 2-person lift maximum of 74 pounds. Currently, system enhancements have resulted in three of the overweight containers being replaced with two containers that meet the requirement. Efforts are underway to replace the remaining two overweight containers.

A new Acquisition Program Baseline (APB) was approved February 14, 2003. This APB implements the Joint Requirements Oversight Council Memo (JROCM) 111-00, which approved the incremental IOC approach, and incorporates the migration to a commercial standards based open architecture. This APB also includes Services' procurement quantities for all years instead of only through FY99 as in the original APB.

By the end of 2002 there were 191 Ground, Shipboard and Sub-Surface Receive Suites (RSs) worldwide. A firm-fixed price contract option was awarded to Raytheon for an FY02 production buy which included 44 RSs for the Air Force, 27 Ground Receive Suites (GRSs) for the Army, 12 Sub-Surface Receive Suites (SSRSs) for the Navy, and 10 Receive Broadcast Managers (RBMs) for CENTCOM. Receive Suite production continues on schedule.

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 1997	DEC 1997	NOV 1997
System Available for Operational Use	JUN 1999	OCT 2001	OCT 2001 (Ch-1)
Initial Operational Capability (IOC)	DEC 1999	SEP 2003	SEP 2003 (Ch-2)
Milestone III	DEC 1999	N/A	N/A (Ch-3)
IOC 2&3	N/A	SEP 2005	SEP 2005 (Ch-2)
Beyond LRIP Review	N/A	SEP 2005	SEP 2005 (Ch-3)

b. Current Change Explanations --

(Ch-1): The Current Estimate for this milestone has changed as follows:

	<u>Previous CE</u>	<u>Current CE</u>
System Available for Operational Use	APR 2003	OCT 2001

This system has been in operational use since October 2001 by direction of the Combatant Commanders (COCOMS) in support of Operation Enduring Freedom (OEF); therefore, this milestone has been met.

(Ch-2): The Current Estimate for these milestones has changed as follows:

	<u>Previous CE</u>	<u>Current CE</u>
Initial Operational Capability (IOC)1	SEP 2002	SEP 2003
IOC 2 & 3	-----	SEP 2005

An incremental IOC approach was approved by the Joint Requirements Oversight Council Memo 111-00 (JROCM 111-00) dated June 27, 2000. GBS Phase II requirements are grouped into IOC 1, 2, and 3. The following

9b. Schedule (Cont'd):

summarizes the threshold requirements associated with each IOC:

IOC 1:

1. Primary Injection Points operational on Ultra High Frequency (UHF) Follow-On (UFO) 8, 9, 10
2. Full Satellite Broadcast Manager capability
3. Field 20% of JPO Receive Suites (19 units)
4. Personnel training in operations and maintenance of fielded equipment
5. Logistically support the system to effectively sustain GBS
6. Independently assess system capabilities
7. Augment UFO GBS with leased commercial satellite services to cover gaps over CONUS

(Note: IOC 1 is based on the performance of the currently fielded Asynchronous Transfer Mode (ATM) based system)

IOC 2:

1. Field 90% of JPO Receive Suites (86 units)
2. Provide classified video capability
3. Remote Receive Suite enable/disable

IOC 3:

1. Tactically suitable Ground Receive Suite (two-person lift)
2. Protect all information from exploitation

(Ch-3): The Current Estimate for these milestones has changed as follows:

	<u>Previous CE</u>	<u>Current CE</u>
Milestone III	OCT 2002	N/A
Beyond LRIP Review	-----	SEP 2005

Milestone III was replaced with "Beyond LRIP Review" which is required to procure greater than the LRIP quantity of 500 units. The Defense Acquisition Executive approved extension of LRIP to 500 units with an August 9, 2000 memorandum.

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
System Coverage	65 deg	65 deg / 65 deg	65 deg	65 deg
	South to 65 deg	South to/ South to 65 deg	South to 65 deg	South to 65 deg
	North	North / North	North	North
Spot Beams	Two	Two / Two	Two	Two
	500nm	500nm / 500nm	500nm	500nm
	steer-able,	steer-able, / able,	steer-able,	steer-able,
	one	one / One	One	One
	2000 nm	2000 nm / 2000 nm	2000 nm	2000 nm
	steer-able	steer-able / able	steer-able	steer-able

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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 /	One PIP and one TIP	One PIP and one TIP
Security	Pass unclass- ified to TS/SCI traffic	Pass / Pass unclass- ified to/ TS/SCI / traffic /	Pass unclassi- fied to TS/SCI traffic	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 / UFO GBS, / one or / more / commer- / cial / satell- / ite / frequen- / cy bands/	20.2-21. / 2 GHz / UFO GBS and 11.7 to 12.2 GHz Ku Commer- cial	20.2-21. / 2 GHz / UFO GBS and 11.7 to 12.2 GHz Ku Commer- cial
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: / FGRT, / TGRT and ART / SRT / 500nm: / FGRT, / TGRT, / SRT and / SSRT	2000nm: / FGRT, / TGRT and / SRT / 500nm: / FGRT, / TGRT, / SRT and / SSRT	2000nm: / FGRT, / TGRT and / SRT / 500nm: / FGRT, / TGRT, / SRT and / SSRT
Pointing of Steerable Spot Beam Antenna	Frequent	Frequent/	Frequent	Frequent
Steerable Antenna Tasking	SBM Primary means	SBM / Primary / Means	SBM Primary Means	SBM Primary Means
Interoperability	N/A	100% / IERs / satisfie/ d /	100% / critical IERs / satisfie/ d	100% / IERs / satisfie/ d

ACRONYMS:

ART -Airborne Receive Suite Terminal

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

FGRT -Fixed Ground Receive Suite Terminal  
 GBS -Global Broadcast Service  
 IERS -Information Exchange Requirements  
 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  
 [REDACTED]  
 UFO -UHF Follow-on Satellite

b. Current Change Explanations -- None

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	397.5	388.8	395.6
Procurement	53.9	361.3	293.6
Flyaway	(48.5)		(278.7)
Nonrecurring flyaway			(7.5)
Total Flyaway	(48.5)		(286.2)
Other Wpn System Costs	(4.3)		(4.5)
Peculiar Support	(0.0)		(1.0)
Initial Spares	(1.1)		(1.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1997 Base-Year \$	451.4	750.1	689.2
Escalation	45.7	71.5	50.5
Development (RDT&E)	(41.7)	(20.5)	(18.2)
Procurement	(4.0)	(51.0)	(32.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	497.1	821.6	739.7
b. Quantity --			
Development (RDT&E)	221	136	136
Procurement	<u>125</u>	<u>1085</u>	<u>915</u>
Total	346	1221	1051

For the current estimate, the Development Quantity of 136 includes 106 Fixed and Transportable Ground Receive Suites (GRS), 27 Shipboard Receive Suites (SRS) and 3 Primary Injection Points (PIPs); the Procurement Quantity of 915 includes 910 Fixed and Transportable GRS and SRS and 5 Theater Injection Points (TIPs) through FY09.

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

JROCM 080-00 directed the inclusion of an additional Key Performance Parameter (KPP), Interoperability. The original customized software architecture met the threshold requirements, and the transition to a standards based open architecture will meet the objective requirements. Inclusion of this KPP did not drive any additional developmental costs.

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. On August 9, 2000, the DAE extended the program's authority to procure LRIP quantities up to Milestone III. Subsequently, Milestone III has been replaced with "Beyond LRIP Review" which is required to procure greater than the LRIP quantity of 500 units.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	750.1	689.2	
(2) Quantity	1221	1051	
(3) Unit Cost	0.614	0.656	+6.84
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	361.3	293.6	
(2) Quantity	1085	915	
(3) Unit Cost	0.333	0.321	-3.60

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GBS, December 31, 2002

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	-14.6	+0.7	-	-13.9
Quantity	-2.7	+160.4	-	+157.7
Schedule	-	+27.9	-	+27.9
Engineering	+4.6	-	-	+4.6
Estimating	-33.1	+2.6	-	-30.5
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	-45.8	+194.4	-	+148.6
Current Changes:				
Economic	-3.2	-4.4	-	-7.6
Quantity	-	+98.7	-	+98.7
Schedule	-	+13.0	-	+13.0
Engineering	+22.8	+2.3	-	+25.1
Estimating	+0.8	-36.0	-	-35.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+20.4	+73.6	-	+94.0
Total Changes	-25.4	+268.0	-	+242.6
Current Estimate	413.8	325.9	-	739.7

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	-2.6	+143.2	-	+140.6
Schedule	-	+24.5	-	+24.5
Engineering	+4.3	-	-	+4.3
Estimating	-26.3	+1.3	-	-25.0
Other	-	-	-	-
Support	-	+2.7	-	+2.7
Subtotal	-24.6	+171.7	-	+147.1
Current Changes:				
Quantity	-	+85.3	-	+85.3
Schedule	-	+11.7	-	+11.7
Engineering	+22.0	+2.1	-	+24.1
Estimating	+0.7	-30.4	-	-29.7
Other	-	-	-	-
Support	-	-0.7	-	-0.7
Subtotal	+22.7	+68.0	-	+90.7
Total Changes	-1.9	+239.7	-	+237.8
Current Estimate	395.6	293.6	-	689.2

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-3.2
	Realignment of funds to facilitate Internet Protocol (IP) development (Engineering)	+15.4	+15.8
	Defense Emergency Response Funds (DERF) to facilitate 2-person lift development (Engineering)	+6.6	+7.0
	Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.8
	RDT&E Subtotal	+22.7	+20.4
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-5.6
	Economic adjustment for negative program change. (Economic)	N/A	+1.2
	Marines: Total Quantity variance associated with decrease of 22 Receive Suites (RSs) (Quantity)	+0.1	+0.1
	Marines: Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.1
	Marines: Change in the estimated cost of receive suites (Estimating)	-0.7	-1.1
	Navy: Quantity decrease of 13 RSs. (Quantity)	-4.1	-4.9
	Navy: Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	-1.4	-1.6
	Navy: Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.5
	Navy: Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	-0.1	-0.1
	Navy: Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
	Navy: Increase in estimated cost of Receive Suites (Estimating)	+4.1	+4.0
	Army: Quantity increase of 235 RSs. (Quantity)	+72.1	+83.4
	Army: Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	+13.1	+14.5
	Army: Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.1
	Army: Correction to align flyaway and support costs. (Support)	-0.7	0.0
	Army: Correction to align flyaway and support costs. (Estimating)	+0.7	0.0

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Army: Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+0.7	+1.4
Army: Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
Army: Decrease in estimated cost of RS (Estimating)	-36.4	-41.5
Air Force: Quantity increase of 103 RSs (Quantity)	+17.2	+20.1
Air Force: Acceleration of annual procurement buy profile. (Schedule)	0.0	-0.6
Air Force: Mod kits for fielded receive suites (Engineering)	+2.1	+2.3
Air Force: Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Procurement Subtotal	<u>+68.0</u>	<u>+73.6</u>

Procurement Quantities for Receive Suites have changed as follows:

	<u>Prior SAR Qty</u>	<u>Current Qty</u>	<u>Increase(Decrease)</u>
Marines	103	81	(22)
Navy	168	155	(13)
Army	219	454	235
Air Force	<u>122</u>	<u>225</u>	<u>103</u>
Totals	612	915	303

QR = Quantity related changes.

**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	-0.020	-0.720	+0.039	+0.028	-0.063	--	+0.003	-0.733	0.704

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	
0.463	-0.004	-0.117	+0.045	+0.003	-0.037	--	+0.003	-0.107	0.356

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 1997	N/A	NOV 1997
Milestone III	N/A	DEC 1999	N/A	N/A
IOC	N/A	DEC 1999	N/A	SEP 2003
Total Cost	0.0	497.1	N/A	739.7
Total Quantity	N/A	346	N/A	1051
Prog Acq Unit Cost	N/A	1.4	N/A	0.7

**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		
Target	Ceiling	Qty
\$84.8	N/A	221

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$260.4	N/A	304	\$260.4	\$260.4

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.9	\$-0.3
Cumulative Variances To Date (12/31/02)	<u>\$1.4</u>	<u>\$-0.3</u>
Net Change	\$0.5	\$0.0

**Explanation of Change:**

Schedule Variance: No significant change in cumulative schedule variance since the last SAR.

Cost Variance: The net change of \$0.5M was primarily due to Raytheon's slower than expected personnel growth on the program.

**Contract Comments:**

The current contract quantity of 304 is based on 10 RDT&E first generation (I1E) Air Force receive suites (RS), 27 RDT&E I1E Shipboard RS, 96 RDT&E JPO-funded Air Force RS, 48 procurement Air Force RS, 67 procurement Navy RS, 49 procurement Army RS, 2 procurement DIA RS, 3 RDT&E PIPs, and 2 procurement Army TIPs.

This contract is funded with RDT&E, Procurement and Operations and Support funds by the Air Force, Army and Navy. Current Contract Price has been updated to reflect significant contracting actions executed in the past year and actions anticipated in the near term.

Contract Performance against the Over Target Baseline (OTB) improved since the June 2002 SAR. The OTB was approved as a result of the Integrated Baseline Review (IBR) in October 2000.

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

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

<u>Appropriation</u>	<u>Prior Years (FY96-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	322.4	38.1	33.5	19.8	413.8
Procurement	113.9	57.5	55.1	99.4	325.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	436.3	95.6	88.6	119.2	739.7

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

b. Annual Summary -- Global Broadcast Service

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				14.1	14.0
1997				37.7	37.9
1998				69.4	70.2
1999				62.9	64.3
2000				39.6	41.1
2001				30.0	31.6
2002				38.6	41.0
2003				20.8	22.3
2004				35.0	38.1
2005				30.3	33.5
2006				8.6	9.7
2007				2.1	2.4
2008				1.9	2.2
2009				4.6	5.5
Subtotal	136			395.6	413.8

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	40		9.0	9.0	9.9
2005	41		8.9	8.9	9.9
Subtotal	81		17.9	17.9	19.8

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	11		2.6	2.6	2.6
1998		1.3		1.3	1.3
1999	20		3.5	3.5	3.6
2000	8		1.1	1.1	1.1
2001	13		11.6	11.6	12.3
2002	15		14.2	14.2	15.2
2003	24		16.0	16.0	17.3
2004	38		20.7	20.7	22.7
2005	26		17.6	17.6	19.6
Subtotal	155	1.3	87.3	88.6	95.7

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

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	1	2.1	2.9	7.1	7.3
1999	8		4.1	5.6	5.8
2000	15		9.0	10.4	10.9
2001		3.8		4.0	4.2
2002	27		6.0	6.4	6.9
2003	1		9.0	10.2	11.1
2004	40		8.0	8.1	8.9
2005	40		8.7	8.8	9.8
2006	42		8.5	8.8	10.0
2007	42		8.7	8.8	10.2
2008	119		27.1	27.1	31.9
2009	119		23.4	23.4	28.0
Subtotal	454	5.9	115.4	128.7	145.0

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	5		2.7	2.7	2.8
2001	16		4.3	4.3	4.6
2002	27		6.4	6.4	6.9
2003					
2004	44		14.4	14.4	16.0
2005	53		14.0	14.0	15.8
2006	65		12.8	12.8	14.7
2007		0.3		0.3	0.4
2008	9		2.2	2.2	2.6
2009	6		1.3	1.3	1.6
Subtotal	225	0.3	58.1	58.4	65.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
USAF	361	0.3	58.1	454.0	479.2
Navy	236	1.3	105.2	106.5	115.5
Army	454	5.9	115.4	128.7	145.0
Grand Total	1051	7.5	278.7	689.2	739.7

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	136	136
Procurement	193	191

Percent Total Program Quantities Delivered: 31.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 346.6

Percent Total Program Expended: 46.9%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --  
There is no antecedent system.

Operations and Support costs include all costs for operating, maintaining and supporting the GBS assets for an assumed life of ten years (2004-2013) for all services. Assets include: Transmit Suites (TS), Receive Suites (RS), and Theater Injection Points (TIP). The costs include all Depot Level Repairables (DLR) costs for GBS assets as well as the operating, logistics and personnel support costs associated with operating the three Transmit Suite sites.

The costs in the table below are based on an estimate prepared in January 2003. From the estimate an average annual cost was calculated for the system by cost element. Some of the cost elements listed in the table encompass more than one task. *Unit Level Consumption* encompasses all Petroleum, Oil and Lubricants costs for the TIPS, and transportation and Regional Support Center costs for sending defective repairs back to the depot. *Contractor Support* encompasses all the operating costs at the TS sites and DLR costs for all assets covered under Contractor Logistics Support. *Sustaining Support* encompasses sustaining engineering support costs, hardware technology obsolescence and software maintenance for all GBS assets and the cost for CONUS Ku satellite lease.

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

Cost Element	Global Broadcast Service Avg Annual - System	Antecedent N/A
Mission Pay & Allowances	1.6	N/A
Unit Level Consumption	0.5	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	15.3	N/A
Sustaining Support	6.7	N/A
Indirect Costs	0.2	N/A
Total	24.3	N/A

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GBS, December 31, 2002

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

Total O&S Cost	Global Broadcast Service	Antecedent
BY\$ (In Millions)	308.1	N/A
TY\$ (In Millions)	382.5	N/A

Report Creation Date: 03/19/2003 8:11:37 AM

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# AF-21 NPOESS

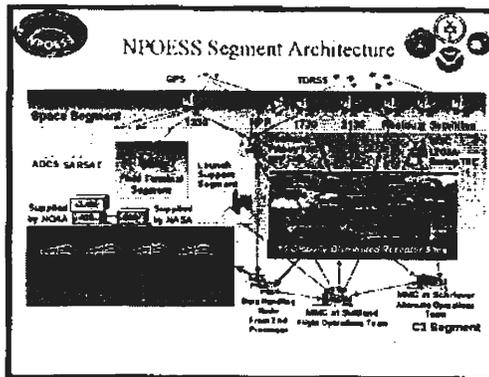
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: NPOESS

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): National Polar-orbiting Operational Environmental Satellite System (NPOESS)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

Centre Building, Suite 910	SES Mr John Cunningham
8455 Colesville Road	Assigned: November 1, 1999
Silver Spring, MD 20910-3320	DSN N/A; COMM 301-713-4701
	john.d.cunningham@noaa.gov

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0603434 E Project 2N2ACV, 8N2ACV

PROCUREMENT:  
APPN 3020 ICN MSERLV (Air Force) (Shared)  
APPN 3020 ICN NPS000 (Air Force)

O&M:  
PE 0305178F

NPOESS is a Presidentially directed Tri-agency program composed of Department of Defense (DoD), Department of Commerce (DOC) and National Aeronautics and Space Administration (NASA) personnel. Per the Tri-agency Memorandum of Agreement (MOA), funding is provided jointly by the Department of Defense (DoD), through the Air Force, and the Department of Commerce (DOC), through the National Oceanic and Atmospheric Administration (NOAA). Currently, the DoD funds NPOESS with RDT&E via PE 0603434E and DOC funds with NOAA Procurement, Acquisition, and Construction (PAC). Procurement will be funded via PE 0305178F and NOAA PAC. Post Initial Operational Capability (IOC), O&S will be funded with O&M via PE 0305178F and NOAA Operations, Research, and Facilities (ORF). Launch Services are

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

03-C-0293

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

Funded entirely with Missile Procurement, Air Force (MPAF) via Evolved Expendable Launch Vehicle (EELV) PE 0305393F.

**5. References:**

SAR Baseline (Production Estimate):

USecAF Approved Acquisition Program Baseline (APB) dated August 22, 2002.

Approved Program:

USecAF Approved Acquisition Program Baseline (APB) dated August 22, 2002.

**6. Mission and Description:**

The National Polar-Orbiting Operational Environmental Satellite System (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 Department of Commerce (DOC)/National Oceanic and Atmospheric Administration (NOAA) mission requirements, and Department of Defense (DoD) peacetime and wartime missions.

**7. Executive Summary:**

In January 2001, the Department of Defense (DoD) directed addition of Interoperability as a Key Performance Parameter (KPP). The National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), the United States Air Force, the United States Navy, and the United States Army, in support of this new KPP, approved a Memorandum of Agreement (MOA) for responsibilities relative to field terminal upgrades. This KPP was included in the latest version of Integrated Operational Requirements Document (IORD-II). Coordination of the IORD-II is complete and it was validated by the Joint Agency Requirements Council (JARC) in December 2001.

In preparation for an Engineering and Manufacturing Development (EMD)/Production milestone decision, the Joint Agency Requirements Group (JARG) finalized the update of NPOESS requirements. The EMD Request for Proposal (RFP) release, initiation of the Life Cycle Cost Estimate (LCCE) update, and the final release of the Technical Requirements Document (TRD) were delayed. These delays forced the Integrated Program Office (IPO) to reschedule the milestone decision from February 2002 to August 2002. Consequently, the IPO exercised a priced extension option on the Program Definition and Risk Reduction (PDRR) contracts to continue development until the milestone decision. Draft RFPs were sent to industry for comment and the Undersecretary of the Air Force approved release of the final RFP on February 14, 2002. Source selection began with the receipt of the proposals on March 13, 2002. The LCCE was updated and reviewed by senior cost advisors and the Cost Analysis Agency. The NPOESS Executive Committee (EXCOM) approved entry into Acquisition and Operations (A&O) on August 22, 2002.

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

On August 23, 2002, the IPO awarded to the team of Northrop Grumman Space Technology (NGST) (formerly TRW), a shared system responsibility contract to execute EMD, Production and deployment, and operate the NPOESS through the Acquisition and Operations phase. The basic contract is valued at \$2.9B plus Production and O&S options. All major sensor development contracts have been "descoped" to facilitate transition of these efforts to NGST subcontracts. The Government redefined the content so that Government held contracts could end in September 2002, and NGST could assume responsibility. The program was redesignated an Acquisition Category (ACAT) IC program consistent with Milestone Decision Authority (MDA) delegation from Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) to Under Secretary of the Air Force (USecAF).

Since the September 2002 Selected Acquisition Report (SAR), the NPOESS FY 2004 budget was decreased to delay delivery of the first satellite due to increased longevity of current Department of Defense /Air Force (DoD/AF) systems. This delay will also cause an up to 19-month coverage gap for the National Oceanic and Atmospheric Administration (NOAA) Polar Operational Environmental Satellite (POES). The System Program Director (SPD) has reason to believe that the current estimate for the program indicates that the development cost will not be within the baseline threshold value. The SPD immediately notified the Milestone Decision Authority (MDA) and the NPOESS Executive Committee (EXCOM) of this issue on February 20, 2003. By March 20, 2003, the SPD will notify the EXCOM of the reason for the program deviation and the actions that need to be taken to bring the program back within the baseline parameters. By May 20, 2003, one of the following will have occurred: the program will be back within APB parameters or a new APB will be approved. At this time, the SPD does not anticipate a Nunn-McCurdy Unit Cost breach.

Sensor development continues under the NGST prime contract. The IPO continues development of the Global Positioning System Occultation Sensor (GPSOS) under Firm Fixed Price contract through Critical Design Review in FY03. The GPSOS will be transitioned to a NGST subcontract at the conclusion of the current effort. In addition, the IPO, through its NGST prime contract, has initiated acquisition of an Aerosol Polarimetry Sensor (APS).

NOAA and Air Force personnel provided vital support in preparations for the launch of Windsat/Coriolis, a risk reduction mission for the NPOESS Conical Scanning Microwave Imaging Sounder, which successfully launched on January 6, 2003. The Windsat will determine sea surface wind direction from passive observation of microwave energy. This capability is the last unproven concept to be employed by NPOESS.

**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	MAR 1997	MAR 1997	MAR 1997
Payload Contract Awards	JUL 1997	JUL 1997	JUL 1997
Pre-Total System Performance Responsibility (pre-TSPR) Contract Award	NOV 2000	NOV 2000	DEC 1999
Milestone II/III	FEB 2002	FEB 2002	AUG 2002
Total System Responsibility (TSPR) Contract Award	MAR 2002	MAR 2002	AUG 2002
Initial Operational Capability (IOC)	JUL 2011	JUL 2011	JUL 2011
Follow-on Decision	OCT 2013	OCT 2013	OCT 2013

Pre-Total System Performance Responsibility (Pre-TSPR) was completed as Program Definition and Risk Reduction (PDRR); Milestone II/III was completed as a Key Decision Point C (KDP-C); and the TSPR contract is redesignated as a Shared System Performance Responsibility (SSPR) to reflect the nature of the Acquisition and Operations (A&O) phase contract.

The tri-agency NFOESS Memorandum of Agreement (MOA) established the NFOESS Executive Committee (EXCOM) as the Program approval authority. The previous NFOESS APB Memorandum was signed by the last of the three EXCOM members on April 19, 1999. This APB redesignated Milestone II as Milestone II/III, a combined R&D/Production decision.

9a. Schedule (Cont'd):

In 2002, the Under Secretary of the Air Force (USECAF) was appointed the Milestone Decision Authority (MDA) by delegation from Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) and the Secretary of the Air Force (SecAF). Under the Defense Space Acquisition process, the System Program Director (SPD) requested a Defense Space Acquisition Board (DSAB) in August 2002 for a KDP-C milestone decision. The MDA concurred and initiated the Independent Program Assessment process which was completed in August 2002.

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

Key EDR Parameters	Production Estimate (SAR)	Approved Program (AFB) Obj/Threshold	Demonstrated Perf	Current Estimate
Atmospheric Vertical Moisture Profile				
Measurement Uncertainty (Clear: Surface - 600mb)	+/- 10%	+/- 10% / greater / of 20% / or 0.2 g / kg-1	TBD	18% or 0.2 g kg-1
Measurement Uncertainty (Cloudy: Surface - 600 mb)	+/- 10%	+/- 10% / greater / of 20% / or 0.2g / kg-1	TBD	20% or 0.2 g kg-1
Atmospheric Vertical Temperature Profile				
Measurement Uncertainty (Clear: Surface - 300mb)	+/- 0.5K	+/- 0.5K/ +/- 1.6K / per 1 km / layer	TBD	0.9 K per 1 km layer
Measurement Uncertainty (Cloudy: Surface - 700mb)	+/- 0.5K	+/- 0.5K/ +/- 2.5K / per 1 km / layer	TBD	2.0 K per 1 km layer
Imagery				
Horizontal Resolution Horizontal Cell Size at Nadir, clear	0.1 km	0.1 km / 0.4 km	TBD	0.4 km
Refresh Visible and IR bands Average Revisit Time	1 hour	1 hour / 4 hours / or less	TBD	3.9 hours

10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (AFB) Obj/Threshold	Demonstrated Perf	Current Estimate
Maximum Revisit Time	1 hour	1 hour / 6 hours / or less	TBD	6.0 hours
Sea Surface Temperature Horizontal Resolution				
Horizontal Cell Size at Nadir, clear	0.25 km	0.25 km / 1.0 km	TBD	0.75 km
Measurement Uncertainty, clear	+/- 0.1 deg C	+/- 0.1 / +/- 0.5 deg C / deg C	TBD	0.5 deg C
Global Sea Surface Winds				
Measurement Accuracy	Greater of +/- 1 m/s or +/- 10%	Greater / Greater of +/- 1/ of +/- 2 m/s or / m/s or +/- 10% / +/- 10%	TBD	1 m/s
Soil Moisture (Surface) Sensing Depth	Surface to -80 cm	Surface to -80 cm / Surface / (skin layer; / -0.1cm)	TBD	Surface to -0.1 cm
Key System Parameters Data Access	Select. denial of all U.S. data (ARGOS and SARSAT ex- cepted)	Select. / Select. denial / denial of all U.S. / U.S. data / data (ARGOS / (ARGOS and / and SARSAT / SARSAT ex- cepted) / cepted)	TBD	Select. denial of all U.S. data (ARGOS and SARSAT ex- cepted)
Interoperability	100% of top- level IERs	100% of / 100% of top- / critical level / top- level IERs / IERs	TBD	100% of critical top-level IERs

Performance Characteristics Footnotes:

Performance Characteristics are per the NPOESS Integrated Operational Requirements Document (IORD II) dated December 13, 2001.

Imagery Refresh Visible and IR Bands Average Revisit Time: At least 75% of

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

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
- IER - Information Exchange Requirements
- SARSAT - Search and Rescue Satellite Aided Tracking
- g kg-1 - grams per kilogram
- cm - centimeter

b. Current Change Explanations -- None

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

a. Cost --	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APR)</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	3969.2	3969.2	4357.6
Procurement	1136.3	1136.3	1243.4
Flyaway	(1136.3)		(1117.3)
Other Flyaway			(126.1)
Total Flyaway	(1136.3)		(1243.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	432.5	432.5	475.5
Total FY 2002 Base-Year \$	<u>5538.0</u>	<u>5538.0</u>	<u>6076.5</u>
Escalation:	579.6	579.6	509.3
Development (RDT&E)	(332.6)	(332.6)	(249.7)
Procurement	(215.8)	(215.8)	(204.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(31.2)	(31.2)	(55.0)
Total Then Year \$	<u>6117.6</u>	<u>6117.6</u>	<u>6585.8</u>

Cost Footnotes:

The numbers listed above are total NFOESS satellites and ground activities, launch vehicles, Government Program Office support, IPO share of NASA/IPO NFOESS Preparatory Program, and related risk reduction efforts. The total NFOESS program costs include both Department of Commerce (DOC) and Department of Defense (DoD) funding budgeted on a 50/50-share basis by year.

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

b. Quantity --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2	2	2
Procurement	4	4	4
Total	6	6	6

There is no Low Rate Initial Production (LRIP) for NPOESS.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	JCR Baseline (AUG 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	5538.0	6076.5	
(2) Quantity	6	6	
(3) Unit Cost	923.000	1012.750	19.72
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	1136.3	1243.4	
(2) Quantity	4	4	
(3) Unit Cost	284.075	310.850	19.43

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	4301.8	1352.1	-	463.7	6117.6
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+394.0	+118.1	-	+76.0	+548.1
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+394.0	+118.1	-	+76.0	+548.1
Current Changes:					
Economic	-45.8	-22.2	-	-9.2	-77.2
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-2.7	-	-	-	-2.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-48.5	-22.2	-	-9.2	-79.9
Total Changes	+305.5	+95.9	-	+66.8	+468.2
Current Estimate	4607.3	1448.0	-	530.5	6585.8

Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	3969.2	1136.3	-	432.5	5538.0
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+396.4	+107.1	-	+43.0	+546.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+396.4	+107.1	-	+43.0	+546.5
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-5.3	-	-	-	-5.3
Engineering	-	-	-	-	-
Estimating	-2.7	-	-	-	-2.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-8.0	-	-	-	-8.0
Total Changes	+388.4	+107.1	-	+43.0	+538.5
Current Estimate	4357.6	1243.4	-	475.5	6076.5

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-49.3
	Economic adjustment for negative program change. (Economic)	N/A	+3.5
	Funding cuts to the Department of Defense (DoD) to delay delivery of the first NPOESS satellite from FY 2008 to FY 2010 due to increased longevity of current systems. With similar reductions to the Department of Commerce, this delay will also cause an up to 19-month coverage gap for the National Oceanic and Atmospheric Administration (NOAA) Polar Operational Environmental Satellite (POES). (Schedule)	-5.3	0.0
	Adjustment for Current and Prior Inflation. (Estimating)	+0.9	-0.9
	Funding cuts due to Congressional rescissions (Estimating)	-3.5	-3.5
	Initial cost impact associated with delaying the delivery of the first NPOESS satellite. (Estimating)	+33.8	+34.9
	Funding cut to the Department of Commerce (DOC) to delay delivery of the first NPOESS satellite from FY 2008 to FY 2010, due to increased longevity of current systems. This delay will also cause an up to 19-month coverage gap for the National Oceanic and Atmospheric Administration (NOAA) Polar Operational Environmental Satellite (POES). Additionally, the funding cuts to DOC were not restored in the outyears. (Estimating)	-33.9	-35.0
	RDT&E Subtotal	-8.0	-43.5
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-22.2
	Procurement Subtotal	0.0	-22.2
(3)	<u>O&amp;M</u>		
	Revised escalation indices. (Economic)	N/A	-9.2
	O&M Subtotal	0.0	-9.2

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate										PAUC	
PAUC										Changes	PAUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est	Cur Est	
1019.60	-12.87	+0.003	--	--	+90.90	--	--	--	+78.03	1097.63	

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate										PUC	
PUC										Changes	PUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est	Cur Est	
338.02	-5.55	+0.005	--	--	-29.52	--	--	--	+23.98	362.00	

c. Schedule, Cost, and Quantity History

Item/Event	SAR			Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PGE)	
Milestone I	MAR 1997	N/A	MAR 1997	MAR 1997
Milestone II	SEP 2000	N/A	FEB 2002	AUG 2002
Milestone III	DEC 2011	N/A	OCT 2013	OCT 2013
IOC	DEC 2010	N/A	JUL 2011	JUL 2011
Total Cost	5329.0	N/A	6117.6	6585.9
Total Quantity	5	N/A	6	6
Prog Acq Unit Cost	1065.8	N/A	1019.6	1097.6

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

a. RDT&E -- NPOESS A&O: NGST, Redondo Beach, CA F04701-02-C-0502, CPAF Award: August 23, 2002 Definitized: August 23, 2002	Initial Contract Price		
	Target	Ceiling	Qty
	\$2942.7	N/A	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$2942.7	N/A	2	\$2942.7	\$2942.7

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/02)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

Currently the Integrated Program Office and Northrop Grumman Space Technologies are in the process of developing the NPOESS contract Performance Measurement baseline with an Integrated Baseline Review date scheduled for February 13-14, 2003. Until a validated baseline is in place, a cost/schedule variance analysis cannot be generated.

Contract Comments:

The basic A&O contract value includes Engineering and Manufacturing Development (EMD) and Pre-initial Operational Capability (Pre-IOC) Operations and Support (O&S). The scope of the EMD effort is defined as Shared System Performance Responsibility, including all labor, materials, facilities, overhead, and so forth, for the design, fielding, and testing of the NPOESS system resulting in declaration of Initial Operational Capability (IOC), delivery of the Cross-track Infrared Sounder (CRIS) and Visible/Infrared Imager Radiometer Suite (VIIRS) sensors to the NPOESS Preparatory Project (NPP); the complete NPOESS space segment (satellites C1 and C2); the complete NPP & NPOESS Interface Data Processing (IDP) and Command, Control, and Communications (C3) segments; launch support segment (including integration to the Evolved Expendable Launch Vehicle (EELV)); on-orbit checkout; calibration and validation; field terminal segment; and final delivery of all ground segment elements to support production satellites. The scope of the Pre-IOC O&S effort is defined as Contractor Operations and Support from NPP Ground Readiness through declaration of IOC and includes operating and maintaining C3 sites and systems, IDP sites and systems, processing data, maintaining and updating algorithms, maintaining the field terminal software, and operating and maintaining NPP and NPOESS satellites. The contract also includes priced options for production satellites and post IOC O&S and Sustaining Engineering.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY95-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-18)	<u>Total</u>
RDT&E	1333.3	546.1	592.1	2135.8	4607.3
Procurement	-	-	-	1448.0	1448.0
MILCON	-	-	-	-	-
OSM	-	0.1	23.1	507.3	530.5
Total	1333.3	546.2	615.2	4091.1	6585.8

Program Funding Summary Footnotes:

The numbers listed above are total NPOESS satellites and ground activities, launch vehicles, Government Program Office support, IPO share of NASA/IPO NPOESS Preparatory Program, and related risk reduction efforts. The total NPOESS program costs include both Department of Commerce (DOC) and Department of Defense (DoD) funding budgeted on a 50/50-share basis by year.

b. Annual Summary -- Weather Satellite System

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				27.3	25.2
1996				29.7	27.9
1997				59.1	56.3
1998				68.1	65.2
1999				115.7	112.0
2000				118.2	116.2
2001				144.8	144.2
2002				268.3	269.6
2003				508.6	516.7
2004				529.2	546.1
2005				565.0	592.1
2006				481.6	512.9
2007				439.7	476.6
2008				279.4	303.2
2009				238.6	268.0
2010				158.9	179.3
2011				174.8	203.5

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

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2012				1.5	1.8
2013				75.1	90.6
2014				1.1	1.3
2015				73.8	92.2
2016				1.0	1.3
2017				0.1	0.1
2018					
Subtotal	2			4357.6	4607.3

The total NPOESS program costs include both Department of Commerce (DOC) and Department of Defense (DoD) funding to be budgeted on a 50/50-share basis by year.

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006		25.2		25.2	27.2
2007		55.6		55.6	61.0
2008	1		332.0	332.0	371.3
2009		56.8		56.8	64.7
2010	1		237.8	237.8	275.6
2011	1		252.6	252.6	298.1
2012	1		157.2	157.2	188.8
2013		27.3		27.3	33.4
2014		17.6		17.6	21.9
2015		17.7		17.7	22.4
2016		21.7		21.7	28.0
2017		17.6		17.6	23.7
2018		24.3		24.3	32.5
Subtotal	4	263.6	979.6	1243.4	1448.0

The total NPOESS program costs include both Department of Commerce (DOC) and Department of Defense (DoD) funding to be budgeted on a 50/50-share basis by year.

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

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				0.1	0.1
2005				22.1	23.1
2006				42.5	45.2
2007				55.0	59.6
2008				96.9	106.7
2009				83.2	93.4
2010				89.0	101.6
2011				86.7	100.8
Subtotal				475.5	530.5

The total NPOESS program costs include both Department of Commerce (DOC) and Department of Defense (DoD) funding to be budgeted on a 50/50-share basis by year.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total		6 263.8	979.6	6076.5	6585.8

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDTRF	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 837.1

Percent Total Program Expended: 12.0%

Total expenditures includes \$418.8M of DOC obligations.

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Operations and Support costs are based on contract option prices for contractor post Initial Operational Capability (IOC) Operations and Support, consistent with the Life Cycle Cost Estimate for this effort dated August 23, 2002. The Post IOC O&S period is estimated to begin in July 2011 with declaration of IOC and continue through June 2019 with completion of a ten year mission life that began with readiness of the first NPOESS satellite and ground system. This period is assumed to be an entirely contractor operated and supported phase although Government resources may be provided upon contractor request and availability. Because Government sources of support are not directed, the contractor may modify their O&S concept to increase or decrease the amount of requested support. Operating & Support Costs are calculated on an annual basis for the entire system, not per satellite.

Antecedent Systems: The NPOESS replaces the following civil and DoD polar-orbiting environmental satellite systems: Defense Meteorological Satellite Program, National Oceanic and Atmospheric Administration Polar Operational Environmental Satellite, and the National Aeronautics and Space Administration Earth Observing System.

b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	Weather Satellite System	Antecedent Systems
	Average Annual System Cost	
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	83.0	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	83.0	N/A

Total O&S Cost	Weather Satellite System	Antecedent Systems
BYS (In Millions)	82.8	N/A
FY\$ (In Millions)	713.1	N/A

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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 March 2, 1999.

**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 309 Strike and 46 E2/C2 pilots each year through FY 2035 at two sites, Naval Air Station (NAS) Kingsville and NAS Meridian. The system includes: 234 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.

The T-45 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 (CLS) has been structured to provide for competition of maintenance support services to ensure that the system is supported in the most cost effective manner. The system is currently up and operating at both NAS Kingsville (T-45A) and NAS Meridian (T-45C). More than 1,000 Naval Aviators have been winged after completing flight training in the T-45 GOSHAWK.

**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, beginning approximately in the mid 1980's, because of age and attrition. After extensive program strategy reviews the program was approved by SECNAV after a Defense Naval Systems Acquisition Review Council (DNSARC) on August 31, 1984. The subsequent Defense Systems Acquisition Review Council (DSARC) review resulted in DOD approval on September 24, 1984.

The first production T-45A was delivered to Naval Air Station (NAS) Kingsville, Texas in December 1991. The first T-45TS trained aviators were winged on October 5, 1994. A total of 83 production T-45A aircraft were procured, two of which were converted to T-45C configuration.

T-45C aircraft which have an updated "glass" cockpit (Cockpit 21) began entering the fleet in 1998.

7. Executive Summary (Cont'd):

During 2002, 14 T-45 aircraft were manufactured and delivered to NAS Meridian.

As of December 31, 2002 there are 75 T-45 aircraft at NAS Kingsville (four aircraft are awaiting crash damage repair). There are 73 T-45C aircraft at NAS Meridian. There are also two aircraft (one T-45A and one T-45C) at NAS Patuxent River, MD conducting flight testing on various components of the T-45 system.

The program continues to aggressively monitor aircraft operational performance, as well as Boeing/Rolls Royce production performance. Program focus continues on correction of engine surge, ground directional control, and obsolescence issues.

The FY03 production contract authorizing the buy of long lead items was awarded to Boeing on October 28, 2002. It is expected to be definitized by March 31, 2003.

The FY03 Engine Production contract with Rolls Royce was awarded on 12 December 2002. This was the first option year on a base contract awarded in September 2001 for the FY02 Production. This contract procures engines and provides them as GFE to the T45 Program. As of December 2002, Rolls Royce was meeting all contractual delivery schedules.

A government/industry team continues working to establish an achievable road map to ensure the T45TS will provide effective and efficient jet pilot training through 2035. The team is concentrating on keeping pace with the evolving Operational Advisory Group (OAG) requirements and capabilities of both the fleet replacement squadrons and primary flight trainer systems. Obsolescence avoidance, increasing airframe life, O&S cost reduction and avionics advances are considered top priorities.

During 2002 the program successfully completed 34,930 flight hours at NAS Kingsville and 28,622 flight hours at NAS Meridian. As of December 2002, the Training command had flown over 352,654 T-45A flight hours and 95,045 T-45C flight hours for a total of 447,699 total flight hours.

In 1999 the Chief of Naval Operations (CNO) approved an inventory objective increase from 187 to 234 aircraft to extend the mission life of the T45TS from 2020 through 2035. However, due to CNO assessment of continued use of existing trainer aircraft, on going analysis of T-45 attrition rates, and budgetary constraints, the FY04 President's Budget reflects a total of 209 aircraft. PB04 reflects an increase of 28 aircraft from PB03.

The T45TS program was selected for Commercial Operations & Support Savings Initiative (COSSI) funding for implementation of two Commercial Technology Insertion programs. The avionics Intergrated Program Team (IPT) was awarded \$6.9 million to develop a commercially based Mission Display Processor (MDP), expanded to incorporate future processing and memory requirements and avoid current parts obsolescence, and \$3.6M for a commercially based airborne data

7. Executive Summary (Cont'd):

recorder (Advanced Signal Data Computer (ASDC)) to enhance engine fatigue life tracking. These contracts were awarded to Boeing in September 1999 and May 2001. The MDP COSSI successfully completed Stage I. The ASDC COSSI Stage I is nearing completion with the finalization of reports.

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
Program Initiated	JUL 1975	JUL 1975	JUL 1975
Requirements Validation Study	MAR 1978	MAR 1978	MAR 1978
MENS Approved	JUN 1979	JUN 1979	JUN 1979
RFQ For Concept Definition	DEC 1979	DEC 1979	DEC 1979
Project Charter Approved	AUG 1980	AUG 1980	AUG 1980
ASE Studies Completed	MAR 1981	MAR 1981	MAR 1981
Sustain Engr Contract Award	NOV 1981	NOV 1981	NOV 1981
DEM/VAL Contract Award (Pre FSED)	SEP 1982	SEP 1982	SEP 1982
Program Redirect (All Carrier Qual)	NOV 1983	NOV 1983	NOV 1983
Advance Development Contract Award	JUL 1984	JUL 1984	JUL 1984
Milestone I/II (DSARC)	SEP 1984	SEP 1984	SEP 1984
FSED Letter Contract	SEP 1984	SEP 1984	SEP 1984
Milestone IIIA Approval Pilot Prod (APP)	SEP 1987	SEP 1987	SEP 1987
T45A First Flight	MAR 1988	MAR 1988	APR 1988
Pilot Lot II FY 89	DEC 1989	DEC 1989	DEC 1989

T45TS, December 31, 2002

9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone IIIA (ALRIP) FY92	NOV 1991	NOV 1991	APR 1992
Complete Navy Tech Eval (NTE)	AUG 1993	AUG 1993	NOV 1993
Complete OPEVAL	DEC 1993	DEC 1993	APR 1994
Initial Operational Capability	NOV 1992	NOV 1992	APR 1993
Milestone III Authorized Full Production	JAN 1995	JAN 1995	JAN 1995
Contractor Logistics Support (CLS) Competition	OCT 1997	OCT 1999	OCT 1999

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
<b>Aircraft</b>				
Wing Span (ft)	30.81	30.81 / 30.81	N/A	30.81
Length (ft)	39.26	39.26 / 39.26	N/A	39.26
Height (ft)	13.42	13.42 / 13.92	N/A	13.92
Flight Design Weight (lbs)	13725	13725 / 14000	13868	13868
Specific Range @ 30,000 ft (takeoff less 40% useable fuel) (nm/lb)	.33	.33 / .32	.359	.359
Endurance @ 5000 ft (takeoff less 80% useable fuel) (lb/hr)	1130	1130 / 1160	940	940
Waveoff (altitude loss ft)	50	50 / 70	<70	<70
Bolter (ground roll distance ft @ 15 kts WOD)	325	325 / 425	310-375	310-375
Lateral Directional Stability (sideslip excursion approach configuration) (deg)	4	4 / 6	6	6
Roll Off at Stall (approach configuration) (deg)	<30	<30 / 30	15-20	15-20
"G" Excursion Speed Brake Extension (Gs)	.25	.25 / .40	.35	.35

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>
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-1)	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
Approach (kts)	125	125 / 125	124.4	124.4
Sustain G's @ 15,000 ft	3.4	3.4 / 3.2	3.3	3.3
Mean Flight Hours Between Failure (MFHBF)	3.2	3.2 / 2.0	3.2	3.2
Direct Maintenance Man Hours/Flight Hour (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

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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>
Academics				
Computer Aided	95	95 / 85	100	100
Instruction (CAI)				
System Availability				
(% Sched)				
Training Integration				
System (TIS)				
Availability (%	95	95 / 85	85	100
Sched)				

Training Integration System (TIS) availability is meeting 100% of schedule and 99% of total time.

Pilot Training Rate performance characteristic was deleted from reporting in accordance with MSIII approval January 19, 1995.

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)	898.9	1086.0	1054.6
Procurement	4595.2	5707.9	5257.5
Airframe/CFE	(2738.5)		(3269.2)
Engines	(184.3)		(296.3)
GFE	(137.8)		(167.9)
Change Allowance/ECO	(62.6)		(34.5)
Nonrecurring flyaway	(198.6)		(227.0)
Total Flyaway	(3321.8)		(3994.9)
Training Equipment	(337.1)		(220.1)
Other	(651.3)		(775.6)
Total Other Wpn Sys	(988.4)		(995.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(285.0)		(266.9)
Construction (MILCON)	34.0	34.0	33.9
Acquisition O&M	0.0	0.0	0.0
Total FY 1995 Base-Year \$	<u>5528.1</u>	<u>6827.9</u>	<u>6346.0</u>
Escalation	71.4	62.1	-37.1
Development (RDT&E)	(-167.1)	(-186.8)	(-174.7)
Procurement	(241.4)	(251.8)	(140.4)
Construction (MILCON)	(-2.9)	(-2.9)	(-2.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>5599.5</u>	<u>6890.0</u>	<u>6308.9</u>
b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	<u>174</u>	<u>234</u>	<u>209</u>
Total	176	236	211

The original program planned 48 LRIP units or 16% of the planned 300 total. Due to delays in completing planned development, OSD directed an increase to the original planned LRIP procurement from 48 to 60 aircraft or 20% of the originally planned 300 total. The T-45 Full Rate Production (FRP) decision occurred in January 1995.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 1999 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	6827.9	6346.0	
(2) Quantity	236	211	
(3) Unit Cost	28.932	30.076	+3.95
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	5707.9	5257.5	
(2) Quantity	234	209	
(3) Unit Cost	24.393	25.156	+3.13

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	+8.9	+0.1	+14.5
Quantity	-	+63.6	-	+63.6
Schedule	-	-151.4	-	-151.4
Engineering	-19.6	+43.1	-	+23.5
Estimating	+162.2	+19.4	-0.1	+181.5
Other	-	-	-	-
Support	-	-161.6	-	-161.6
Subtotal	+148.1	-178.0	+0.0	-29.9
Current Changes:				
Economic	-	-12.6	-	-12.6
Quantity	-	+554.0	-	+554.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+73.3	-	+73.3
Other	-	-	-	-
Support	-	+124.6	-	+124.6
Subtotal	-	+739.3	-	+739.3
Total Changes	+148.1	+561.3	+0.0	+709.4
Current Estimate	879.9	5397.9	31.1	6308.9

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	-	+117.6	-	+117.6
Schedule	-	-65.9	-	-65.9
Engineering	-20.3	+51.8	-	+31.5
Estimating	+176.0	+33.7	-0.1	+209.6
Other	-	-	-	-
Support	-	-116.7	-	-116.7
Subtotal	+155.7	+20.5	-0.1	+176.1
Current Changes:				
Quantity	-	+477.8	-	+477.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+58.1	-	+58.1
Other	-	-	-	-
Support	-	+105.9	-	+105.9
Subtotal	-	+641.8	-	+641.8
Total Changes	+155.7	+662.3	-0.1	+817.9
Current Estimate	1054.6	5257.5	33.9	6346.0

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-12.6
Total quantity variance associated with increase of 28 aircraft from 181 to 209. (Quantity)	+477.8	+554.0
Delayed budget adjustment associated with claim adjustments to McDonnell Douglas of \$32.0M and \$9.6M for FY94 and FY95 respectively. (Estimating)	+40.9	+41.6
Adjustment for Current and Prior Inflation. (Estimating)	+8.8	+9.8
Revised program estimate due to increase in aircraft quantities. (QR)(Estimating)	+8.4	+21.9
Adjustment for Current and Prior Inflation. (Support)	+2.7	+2.8
Change in Initial Spares associated with quantity increase. (QR)(Support)	+22.2	+25.5
Change in Training Equipment (Support)	-14.1	-15.5
Increase in Other Logistics related elements resulting from additional 28 aircraft being funded in FY04, 05 and 06. (Support)	+95.1	+111.8
Procurement Subtotal	+641.8	+739.3

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

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

QR = Quantity related changes.

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	
31.82	+0.009	-2.35	-0.718	+0.111	+1.21	--	-0.175	-1.92	29.90

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	-0.018	-1.70	-0.724	+0.206	+0.444	--	-0.177	-1.97	25.83

c. Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	JUL 1975	N/A	JUL 1975	JUL 1975
Milestone II	N/A	N/A	SEP 1984	SEP 1984
Milestone III	N/A	N/A	JAN 1995	JAN 1995
IOC	MAY 1991	N/A	NOV 1992	APR 1993
Total Cost	5462.0	N/A	5599.5	6308.9
Total Quantity	304	N/A	176	211
Prog Acq Unit Cost	18.0	N/A	31.8	29.9

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

a. Procurement --

<u>T45TS GFE ENG FY94-01:</u>			Initial Contract Price		
ROLLS ROYCE, PLC, Bristol, UK			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-93-C-0100, FFP			\$2.7	N/A	12
Award: November 30, 1993					
Definitized: March 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>	
\$222.0	N/A	118	\$222.0	\$222.0	

Explanation of Change:

None.

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

Contract Comments:

The Program Manager's Price at Completion reflects the total contract estimate for the GFE engines for the eight (8) option years.

The Basic contract was awarded to Rolls Royce (November 93) and contains eight options, FY94 through FY01.

The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Acquisition contract prior to definitization.

The Current Target Price decrease from \$224.3M to \$222.0M reflects contract adjustments as a result of exchange rate adjustments in regard to French Francs.

Total funding and quantities reflect GFE engines for the option years FY94 thru FY01, plus the price of modules, and spare engines awarded to date.

The estimated price at completion reflects the award of the FY01 GFE engine option.

This will be the last report for this contract. Contract is more than 90% complete.

15. Contract Information (Cont'd):

<u>T45TS FY99-00 PROD:</u>		Initial Contract Price		
MCDONNELL DOUGLAS CORP, ST. LOUIS MO		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-98-C-0114, FFP		\$3.1	N/A	15
Award: September 24, 1998				
Definitized: February 16, 1999				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$512.6	N/A	30	\$512.6	\$512.6

Explanation of Change:

None.

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

Contract Comments:

Initial target price is for long lead material. The balance of the funding was awarded the following year.

This contract provided for the base year FY99 and option year FY00 (quantity of 15 aircraft) production.

This will be the last report for this contract. This contract is 90% complete.

<u>T45TS GFE ENG FY02-04:</u>		Initial Contract Price		
ROLLS ROYCE, PLC, BRISTOL, UK		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-01-C-0290, FFP		\$2.1	N/A	14
Award: September 27, 2001				
Definitized: March 28, 2002				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$33.3	N/A	14	\$33.3	\$33.3

Explanation of Change:

None.

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

15. Contract Information (Cont'd):

Contract Comments:

Initial target price is for long lead material. The balance of the funding was awarded the following year.

The basic FY02 contract was awarded to Rolls Royce (September 2001) and contains two option years, FY03 and FY04. Options include T45Ts GFE aircraft engines, modules and spare engines.

The change in the current contract price is revised from \$12.6 to \$33.3 as a result of exercise of FY03 option.

Contract delivery total quantity of 6 installation engines and one module 3 for FY02 and 8 installation engines for FY03.

Estimated price at completion reflects the FY02 (6 installation engines and one module 3) and FY03 (8 installation engine) requirements.

<u>T45TS FY01 PROD:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS CORP, ST LOUIS MO N00019-00-C-0184, FFP Award: September 1, 2000 Definitized: March 1, 2001	\$5.2	N/A	14

<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>
\$241.1	N/A	14	\$241.1	\$241.1

Explanation of Change:

None.

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

Contract Comments:

Initial target price is for long lead material. The balance of the funding was awarded the following year.

The Current Target Price of \$241.1 includes Ground Handling Improvement Phase III effort, Spares, three spare wings, technical publications non-recurring effort, ECP-229 Forward Flaps Quadrant Handles, and ECP-236 Bleed Air Pipe.

The FY01 quantity of 14 T-45 aircraft was awarded in September 2000 and the price was definitized on March 1, 2001. As of December 2002 three aircraft

15. Contract Information (Cont'd):

have been delivered per schedule.

<u>T45TS FY02 PRODUCTION:</u>			
MCDONNELL DOUGLAS, ST LOUIS, MO	<u>Initial Contract Price</u>		
N00019-01-C-0267, FFP	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Award: July 7, 2001	\$2.9	N/A	6
Definitized: July 2, 2002			

<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>
\$133.7	N/A	6	\$133.7	\$133.7

Explanation of Change:

None.

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

Contract Comments:

Initial target price was for long lead material. The balance of the funding was awarded the following year.

The Current Target Price of \$133.7M includes \$2.8M for Ground Handling, Phase IV, \$.8M for DTIII, \$1.3M for repair of the GFP, \$.8M for GTS, and \$.3M for ECP 240 GINA Software Companion.

The FY02 quantity of 6 aircraft was awarded July 2001 and the price was definitized on July 2, 2002. Aircraft are scheduled to begin delivery in November 2003.

<u>FY03 T45TS AIRCRAFT:</u>			
MCDONNELL DOUGLAS, ST LOUIS, MO	<u>Initial Contract Price</u>		
N00019-03-C-6528, FFP	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Award: November 6, 2002	\$15.8	N/A	8
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>
\$15.8	N/A	8	\$15.8	\$15.8

Explanation of Change:

None.

15. Contract Information (Cont'd):

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

Contract Comments:

The Current Target Price of \$15.8 reflects Long Lead Parts, Flight Test Program, and ILS. Contract definitization is planned for Mar 03. Contract Price will be revised in accordance with definitized pricing.

The FY03 quantity is 8 aircraft and the aircraft price is not yet definitized.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY80-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06)	<u>Total</u>
RDT&E	879.9	-	-	-	879.9
Procurement	4593.1	357.3	248.1	199.4	5397.9
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	5504.1	357.3	248.1	199.4	6308.9

b. Annual Summary -- T-45TS

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1995 Dollars Nonrec</u>	<u>Flyaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1980			7.1	7.1	4.2
1981			2.5	2.5	1.6
1982			7.3	7.3	4.9
1983			11.1	11.1	7.8
1984			32.3	32.3	23.6
1985			89.6	89.6	67.5
1986			156.6	156.6	121.4
1987			178.6	178.6	142.5
1988			120.5	120.5	99.4
1989			106.0	106.0	91.1
1990			216.6	216.6	193.8
1991			15.6	15.6	14.5
1992			50.3	50.3	48.0

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

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

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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 FY 1995 Dollars Nonrec	Flyaway FY 1995 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		17.8		137.1	127.2
1991		39.9		159.5	152.2
1992	12	25.9	220.3	367.3	358.3
1993	12	8.3	225.2	281.7	279.9
1994	12	8.2	216.0	287.7	291.2
1995	12	5.2	210.1	245.7	252.7
1996	12	2.3	206.8	306.6	319.8
1997	12	3.5	203.9	284.4	299.1
1998	15	5.4	237.3	278.0	295.8
1999	15	2.5	237.7	289.5	311.9
2000	15		253.1	309.9	338.1
2001	14	13.4	223.7	276.3	304.5
2002	6	9.0	123.1	170.0	189.4
2003	8	7.6	151.6	192.7	217.7
2004	15	3.4	264.6	311.5	357.3
2005	8	4.6	163.4	212.8	248.1
2006	5	5.0	127.8	168.1	199.4
Subtotal	209	227.0	3767.9	5257.5	5397.9

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				10.8	9.2
1989					
1990				12.9	11.8

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

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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	211	227.0	4822.5	6346.0	6308.9

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	156	156

Percent Total Program Quantities Delivered: 74.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 4910

Percent Total Program Expended: 77.8%

T-45 deliveries accepted through the "As Of" date December 31, 2002 are through the 156th aircraft (A156).

**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.

The (234 quantity) March 2, 1999 Acquisition Program Baseline (APB) program was specifically scoped to a 361 pilot training rate (PTR) per year, spread over two sites (NAS Meridian MS, and NAS Kingsville, TX). With the program limited to a production quantity of 209 T-45 aircraft, the program will be

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

unable to satisfy the Chief of Naval Operations anticipated pilot training rate (PTR) of 309 Strike and 46 E2/C2 pilots (for a total of 355) after FY 2018. This will significantly impact the program plan to support pilot training through 2035. The steady state quantity of flight hours is approximately 90,000 hours per year (contingent upon the retirement of the T-2C aircraft in FY 2004).

O&S cost elements include: Mission Personnel, Unit-Level Consumption, Contractor Logistics Support (CLS), 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 Mission Personnel, but within the CLS portion of the O&S.

Unit-Level Consumption costs include the cost for Petroleum, Oil & Lubricants (POL) required for peacetime operations, and Training Ordnance costs.

CLS costs include the following elements: the costs for Aircraft Maintenance; Ground Training System (GTS Maintenance, Replenishment Spares, Repair of Repairables (ROR), Simulator Maintenance, and Operations Costs); Training Support 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 modification 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. Software Maintenance, for Simulator Operations costs are also included in the cost for CLS.

Indirect costs include the following: 1) Pipeline training costs for all instructor pilots that are assigned to the T-45 during their first tour; and 2) Installation Support costs. Installation Support Costs include costs for personnel and infrastructure at the host installation where training is performed.

Date of estimate: December 27, 2002.

The T-45A/C was designed to replace the T-2C, and TA-4J aircraft. The Average Annual Cost Per Steady State reflects the current T-45A/C aircraft estimate. The cost of antecedent (T-2C, and TA-4J) systems were not available.

**b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)**

Cost Element	T-45TS	No Antecedent System
	Avg Annual Cost Per T-45	
Mission Pay & Allowances	127.5	N/A
Unit Level Consumption	149.0	N/A
Intermediate Maintenance	N/A	N/A

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

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	T-45TS	No Antecedent System
	Avg Annual Cost Per T-45	
Depot Maintenance	N/A	N/A
Contractor Support	995.8	N/A
Sustaining Support	57.2	N/A
Indirect Costs	206.8	N/A
Total	1536.3	N/A

Total O&S Cost	T-45TS	No Antecedent System
BY\$ (In Millions)	1204.9	N/A
TY\$ (In Millions)	1536.3	N/A

Report Creation Date: 03/20/2003 11:04:02 AM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM:** Minuteman III PRP

**AS OF DATE:** December 31, 2002

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SAF/PAS  
08 0085  
CONGRESSIONAL

1. (U) Designation and Nomenclature (Popular Name): Minuteman III Propulsion Replacement Program (MM III PRP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  

OO-ALC/LMP	Capt Tom Rock
6031 Gum Lane	Assigned: May 1, 2001
Hill AFB, UT 84056-5826	DSN 775-5541; COMM (801)775-5541
	Tom.Rock@hill.af.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0604851F  
 PROCUREMENT:  
 (U) APPN 3020 ICN LGM30G (Air Force)

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Minuteman III PRP, December 31, 2002

**5. (U) References:**

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated September 10, 2001.

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated September 10, 2001.

**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 were qualified to replace unavailable or environmentally prohibited materials. Additionally, known failure modes and design weaknesses were corrected by incrementally inserting and qualifying current rocket motor technologies. The PRP reuses existing components to the greatest extent possible. During remanufacture, the solid rocket motors and interstage hardware and ordnance are being 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 were 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) All nine Low Rate Initial Production (LRIP 1) and all thirty-three LRIP 2 deliveries have been made. Eight out of Eighty-five full rate production (FRP 1) deliveries have been made.

The second Full Rate Production (FRP 2) option was exercised in October 2002. Procurement of materials and parts will dominate this effort until June, 2003 when actual production will begin. The FRP 2 quantity buy is 96 bringing the current quantity buy to 223 boosters. The Propulsion Replacement Program (PRP) is currently required to produce a total of 606 boosters during the period FY00 to FY08.

The program's focus is on resolving production challenges. Foreign objects (FO) found in twelve stage 2 and nine stage 3 motors will impact the field deliveries. There is no operational impact (missile off alert) anticipated due to temporary delay in deliveries. The FO's are small lead pellets from a cracked dead blow mallet. A quantity of 100 pellets weighs less than a quarter (\$.25) and fits into a thimble. The number of pellets found in the motors varied from 1 to 111. A letter of concern was sent to the prime

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

contractor shortly after the FO incident. The letter expressed the Air Force's concern and directed that the problem be promptly resolved. A joint independent review team is assessing contractor production facilities and will make recommendations to eliminate this problem. The program office has increased surveillance at Pratt and Whitney to closely monitor potential FO areas.

The program has historically been sensitive to rate changes driven by NASA shuttle program. The recent shuttle tragedy significantly impacts ATK Thiokol business base. Although the magnitude of the impact is unknown at this time, we will watch closely for potential impacts to the PRP program. Any new rate increases will compound the impact of known existing rate increases and continue manufacturing inefficiencies.

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
DT&E Phase Start	APR 1995	APR 1995	APR 1995
PDR Close-out	FEB 1998	FEB 1998	JAN 1998
CDR Close-out	AUG 1998	AUG 1998	NOV 1998
LRIP Contract Award	OCT 1999	OCT 1999	OCT 1999
IOT&E Phase Start	JUL 1999	JUL 1999	JUL 1999
IOT&E Phase Complete	MAR 2000	MAR 2000	MAY 2000
DT&E Phase Complete	JUN 1999	JUN 1999	JUN 1999
PCA Close-out	JUN 2001	JUN 2001	JUN 2001
Milestone III Review	SEP 2001	SEP 2001	SEP 2001

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Minuteman III PRP, December 31, 2002

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
LRIP Booster FAD	APR 2001	APR 2001	APR 2001
IOC	JAN 2002	JAN 2002	JAN 2002 (Ch-1)

(U) ACRONYMS:

- CDR- Critical Design Review
- DT&E- Developmental Test and Evaluation
- IOC- Initial Operational Capability
- IOT&E- Initial Operational Test and Evaluation
- LRIP- Low Rate Initial Production
- PCA- Physical Configuration Audit
- PDR- Preliminary Design Review
- FAD- First Asset Delivery

b. Current Change Explanations --

(U) Ch-1: IOC current estimate date, which was inadvertently left off from last SAR, was completed January 2002.

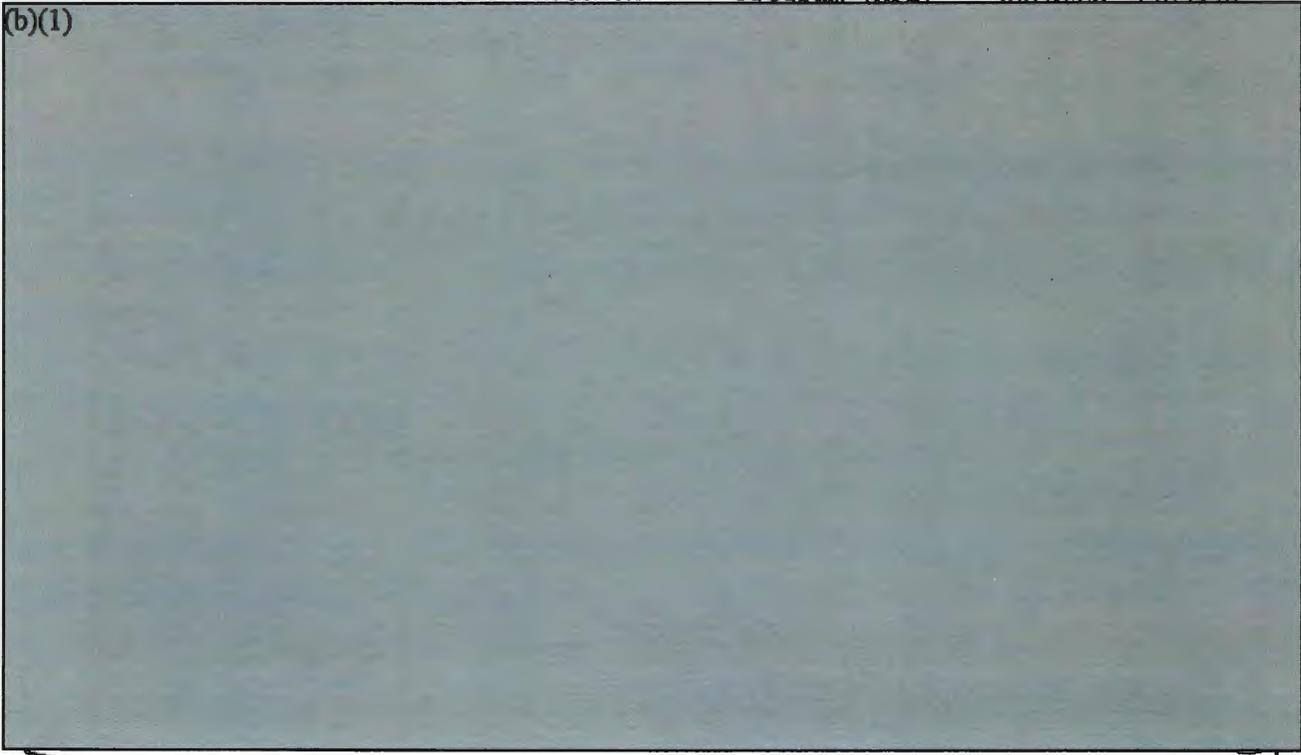
10. (U) Performance Characteristics:

a. Performance --

Production	Approved Program (APB)	Demonstrated	Current
------------	------------------------	--------------	---------

**AS AMENDED**

(b)(1)



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Minuteman III PRP, December 31, 2002.

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

AS AMENDED

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
(b)(1)	[Redacted]			

(U) ACRONYMS:  
 FRD- Formerly Restricted Data  
 FS- Frequency Source  
 NM- Nautical Miles

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)	336.8	336.8	317.0
Procurement	1750.0	1750.0	1652.8
Flyaway	(1632.4)		(1556.6)
Other Wpn System Costs	(117.6)		(96.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1994 Base-Year \$	2086.8	2086.8	1969.8
Escalation	514.0	514.0	308.3
Development (RDT&E)	(30.5)	(30.5)	(21.6)
Procurement	(483.5)	(483.5)	(286.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2600.8	2600.8	2278.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	607	607	606
Total	607	607	606

c. Foreign Military Sales -- None.

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Minuteman III PRP, December 31, 2002

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

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	2086.8	1969.8	
(2) Quantity	607	606	
(3) Unit Cost	3.438	3.250	-5.47
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	1750.0	1652.8	
(2) Quantity	607	606	
(3) Unit Cost	2.883	2.727	-5.41

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	367.3	2233.5	-	2600.8
Previous Changes:				
Economic	-7.2	-19.0	-	-26.2
Quantity	-	-2.1	-	-2.1
Schedule	-	-21.0	-	-21.0
Engineering	-	-	-	-
Estimating	-31.8	-248.2	-	-280.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-39.0	-290.3	-	-329.3
Current Changes:				
Economic	-	-3.7	-	-3.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+10.3	+24.0	-	+34.3
Other	-	-	-	-
Support	-	-24.0	-	-24.0
Subtotal	+10.3	-3.7	-	+6.6
Total Changes	-28.7	-294.0	-	-322.7
Current Estimate	338.6	1939.5	-	2278.1

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Minuteman III PRP, December 31, 2002

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	336.8	1750.0	-	2086.8
Previous Changes:				
Quantity	-	-1.6	-	-1.6
Schedule	-	-15.5	-	-15.5
Engineering	-	-	-	-
Estimating	-29.0	-101.4	-	-130.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-29.0	-118.5	-	-147.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+9.2	+42.7	-	+51.9
Other	-	-	-	-
Support	-	-21.4	-	-21.4
Subtotal	+9.2	+21.3	-	+30.5
Total Changes	-19.8	-97.2	-	-117.0
Current Estimate	317.0	1652.8	-	1969.8

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
\$10.3M was received on 27 September, 2002 for Aerojet contract closeout. Closeout costs were not previously included in the Program Office Estimate (Estimating)	+9.2	+10.3
RDT&E Subtotal	+9.2	+10.3
(2) <u>Procurement</u>		
Revised escalation rates (Economic)	N/A	-3.7
Revised estimate (Estimating)	+20.1	-1.3
Correction to realign flyaway and support costs from previous SARs (Support)	-22.6	-25.3
(Estimating)	+22.6	+25.3
Revised estimate for support costs (Support)	+1.2	+1.3
Procurement Subtotal	+21.3	-3.7

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Minuteman III PRP, December 31, 2002

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	
4.64	-0.208	--	+0.056	--	-0.295	--	+0.092	-0.355	4.29

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	
4.28	-0.049	+0.004	-0.035	--	-0.405	--	-0.040	-0.525	3.76

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	
4.03	-0.196	--	+0.056	--	-0.302	--	+0.092	-0.350	3.68

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	
3.68	-0.037	+0.003	-0.035	--	-0.370	--	-0.040	-0.479	3.20

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	N/A	N/A	N/A
Milestone II	N/A	JUN 1994	JUN 1994	JUN 1994
Milestone III	N/A	SEP 2000	SEP 2001	SEP 2001
IOC	N/A	JAN 2002	JAN 2002	JAN 2002
Total Cost	N/A	2819.3	2600.8	2278.1
Total Quantity	N/A	607	607	606
Prog Acq Unit Cost	N/A	4.6	4.3	3.8

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Minuteman III PRP, December 31, 2002

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

a. Procurement --

(U) MMIII PRP LRIP/FRP: TRW Space & Missile Div, Fairfax VA F42600-98-C-0001, CPAF/FPIF Award: December 22, 1997 Definitized: December 22, 1997	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$636.8	N/A	223

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$660.1	N/A	223	\$684.9	\$684.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-18.7	\$-5.5
Cumulative Variances To Date (12/31/02)	\$-17.8	\$-5.2
Net Change	\$0.9	\$0.3

Explanation of Change:

(U) Four options on the procurement contract are exercised: LRIP 1, LRIP 2, FRP 1, and FRP 2.

LRIP 1 is 100%.

LRIP 2 is 99.9% complete with only a few administrative tasks remaining.

FRP 1 is 61.5% complete and is projecting a (26.35M) variance at complete. The negative cost variance will go to zero during the firmup process (contractual rebaseline) scheduled for completion January 2003. Negative schedule variance (4.04%) reflects late field deliveries of boosters due to a foreign objects issue at Pratt and Whitney. Booster deliveries from the contractor were halted in December due to Foreign Objects found in twelve Stage 3 and nine Stage 2 motors. Production resumed on January 15, 2003 preventing further schedule delays. The severity of the schedule delay is dependant on the disposition of affected motors. Disposition will occur in March 2003.

FRP 2 was exercised October 2002. The Integrated Baseline Review (IBR) is scheduled for March 23-30, 2003.

(U) Contract Comments:

LRIP 1 is 100% complete and will not be reported in the next SAR.

LRIP 2 is 99.9% complete and will not be reported in the next SAR.

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Minuteman III PRP, December 31, 2002

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 (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-07)</u>	<u>Total</u>
RDT&E	338.6	-	-	-	338.6
Procurement	785.7	297.0	283.7	573.1	1939.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1124.3	297.0	283.7	573.1	2278.1

b. Annual Summary -- Minuteman III PRP

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1994 Dollars Nonrec</u>	<u>Flyaway FY 1994 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				14.7	14.9
1995				25.0	25.8
1996				62.0	65.3
1997				64.8	69.1
1998				60.5	65.0
1999				55.6	60.3
2000				25.3	27.9
2001					
2002				9.1	10.3
Subtotal				317.0	338.6

Appropriation: 3020 - Missile Procurement, Air Force

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1994 Dollars Nonrec</u>	<u>Flyaway FY 1994 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2000	9		78.5	81.0	90.1
2001	33		118.1	123.1	138.2
2002	85		221.5	235.3	267.5
2003	96		236.2	251.4	289.9
2004	96		238.5	253.8	297.0
2005	96		223.5	238.6	283.7
2006	96		224.5	239.3	289.6
2007	95		215.8	230.3	283.5
Subtotal	606		1556.6	1652.8	1939.5

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Minuteman III PRP, December 31, 2002

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	606		1556.6	1969.8	2278.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	55	50

(U) Percent Total Program Quantities Delivered: 8.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 719.8

(U) Percent Total Program Expended: 31.6%

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. There is no Antecedent System.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Minuteman III PRP	Antecedent System
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	0.0	0.0

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Minuteman III PRP, December 31, 2002

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

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Minuteman III PRP	Antecedent System
Total	0.0	0.0

Total O&S Cost	Minuteman III PRP	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

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# AF-12 GLOBAL HAWK

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CONGRESSIONAL SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: Global Hawk

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): RQ-4A, Global Hawk
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  
 Reconnaissance Systems Pgr Office      Col G. Scott Coale  
 Aeronautical Systems Center              Assigned: July 1, 2002  
 2640 West Loop Road, Room 213          DSN 785-7764; COMM 937-255-7764  
 WPAFB, OH 45433-7106                      scott.coale@wpafb.af.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
     (U)    PE 35205F (Shared) Predator Project  
 PROCUREMENT:  
     (U)    APPN 3080 ICN HAE UAV (Air Force)  
     (U)    APPN 3010 ICN HAEUAV (Air Force)  
 MILCON:  
     (U)    PE 35205F

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**DIRECTORATE FOR FREEDOM OF INFORMATION  
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DEPARTMENT OF DEFENSE**

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Declassify on: X1, A~~

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated December 24, 2002.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated December 24, 2002.

**6. (U) Mission and Description:**

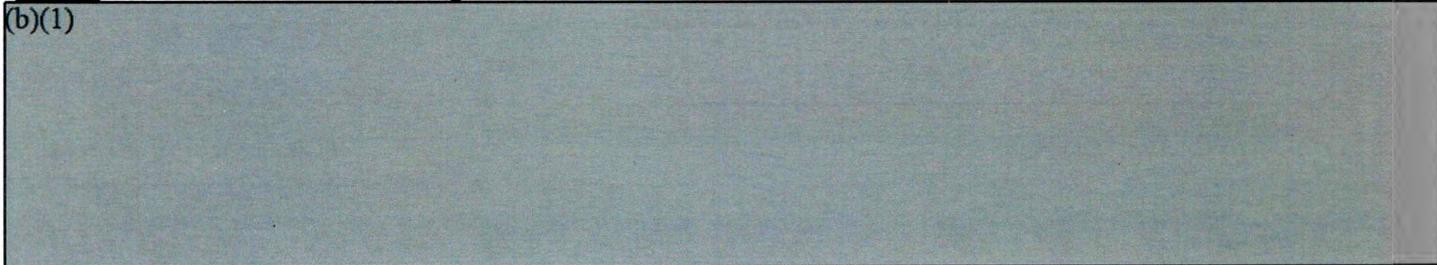
(U) The Global Hawk system is a high altitude, long endurance, unmanned aerial vehicle (UAV) with an integrated sensor suite and ground segment that provides Intelligence, Surveillance, and Reconnaissance (ISR) capabilities to joint warfighters. The system provides high-resolution, high-quality, digital Synthetic Aperture Radar (SAR) to include Ground Moving Target Indicator (GMTI), plus Electro-Optical (EO), and medium wave Infrared (IR) imagery of targets and other critical areas of interest. A signals intelligence (SIGINT) capability will be added to the system. The system will become part of the Air Force ISR architecture.

(U) Acronym List:

EO	Electro-Optical
GMTI	Ground Moving Target Indication/Indicator
IR	Infrared
ISR	Intelligence, Surveillance and Reconnaissance
SAR	Synthetic Aperture Radar
SIGINT	Signal Intelligence
UAV	Unmanned Aerial Vehicle

**7. (U) Executive Summary:**

(b)(1)



(U) Foreword: A March 2002 Defense Acquisition Board (DAB) review approved a new baseline for the Global Hawk program, incorporating the spiral development process. The spiral development strategy results in the earlier fielding of an increasingly more capable system compared to a conventional acquisition approach. This DAB envisioned multi-mission capable AVs configured for both imagery and signals intelligence (IMINT and SIGINT) missions. The program's ORD was updated to reflect this revised approach and was validated by the JROC in October 2002. A subsequent DAB took place on December 18, 2002 that further refined the Global Hawk program. The December DAB focused on approving the

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Global Hawk, December 31, 2002

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

next two development spirals, Spirals 3 and 4, and approved a revised configuration approach that will make the Global Hawk system more affordable. As a result of this DAB, the Undersecretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) issued an updated Acquisition Decision Memorandum (ADM), December 24, 2002; Acquisition Program Baseline (APB), December 24, 2002; and Acquisition Strategy Report (ASR), December 19, 2002. This Selected Acquisition Report (SAR) reports on this new baseline for the first time.

(U) Program Management: This program baseline incorporates several refinements. Primarily, it captures the results of a focused effort to improve system affordability. The effort started in March 2002 with a process of identifying recommendations for improving affordability and culminated with the baselining of many of these recommendations into the program. The program office has instituted a process to continue to identify, evaluate, and implement affordability initiatives to further reduce unit cost. The primary change this period was the adoption of a "missionized" approach for the AV configuration. This approach will result in two AV configurations: a multiple-intelligence (Multi-Int) configuration and a radar-only configuration. The Multi-Int configuration will include electro-optical, infrared, radar and signals intelligence capability. The radar-only configuration will incorporate the Multi-Platform Radar Technology Insertion Program (MP-RTIP) capability.

(U) Program Direction: Dec 2002 ADM direction included: Approved Spirals 3 and 4 for development, approved a Low Rate Initial Production (LRIP) of 19 AV and the previously approved 4 ground stations, approved the missionized payload configuration, approved an integrated verification test concept, embraced a "buy-to-budget" acquisition strategy (as an affordability initiative), accelerated the purchase of two AVs into the Future Years Defense Program (FYDP), and directed continued support for the Navy's Global Hawk Maritime Demonstration (GHMD).

(U) OPERATION ENDURING FREEDOM (OEF): As reported in the previous SAR, the Global Hawk program received and executed OEF deployment orders from November 2001 to September 2002, flying approximately 1,000 hours during over 50 sorties, providing over 15,000 imagery scenes to combat planners. The combatant command identified Global Hawk as "an imagery intelligence workhorse" in OEF. Two OEF mishaps occurred involving Global Hawk AVs (December 30, 2001 and July 10, 2002). Resulting safety and accident investigation boards emphasized the need to build on the success of the Advanced Concept Technology Demonstration (ACTD) phase and rigorously pursue EMD. In addition, the program implemented some ACTD system and process improvements before returning to operations and development flying. OEF participation resulted in some adverse impacts on the development program, but the early combat experience and feedback will ultimately result in the fielding of a more effective Global Hawk system.

(U) Budget Changes: Since the December 2002 DAB, two budget actions impacted the program baseline. The Air Force accelerated funding to increase the Fiscal Year (FY) 2006 Lot 5 quantity to 6 AVs from the baselined 4 AVs. Immediately

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Global Hawk, December 31, 2002

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

prior to releasing the FY 2004 President's Budget (PB), program funding was reduced, necessitating delayed procurement and development effort in multiple fiscal years. A detailed impact assessment has been initiated but is not completed in time for incorporation into this SAR. Initial impact assessments indicate that some development tasks will be delayed 1-2 years with the resultant delayed delivery of incremental capability improvements. Reduced production funding will result in building fewer AVs in the FYs 2004 through 2006 and/or the delivery of AVs without their full complement of sensor payloads. Other FY 2004 PB reductions will impact the user's Military Construction Program, and Operations and Maintenance program. Future Air Force action may reduce FY 2004 PB impacts, but it is likely the December 2002 APB will be impacted. We do not expect to be able to execute the ADM-directed program with the revised funding profile. The total program buy of 51 AVs will remain constant with individual production lot quantities adjusted to support available procurement funding.

(U) Program Leadership Changes: Colonel G. Scott Coale assumed program manager duties on July 1, 2002 replacing Colonel Wayne Johnson. Mr. Gary Stidham assumed Air Force deputy program manager duties on September 1, 2002 replacing Mr. Randy Brown. Navy Commander Rick McQueen continued as Navy deputy program manager.

(U) Contracting Events: ACTD AV-7 delivered on February 14, 2003. Engineering and Manufacturing Development (EMD) Spirals 1 and 2A contracts continue to execute with the Spiral 2B nearing definitization. An undefinitized contract action (UCA) for Spiral 3 and development effort in support of the Department of the Navy (DON) Global Hawk Maritime Demonstration is scheduled for mid FY 2003. The LRIP Lot 1 contract was definitized in August 2002 with delivery of the first production Ground Segment and AV in late FY 2003, and delivery of the second production AV in early FY 2004. In order to preserve the LRIP Lot 2 delivery schedule and maintain the subcontractor base, a UCA was issued to begin subcontractor production efforts. The UCA award for the Lot 2, which includes the DON demonstration support assets, was January 31, 2003. Acquisition activities are underway for the Logistics Support Contract (LSC) with definitization expected in FY 2003.

(U) Program Execution and Asset Availability: A significant percentage of the contractor work force and members of the program office supported or deployed with the Global Hawk system during the 2001-2002 OEF deployment. In the contractor workforce, 45% of the field service staff and about 20% of the overall staff supported and/or deployed during OEF. This resulted in some adverse schedule impacts on the development program; however, the program office has built a recovery plan and has been executing to this plan since returning from OEF in September 2002. The Global Hawk program is still in the early stages of development, and the 2003 GWOT deployment of limited assets will again impact development efforts. Since the overall contractor workforce has grown since the original OEF deployment, the 2003 GWOT deployment will impact a smaller percentage of the development workforce.

(U) Acronym List:

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

ACTD           Advanced Concept Technology Demonstration  
 ADM           Acquisition Decision Memorandum  
 APB           Acquisition Program Baseline  
 ASR           Acquisition Strategy Report  
 AV            Air Vehicle  
 DAB           Defense Acquisition Board  
 DON           Department of the Navy  
 EMD           Engineering and Manufacturing Development  
 FY            Fiscal Year  
 FYDP          Future Years Defense Program  
 GHMD          Global Hawk Maritime Demonstration  
 GWOT          Global War on Terrorism  
 IMINT         Imagery Intelligence  
 JROC          Joint Requirements Oversight Council  
 LRIP          Low Rate Initial Production  
 LSC          Logistics Support Contract  
 MP-RTIP       Multi-Platform Radar Technology Insertion Program  
 Multi-Int     Multiple Intelligence  
 OEF          Operation Enduring Freedom  
 ORD          Operational Requirement Document  
 PB            President's Budget  
 SAR          Selected Acquisition Report  
 SIGINT       Signal Intelligence  
 UCA          Un definitized Contract Action

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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Global Hawk, December 31, 2002

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Increment Zero: Delivery of first AV with initial Spiral 1 capability Operational Assessment	N/A	SEP 2003	SEP 2003 (Ch-1)
Start	N/A	AUG 2004	AUG 2004 (Ch-1)
Complete	N/A	SEP 2004	SEP 2004 (Ch-1)
Interim Program Review (IPR)	N/A	NOV 2004	NOV 2004 (Ch-1)
Delivery of first AV with initial Basic ORD Increment 1 capability	N/A	SEP 2005	SEP 2005 (Ch-1)
Initial Operational Capability (IOC)	N/A	DEC 2005	DEC 2005 (Ch-1)
Delivery of first of two AVs with 3,000 lbs payload capability to support IOT&E	N/A	MAY 2006	MAY 2006 (Ch-1)
IOT&E #1			
Start	N/A	JUL 2006	JUL 2006 (Ch-1)
Complete	N/A	SEP 2006	SEP 2006 (Ch-1)
Full Rate Production (FRP) Decision Review (DR)	N/A	NOV 2006	NOV 2006 (Ch-1)
Start FRP	N/A	DEC 2006	DEC 2006 (Ch-1)
Delivery of first AV with initial Basic ORD Increment 2 capability	N/A	SEP 2007	SEP 2007 (Ch-1)
SIGINT ASIP capability, SIGINT Annex need date	N/A	SEP 2009	SEP 2009 (Ch-1)
MP-RTIP capability, Radar Annex need date	N/A	SEP 2009	SEP 2009 (Ch-1)
Signals Intelligence Operational Test (OT) event	N/A	TBD	TBD (Ch-1)
MP-RTIP/ Active Electronically Scanned Array (AESA) OT event	N/A	TBD	TBD (Ch-1)
Approved for EMD/LRIP	FEB 2001	MAR 2001	

(U) Schedule milestones reflect the newly approved APB.

(U) Acronym List:

AESA Active Electronically Scanned Array  
APB Acquisition Program Baseline  
ASIP Airborne Signals Intelligence Program  
AV Air Vehicle  
DAB Defense Acquisition Board  
DR Decision Review  
EMD Engineering and Manufacturing Development  
FOC Full Operational Capability  
FRP Full Rate Production  
IOC Initial Operational Capability  
IOT&E Initial Operational Test & Evaluation  
IPR Interim Program Review  
LRIP Low Rate Initial Production  
MP-RTIP Multi Platform Radar Technology Insertion Program

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

MS Milestone  
 ORD Operational Requirements Document  
 OT Operational Test  
 SIGINT Signals Intelligence

b. Current Change Explanations --

(U) (Ch-1): These milestones were added to the baseline as the results of the December 18, 2002 DAB and included in the December 24, 2002 APB. The first milestone event ("Approved for EMD/LRIP") reflects the actual accomplishment date of the Milestone II DAB in March 2001.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Increment Zero: Endurance -- Air Vehicle (AV) (KPP)	N/A	40 / In msn hrs / capable / config- / uration, / must / have a / min / total / endur- / ance of / 28 hrs / plus / appro- / priate / fuel / reserves / IAW Air / Force / Instruc- / tions	31.5 hrs during Advanced Concept Demon- stra- tions	31.5 hrs(Ch-1)
Increment Zero: Airspace Coordination - Global Hawk System (KPP)	N/A	Must be / Must be suffi- / suffi- ciently / ciently robust / robust to allow/ to allow world- / world- wide / wide system / system employ- / employ- ment in / ment in all / all classes / classes of / of	To date the Global Hawk ACTD has operated in Classes A, D & E domestic aero- space and	Must be (Ch-1) suffi- ciently robust to allow world- wide in all classes of air space

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf Classes</u>	<u>Current Estimate</u>
Increment Zero: Mission Execution - Ground Station (KPP)	N/A	Must / Must allow / allow opera- / opera- tors to / tors to perform / perform NRT / NRT mission / mission control, / control, mission / mission monitor- / monitor- ing, and / ing, and mission / mission updates / updates / modifi- / modifica- cations / tions to to / include include / dynamic dynamic / platform platform / and and / payload payload / control control / and re- and re- / tasking tasking /	airspace / airspace airspace Global Hawk has demon- strated real time status- ing and control of the air vehicle, to include manual override of the pre-pro- grammed flight plan in payload response to ATC and re- tasking direc- tion	Must (Ch-1) allow opera- tors to perform NRT mission control, mission monitor- ing, and mission updates / modifi- cations to include dynamic platform and payload control and re- tasking
Basic ORD Increment 1: Information Exchange Requirements (IERS) (KPP)	N/A	Satisfy / Satisfy 100% of / 100% of all / all top- / top- level / level IERS / IERS / desig- / nated / critical	Global Hawk has demon- strated some degree of perfor- mance in 11 of the 12 IER level 1 events	Satisfy (Ch-1) 100% of all top- level IERS

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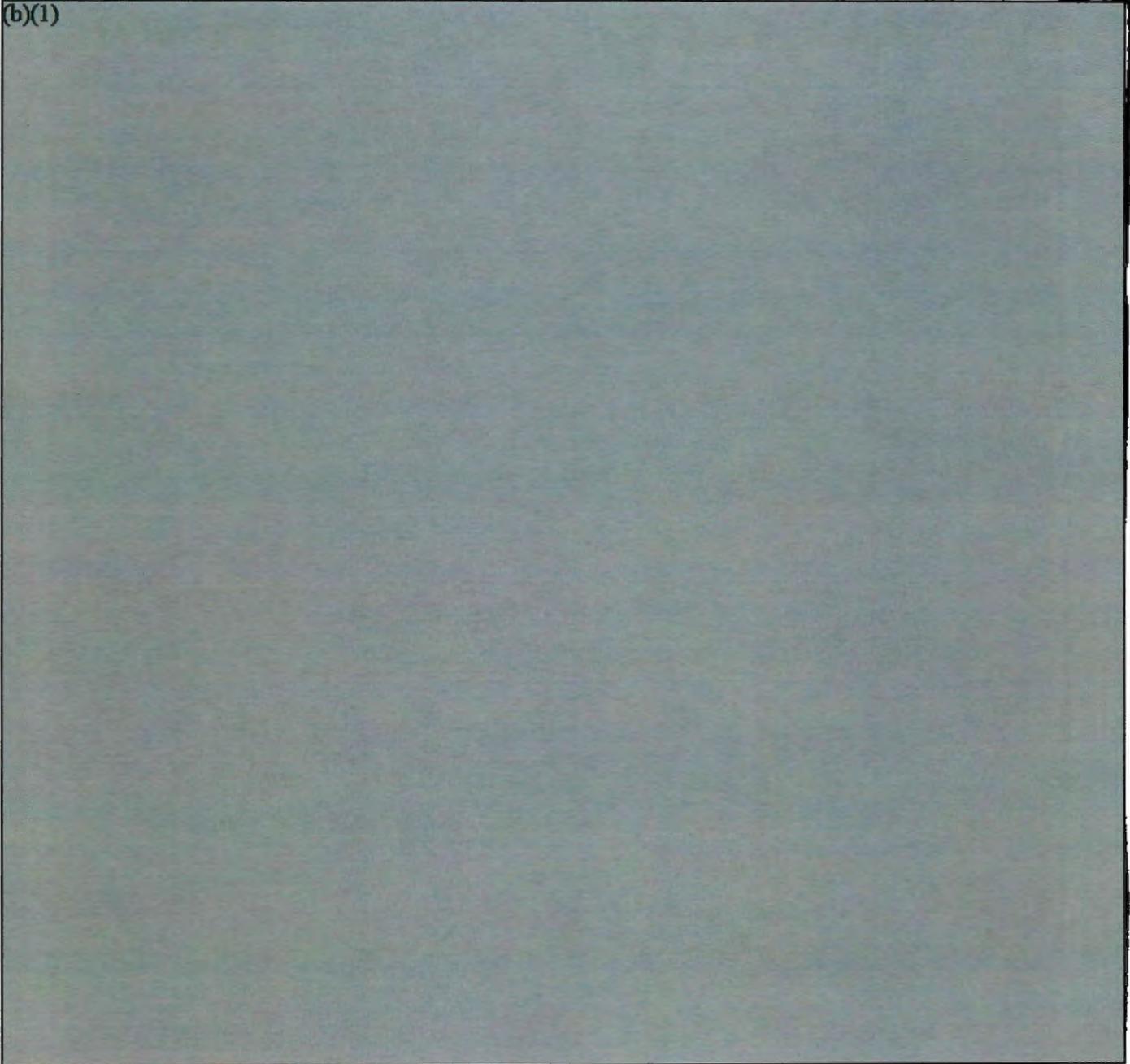
Global Hawk, December 31, 2002

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

AS AMENDED

Development	Approved	Demon-	Current
Estimate (APB)	Program (APB)	strated	Estimate
	Estimate (Threshold)	Performance	

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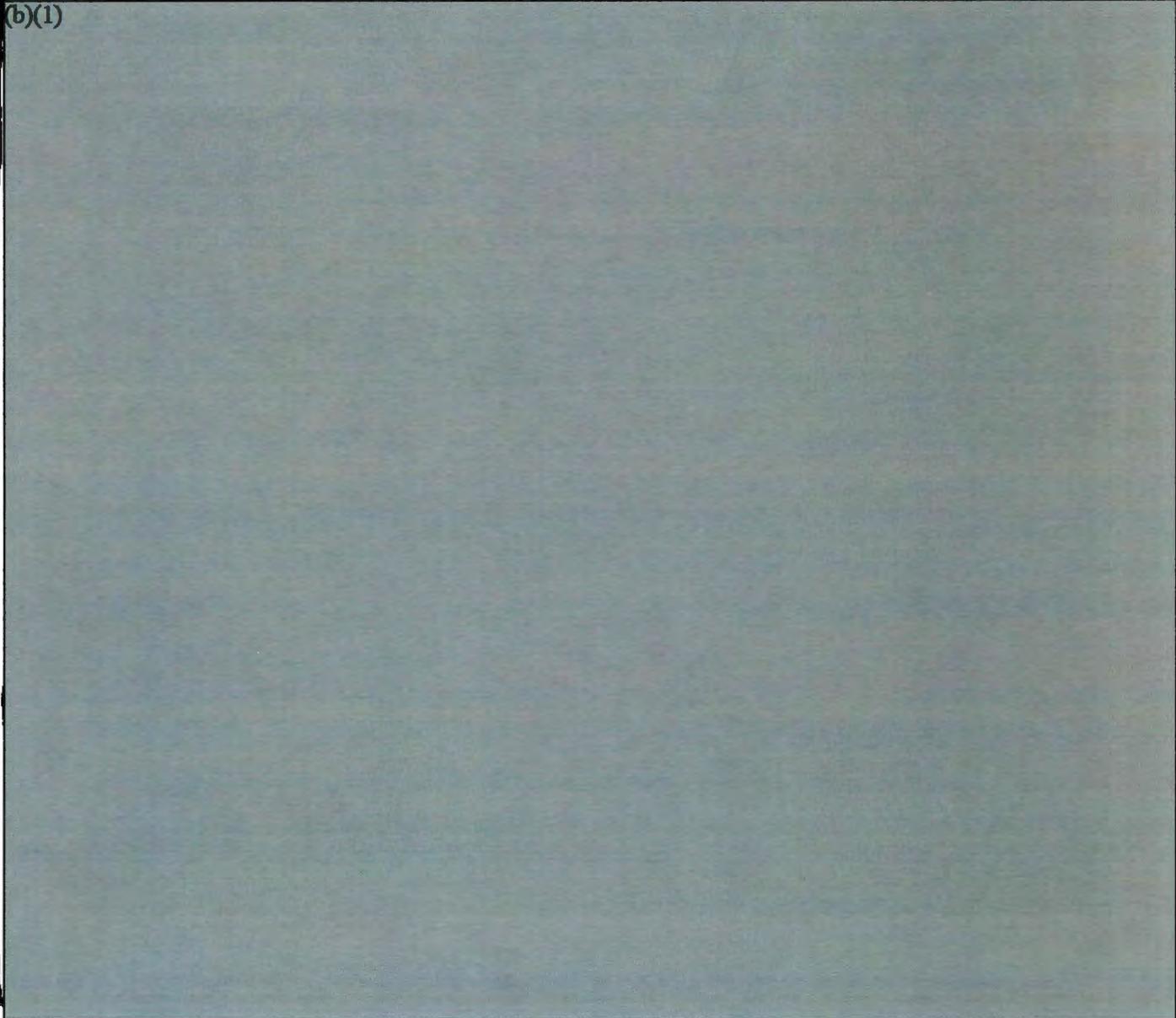
Global Hawk, December 31, 2002

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

AS AMENDED

Development	Approved Program (APB)	Demonstrated	Current
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(b)(1)



(U) Acronym List:

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Global Hawk, December 31, 2002

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

ACTD	Advance Concept Technology Demonstration
ASIP	Airborne Signals Intelligence Program
AV	Air Vehicle
EMD	Engineering and Manufacturing Development
EO	Electro Optical
ETOS	Effective Time on Station
GHz	Giga-Hertz
HBS	High Band System
IAW	In Accordance With
IER	Information Exchange Requirements
IR	Infrared
Km	Kilometer
KPP	Key Performance Parameter
lbs	Pounds
MHz	Mega-Hertz
MP-RTIP	Multi Platform Radar Insertion Program
MTBCF	Mean Time Between Critical Failures
Multi-Int	Multiple Intelligence
NIIRS	National Intelligence Imagery Reference Standard
NM	Nautical Miles
NRT	Near Real Time
ORD	Operational Requirements Document
RF	Radio Frequency
PCU	Production Configuration Unit
SAR	Synthetic Aperture Radar
SIGINT	Signals Intelligence
STAR	System Threat Analysis Report
UAV	Unmanned Air Vehicle

b. Current Change Explanations --

(U) (Ch-1): The performance changes reflect the current ORD that has been revised to represent user requirements in a manner that allows the alignment of program spiral development efforts against required delivery dates. The current APB also reflects this ORD (Global Hawk ORD CAF 353-02-C, dated October 30, 2002).

(U) Increment Zero: Airspace Coordination - Global Hawk System (KPP): "... congested airspace over densely populated areas are not anticipated."

(U) Increment Zero: Mission Execution - Ground Station (KPP): "... system has also demonstrated real-time sensor re-tasking to include rapid re-visit and "cued" response to a target in a longer lower resolution image."

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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)	840.4	2167.1	2207.7
Procurement	3484.4	2904.6	2919.2
Non-recurring	(13.7)		(93.4)
Recurring	(3072.8)		(2415.2)
Total Flyaway	(3086.5)		(2508.6)
Other Weapon Sys	(124.8)		(89.8)
Peculiar Support	(48.6)		(46.1)
Initial Spares	(224.5)		(274.7)
Construction (MILCON)	25.5	125.0	122.9
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	<u>4350.3</u>	<u>5196.7</u>	<u>5249.8</u>
 Escalation	 1043.7	 691.7	 565.1
Development (RDT&E)	(65.8)	(225.3)	(187.9)
Procurement	(975.4)	(444.7)	(359.3)
Construction (MILCON)	(2.5)	(21.7)	(17.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>5394.0</u>	<u>5888.4</u>	<u>5814.9</u>

(U) 1. The Program Manager's current estimate reflects the approved FY04 President's Budget. We do not expect to be able to execute the ADM-directed program with this revised funding profile.

(U) 2. The Global Hawk procurement includes 51 AVs and the associated Ground Stations (10 LREs and 10 MCEs). The Global Hawk system is defined as costs for the AVs and Ground Stations. ACTD sunk costs (FY00 and prior years) are excluded from the numbers and computations since they aren't included in the APB values.

(U) 3. 7 ACTD test units are in the ACTD sunk costs (FY00 and prior years) and are therefore excluded.

(U) 4. The APB and current estimate values are expressed in Base-Year 2000 dollars (BY00\$) in millions.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	<u>63</u>	<u>51</u>	<u>51</u>
Total	63	51	51

(U) As part of the approval to proceed with a "Spiral" development strategy, the March 24, 2002 DAB established initial LRIP quantities of 17 AVs and 4 MCE/LRE. The LRIP quantity for air vehicles was increase to 19, at the December 18, 2002 DAB.

(U) Acronym List:

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

ACTD Advance Concept Technology Demonstration  
 ADM Acquisition Decision Memorandum  
 AVs Air Vehicles  
 DAB Defense Acquisition Board  
 LRE Launch & Recovery Element  
 LRIP Low Rate Initial Production  
 MCE Mission Control Element  
 MILCON Military Construction  
 O&M Operations & Maintenance

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	5196.7	5249.8	
(2) Quantity	51	51	
(3) Unit Cost	101.896	102.937	+1.02
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	2904.6	2919.2	
(2) Quantity	51	51	
(3) Unit Cost	56.953	57.239	+0.50

(U) Acronym List:

APUC Average Procurement Unit Cost  
 PAUC Program Acquisition Unit Cost

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Global Hawk, December 31, 2002

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	906.2	4459.8	28.0	5394.0
Previous Changes:				
Economic	-0.7	-56.5	-0.1	-57.3
Quantity	-	-650.5	-	-650.5
Schedule	+198.3	-1275.4	-	-1077.1
Engineering	+1166.6	+1663.4	+117.0	+2947.0
Estimating	+16.2	+249.4	+1.8	+267.4
Other	-	-	-	-
Support	+24.4	-1.3	-	+23.1
Subtotal	+1404.8	-70.9	+118.7	+1452.6
Current Changes:				
Economic	-42.6	-113.4	-3.6	-159.6
Quantity	-	-	-	-
Schedule	+16.9	-17.8	-	-0.9
Engineering	+83.0	-561.9	-	-478.9
Estimating	+27.3	-421.8	-2.3	-396.8
Other	-	-	-	-
Support	-	+4.5	-	+4.5
Subtotal	+84.6	-1110.4	-5.9	-1031.7
Total Changes	+1489.4	-1181.3	+112.8	+420.9
Current Estimate	2395.6	3278.5	140.8	5814.9

(U) Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	840.4	3484.4	25.5	4350.3
Previous Changes:				
Quantity	-	-454.0	-	-454.0
Schedule	+163.4	-903.0	-	-739.6
Engineering	+1049.9	+1408.9	+98.3	+2557.1
Estimating	+17.0	+222.6	+1.2	+240.8
Other	-	-	-	-
Support	+23.2	-1.0	-	+22.2
Subtotal	+1253.5	+273.5	+99.5	+1626.5
Current Changes:				
Quantity	-	-	-	-
Schedule	+14.6	-9.6	-	+5.0
Engineering	+81.4	-478.1	-	-396.7
Estimating	+17.8	-364.7	-2.1	-349.0
Other	-	-	-	-
Support	-	+13.7	-	+13.7
Subtotal	+113.8	-838.7	-2.1	-727.0
Total Changes	+1367.3	-565.2	+97.4	+899.5
Current Estimate	2207.7	2919.2	122.9	5249.8

(U) Acronym List:

AICS Airborne Integrated Communication System

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

ISS Integrated Sensor Suite  
 ITS Imagery & Targeting Support  
 MP-RTIP Multi- Platform Radar Technology Insertion Program  
 SIGINT Signal Intelligence

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-42.6
	Changes due to acceleration/delay of capabilities per program direction. (Schedule)	+14.6	+16.9
	Additional requirements and capabilities added to the program per current direction including Operation Enduring Freedom, Imagery & Targeting Support (ITS) and Special Test Equipment. (Engineering)	+81.4	+83.0
	Adjustment for Current and Prior Inflation. (Estimating)	+7.1	+7.4
	Estimate updates for actuals, contract negotiation, overhead rate changes, database variances, etc. (Estimating)	+10.7	+19.9
	RDT&E Subtotal	<u>+113.8</u>	<u>+84.6</u>
(2)	<u>Procurement</u>		
	Revised escalation indices (Economic)	N/A	-113.4
	Revision of air vehicle buy profile. (Schedule)	-9.6	-17.8
	Changes in program requirements and capabilities, per program direction (ISS, MP-RTIP, Defensive Systems, AICS, SIGINT, etc). (Engineering)	-478.1	-561.9
	Adjustment for Current and Prior Inflation (Estimating)	+4.7	+5.0
	Changes due to actuals, contract negotiations, overhead rate changes, database variances, methodology updates for learning curves and first unit costs. (Estimating)	-369.4	-426.8
	Changes due to actuals, contract negotiations, estimate updates and overhead rate changes. (Support)	+13.7	+4.5
	Procurement Subtotal	<u>-838.7</u>	<u>-1110.4</u>
(3)	<u>MILCON</u>		
	Revised escalation indices. (Economic)	N/A	-3.6
	Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2

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

b. (U) Current Change Explanations --

	(Dollars in Millions)
	Base-Year    Then-Year
Changes due to estimate updates. (Estimating)	-2.3       -2.5
MILCON Subtotal	-2.1       -5.9

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
85.62	-4.25	+7.40	-21.14	+48.39	-2.54	--	+0.541	+28.40	114.02

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	
70.79	-3.33	+3.90	-25.36	+21.60	-3.38	--	+0.063	-6.51	64.28

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	FEB 2001	N/A	FEB 2001
Milestone III	N/A	JAN 2011	N/A	N/A
IOC	N/A	N/A	N/A	DEC 2005
Total Cost	N/A	5394.0	N/A	5814.9
Total Quantity	N/A	63	N/A	51
Prog Acq Unit Cost	N/A	85.6	N/A	114.0

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

(U) Acronym List:

AV Air Vehicle  
 CPAF Cost Plus Award Fee  
 CPR Cost Performance Report  
 EMD Engineering and Manufacturing Development  
 FPIF Fixed Price Incentive Fee  
 G&A General & Administrative  
 ILS Integrated Logistics Support  
 LRE Launch & Recovery Element  
 MCE Mission Control Unit  
 NTE Not to Exceed  
 OEF Operation Enduring Freedom  
 UCA Undefinitized Contract Action

a. RDT&E --

(U) Global Hawk EMD:

Northrop Grumman Systems, San Diego CA  
 F33657-01-C-4600, CPAF  
 Award: March 15, 2001  
 Definitized: January 22, 2002

	Initial Contract Price		
	Target	Ceiling	Qty
	\$41.5	N/A	0

Current Contract Price	Estimated Price At Completion	
	Target	Program Manager
\$404.9	\$404.9	\$404.9

Previous Cumulative Variances	Cost Variance	Schedule Variance
	N/A	N/A
Cumulative Variances To Date (12/31/02)	\$-7.6	\$-4.2
Net Change	\$-7.6	\$-4.2

Explanation of Change:

(U) 1. Using traditional Earned Value tools on a spiral development program is proving somewhat problematic. We currently receive one EMD Cost Performance Report (CPR) covering Multiple efforts for different dollar amounts and periods of performance. Future CPRs will show the EMD efforts separately by the individual spirals, which will give us better insight.

(U) 2. Some tasks fell behind schedule this past year when we re-directed priorities to support OEF. A large percentage of our contractor workforce hired to work development tasks were also deployed. These are the primary reasons for the EMD contract variances and we have built a post-OEF recovery plan that will be baselined into the program in March 2003. This change will meet user requirements and eliminate much of the variance.

(U) Contract Comments:

(U) 1. Includes negotiated values for Spirals 1 & 2A and NTE for Spiral 2B. since the last SAR submittal additional funds have been added for the ILS

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

effort (\$23M), Spiral 2A (\$53M), and Spiral 2B (\$288M).

(U) 2. Spiral 2B contract modification was negotiated in January 2003 with definitization planned for March 2003 and has been managed under a UCA since March 2002.

b. Procurement --			Initial Contract Price		
(U) GH Procurement - Lot 1:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Systems, San Diego CA					
F33657-01-C-4601, PPIF			\$20.5	\$20.5	2
Award: June 11, 2001					
Definitized: August 23, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$100.3	\$116.0	2	\$100.3	\$100.3	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/02)			N/A	N/A	
Net Change			\$-1.6	\$-4.4	
			\$-1.6	\$-4.4	

Explanation of Change:

(U) Contractor is currently reporting variances on a "challenge" schedule versus contractual schedule. The "challenge" schedule completes all tasks two months ahead of contractual requirements. Once the efforts are rebaselined to the contractual schedule, schedule variance should become at or near zero since we are right in line with that schedule. Cost variance is due mostly to overhead, G&A and rate changes.

(U) Contract Comments:

(U) Initial reporting included only Undefined Contract Action (UCA) for the advance procurement efforts. The current values and dates reflect the entire effort for the Lot 1 buy.

(U) GH Lot 2 Prod - AF03:			Initial Contract Price		
Northrop Grumman Systems, San Diego CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-02-C-5422, PPIF			\$30.3	N/A	3
Award: January 31, 2003					
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>	
\$141.1	N/A	3	\$141.4	\$141.4	

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.

(U) Contract Comments:

(U) 1. Initial contract price included only the Undefined Contract Action (UCA) for the advance procurement efforts. Latest contract price is for a total UCA value of \$141.4M for purchase of 3 AVs and 1 LRE funded with FY03 Air Force funds.

(U) 2. Contract definitization is planned for March 2003 and cost and schedule reporting will not occur until 60 days afterward.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) GH Lot 2 Prod - AF02: Northrop Grumman Systems, San Diego CA F33657-02-C-5422, FPIF Award: January 31, 2003 Definitized: N/A	\$48.0	N/A	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$48.0	N/A	1	\$48.0	\$48.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

None.

(U) Contract Comments:

(U) 1. Initial and latest contract price is the Undefined Contract Action (UCA) for the purchase of 1 AV funded with FY02 Air Force Supplemental funds.

(U) 2. Contract definitization is planned for March 2003 and cost and schedule reporting will not occur until 60 days afterward.

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

(U) GH Lot 2 prod - Navy:			Initial Contract Price		
Northrop Grumman Systems, San Diego CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-02-C-5422, FPIF			\$113.5	N/A	2
Award: January 31, 2003					
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>	
\$113.5	N/A	2	\$113.5	\$113.5	
			<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:

None.

(U) Contract Comments:

(U) 1. Initial and latest contract price is the Undefined Contract Action (UCA) for the purchase of 2 AVs, 2 LREs and 1 MCE funded with Navy funds.

(U) 2. Contract definitization is planned for March 2003 and cost and schedule reporting will not occur until 60 days afterward.

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 (FY01-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-11)</u>	<u>Total</u>
RDT&E	675.4	357.6	300.0	1062.6	2395.6
Procurement	349.5	253.1	303.5	2372.4	3278.5
MILCON	11.7	22.3	24.2	82.6	140.8
O&M	-	-	-	-	-
Total	1036.6	633.0	627.7	3517.6	5814.9

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Global Hawk, December 31, 2002

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

b. Annual Summary -- Global Hawk

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				126.8	129.7
2002				206.9	213.5
2003				318.5	332.2
2004				337.7	357.6
2005				279.1	300.0
2006				176.2	192.6
2007				204.1	227.0
2008				203.4	230.2
2009				202.6	233.4
2010				123.7	145.1
2011				28.7	34.3
Subtotal				2207.7	2395.6

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				20.4	21.0
2002	3	11.9	122.9	156.1	162.3
2003	3	17.3	105.1	157.1	165.6
2004	4	17.0	166.9	236.4	252.9
2005	4	17.0	172.9	278.7	303.2
2006	6	7.5	399.3	429.1	474.6
2007	7	4.5	306.9	478.0	538.2
2008	7	4.6	363.9	414.1	474.6
2009	6	4.6	300.0	333.7	389.4
2010	6	4.5	257.4	257.2	305.5
2011	5	4.5	219.9	156.4	189.1
Subtotal	51	93.4	2415.2	2917.2	3276.4

(U) FY2001 recurring flyaway includes advance procurement for 2 AV's purchased in FY02.

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

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				0.6	0.6
2004				0.2	0.2
2005				0.3	0.3
2006				0.3	0.3
2007					
2008					
2009					
2010				0.6	0.7
Subtotal				2.0	2.1

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				11.1	11.7
2004				20.8	22.3
2005				22.2	24.2
2006					
2007					
2008					
2009					
2010				40.8	48.6
2011				28.0	34.0
Subtotal				122.9	140.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	51	93.4	2415.2	5249.8	5814.9

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): \$ 330.8

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

(U) Percent Total Program Expended: 5.7%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

(U) 1. Service Cost Position (SCP) from the Dec 02 Interim Program Review (IPR) is shown below. No O&S costs are included in the APB.

(U) 2. Global Hawk is designed to be forward based at 3 operating locations around the world and home based at a single main operating base (MOB) - Beale AFB.

(U) 3. Support planning concept of 2-level maintenance. Organizational maintenance will be performed by a mix of contractor and military personnel. Initial depot maintenance is planned to be performed by the contractor (i.e., Contractor Logistics Support (CLS)). A Source of Repair Assignment Process (SORAP) is being performed to determine the long term depot maintenance strategy.

(U) 4. The prime contractor will provide supply support as part of planned CLS. Other responsibilities include normal depot services, component repair/overhaul and item management.

(U) 5. Steady state begins in 2009 and continues through 2030 for a total planned steady state period of 22 years. Planned flying hours for each year of the steady state period is 20,410.

(U) 6. There is no antecedent system for the Global Hawk.

Acronym List:

AFB	Air Force Base
CLS	Contractor Logistics Support
FH	Flying Hour
IPR	Interim Program Review
MOB	Main Operating Base
SCP	Service Cost Position
SORAP	Source of Repair Assignment Process
SS	Steady State

b. (U) Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	Global Hawk Avg Annual \$ per FH @ Steady State (SS)	Antecedent System
Mission Pay & Allowances	2.2	N/A
Unit Level Consumption	0.7	N/A
Intermediate Maintenance	0.0	N/A

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Global Hawk, December 31, 2002

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

b. (U) Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	Global Hawk Avg Annual \$ per FH @ Steady State (SS)	Antecedent System
Depot Maintenance	0.0	N/A
Contractor Support	3.3	N/A
Sustaining Support	4.2	N/A
Indirect Costs	1.1	N/A
Total	11.5	N/A

Total O&S Cost	Global Hawk	Antecedent System
BY\$ (In Millions)	6613.1	N/A
TY\$ (In Millions)	10882.5	N/A

Report Creation Date: 03/20/2003 4:56:43 PM

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# A-7 COMANCHE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Comanche Reconnaissance Attack Helicopter (RAH-66)
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:  
Comanche Project Manager's Office      COL Robert P. Birmingham  
ATTN: SFAE-AV-RAH, Building 5681      Assigned: September 15, 2000  
Redstone Arsenal      DSN 897-0846; COMM 256-313-0846  
Huntsville, AL 35898-5000      Robert.Birmingham@comanche.redstone.army.mil
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  
PROCUREMENT:  
(U) APPN 2031 ICN A08300 (Army)  
MILCON:  
(U) PE 10019484  
  
(U) NOTE: PE 64810 Project D327/DC72 (FY 88 Only)

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pp. 5-7  
(Sentry)

MAR 14 2006  
DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
U.S. DEPARTMENT OF DEFENSE

~~Classified by: Comanche Security Classification Guide, November 4, 2002  
Downgrade instructions: None  
Declassification: AS~~

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Comanche (RAH-66), December 31, 2002

5. (U) References:

SAR Baseline (Development Estimate):

(U) (U) DAE Approved Acquisition Program Baseline (APB) dated July 7, 2000.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated October 17, 2002.

6. (U) Mission and Description:

(U) The RAH-66 Comanche will be the Army's next generation armed reconnaissance aircraft system. Comanche will be the first fielded capability of the Future Combat System in the Objective Force. It will provide the Army with network-centric capability from a joint and combined perspective. Comanche's technology will provide the Army with a system capable of operating in adverse weather conditions across a wide spectrum of threat environments. Comanche's innovative design will provide the Army with much lower operating costs through the use of integrated diagnostics and component functional partitioning, eliminating the requirement for Aviation Intermediate Maintenance (AVIM). Comanche advanced airframe design incorporates composite airframe structures, bearing-less main rotor system, and reduced signatures. The Comanche Mission Equipment Package (MEP) will feature an open systems architecture integrating second-generation target acquisition and night vision sensors. Pilot workload from targeting to navigation is significantly reduced due to introduction of cognitive decision aiding and fully integrated weapon systems.

7. (U) Executive Summary:

(U) On October 7, 2002, the Defense Acquisition Board (DAB) reviewed the Comanche Program restructure.

The Defense Acquisition Executive (DAE) signed the Acquisition Decision Memorandum (ADM) on October 17, 2002. The ADM documented approval of the Engineering and Manufacturing Development through the Block III capability. The ADM also approved: Low Rate Initial Production (LRIP) of up to 73 aircraft, Acquisition Strategy, Acquisition Program Baseline (APB), LRIP entrance criteria, and total procurement objective of 650 aircraft at a procurement rate of up to 60 per year.

Further, the DAE directed the Army to fund the Research, Development, Test and Evaluation (RDTE) and procurement programs to the Cost Analysis Improvement Group (CAIG) estimate and the CAIG funding profile. The Revised Program resulted in a Nunn-McCurdy unit cost breach of greater than 15%, but less than 25%, for Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC), requiring formal notification. Congress was notified on January 16, 2003.

The Truth in Negotiation Act (TINA) waiver was approved on November 12, 2002

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

allowing the contract to be modified without the use of certified cost and pricing data. Air Vehicle contract modification was awarded on November 14, 2002.

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	Yes
Average Procurement Unit Cost	Yes

c. (U) Explanation of Breach:

The Revised Program resulted in a Nunn-McCurdy unit cost breach greater than 15% but less than 25% for PAUC and APUC. See Section 12 for further details.

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Comanche (RAH-66), December 31, 2002

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
T800 Engine FSD Contract Award	JUL 1985	JUL 1985	JUL 1985	
Milestone I (ASARC)	MAY 1988	MAY 1988	MAY 1988	
Milestone I (DAB)	JUN 1988	JUN 1988	JUN 1988	
Award Air Vehicle Phase I Dem/Val Contracts	OCT 1988	OCT 1988	OCT 1988	
T800 FSD Downselection	OCT 1988	OCT 1988	OCT 1988	
USD(A) Program Review	JAN 1991	JAN 1991	JAN 1991	
Award Dem/Val Prototype Phase Contract	APR 1991	APR 1991	APR 1991	
Critical Design Review	OCT 1993	OCT 1993	DEC 1993	
First Flight	JAN 1996	JAN 1996	JAN 1996	
Milestone II	APR 2000	APR 2000	APR 2000	
Award EMD Contract	JUN 2000	JUN 2000	JUN 2000	
Customer Test III (EOSS User Survey)				
Start	JUN 2003	N/A	N/A	(Ch-1)
Complete	JUL 2003	N/A	N/A	(Ch-1)
LUT				
Start	APR 2005	JUL 2006	JUL 2006	(Ch-2)
Complete	MAY 2005	OCT 2006	OCT 2006	
LRIP Program Review (IPR)/Contract Award	JUN 2005	DEC 2006	DEC 2006	
IOT&E				
Start	JUN 2006	DEC 2008	DEC 2008	
Complete	OCT 2006	APR 2009	APR 2009	
Production Contract	DEC 2006	NOV 2009	NOV 2009	(Ch-2)
Milestone III	DEC 2006	NOV 2009	NOV 2009	(Ch-2)
IOC	DEC 2006	SEP 2009	SEP 2009	
Depot Support Date	DEC 2006	JUN 2009	JUN 2009	(Ch-2)
Organic Support Date	DEC 2009	JUN 2012	JUN 2012	(Ch-2)
Aircraft #3 Delivery	N/A	MAR 2005	MAR 2005	(Ch-2)
Block II Interim Decision Review	N/A	MAR 2004	MAR 2004	(Ch-2)
Block III Interim Decision Review	N/A	NOV 2005	NOV 2005	(Ch-2)
Block II Operational Test				
Start	N/A	APR 2009	APR 2009	(Ch-2)
Finish	N/A	MAY 2009	MAY 2009	(Ch-2)
Block III Operational Test				
Start	N/A	DEC 2010	DEC 2010	(Ch-2)
Finish	N/A	MAR 2011	MAR 2011	(Ch-2)
Milestone IIIA - Block III	N/A	JUL 2011	JUL 2011	(Ch-2)
First Unit Equipped (FUE)	N/A	JUN 2009	JUN 2009	(Ch-2)

(U) Current Estimate reflects DAB approved schedule of the Comanche Restructured Program.

Acronyms:

DAB Defense Acquisition Board  
 EMD Engineering and Manufacturing Development  
 EOSS Electro Optic Sensor System  
 FUE First Unit Equipped

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

IDR Interim Decision Review  
 IER Information Exchange Requirements  
 IOC Initial Operational Capability  
 IOT&E Initial Operational Test & Evaluation  
 IPR Integrated Program Review  
 LRIP Low Rate Initial Production  
 LUT Limited User Test  
 MER Maximum Effective Range

b. Current Change Explanations --

(U) (Ch-1) EOSS Survey omitted due to restructure program.  
 Customer Test III (EOSS) User Survey Start from JUN 2003 to N/A  
 Customer Test III (EOSS) User Survey Complete JUL 2003 to N/A

Ch-2) The following schedule estimates are IAW the approved restructured program. The following milestones have changed.

LUT Start from AUG 2006 to JUL 2006  
 Production Contract from SEP 2009 to NOV 2009  
 Milestone III from JUN 2009 to NOV 2009  
 Depot Support Date from SEP 2009 to JUN 2009  
 Organic Support Date from SEP 2012 to JUN 2012  
 A/C #3 Delivery added from N/A to MAR 2005  
 Block II IDR added from N/A to MAR 2004  
 Block III IDR added from N/A to NOV 2005  
 Block II Oper Test Start from N/A to APR 2009  
 Block II Oper Test Finish from N/A to May 2009  
 Block III Oper Test Start from N/A to DEC 2010

Block III Finish from N/A to MAR 2011  
 MS IIIA - Block III added from N/A to JUL 2011  
 FUE added from N/A to JUN 2009

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Vertical Rate of Climb (VROC) (ft/min (FPM) @4000 ft, 95 F & PMGW & 100% MRP)	750	750 / 500	510	510
Signature Levels: (U) Radar Cross-Section (RCS) (dBsm)	(b)(1)			

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

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AS AMENDED

	Development	Approved Program (APB)		Demonstrated	Current Estimate	
Infrared (IR) Engine Exhaust System (watts/steradian)	(b)(1)					
Night Hot Target Classification Range (km)	(b)(1)					
Night Target Acquisition Range Identification (km)		N/A	/ N/A	TBD	N/A	(Ch-1)
Digitally Exchange Battlefield Information to Joint & Combined Arms Forces	TBD	N/A	/ N/A	TBD	N/A	(Ch-1)
Multifunctional Launch Stations ATGM, ATAM, Rockets (Internal)/ Turret Gun System	6/1	6/1	/ 6/1	TBD	6/1	
Operational Availability (Ao) (percent):	N/A	N/A	/ N/A	TBD		
Wartime	78	N/A	/ N/A	TBD	N/A	(Ch-1)
Reliability:						
Mean Time Between Essential Maintenance Actions (MTBEMA) (hrs)	4.5	4.5	/ 4.5	TBD	4.5	
Maintainability:						
Mean Time To Repair (MTTR) (hrs)	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Mean Time Between Mission Affecting Failure (MTBMAF) (hrs)	8.5		/ N/A	TBD	8.5	
Maintenance Manhours per flight hr (MMH/FH) @ User Level	2.6		/	TBD	2.6	
Flight Performance (Primary Mission):						
RAH						
Operational Readiness (OR) (percent)	N/A	90	/ 84	TBD	84	(Ch-2)
Mean Time To Repair (MTTR) (hrs) with cure time	N/A	2.0	/ 2.0	TBD	2.0	(Ch-2)
Night EOSS Target Acquisition Range						

10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate	
Classification (km)	N/A	(b)(1)			(Ch-2)
Identification (km)	N/A				(Ch-2)
Interoperability - All Top Level IER's shall be satisfied to the standards specified in the Threshold and Objective values /12&/13	N/A	see footnote/ 12	/ see footnote / 13	TBD	See Footnote 1 (Ch-2)

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(U) Acronyms:  
 IER Information Exchange Requirements  
 MER Maximum Effectiveness Range

Footnote 1 Interoperable communication provides at all levels the precise real-time information needed to successfully execute required missions in the joint combined arms air/ground maneuver team joint battlespace. Digital interconnectivity is critical to provide common situational awareness for synchronization of the joint battlespace. This capability must be fully met in Blk I. IER matrix may be found in Table B of Comanche ORD.

b. Current Change Explanations --

(U) (Ch-1) The following performance characteristics are revised IAW with the approved restructure program

(b)(1)

- (U) Digitally Exchange Battlefield Information from See Connectivity Chart to N/A
- (U) Operational Availability (Ao) (percent):wartime from 78 to N/A
- (U) Mean Time To Repair (MTTR) (hours)from .86 to N/A

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(U) (Ch-2)The following performance characteristics are added/changed in accordance with the approved restructure program.

Operational Readiness (OR) (percent)from N/A to 84  
 Mean Time To Repair (MTTR) (hours)with cure from N/A to 2.0

(b)(1)

Interoperability-All Top Level IER's from N/A to See Footnote 1

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

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	8474.1	11973.7	11964.0
Procurement	29093.6	20893.0	20892.8
Recurring Flyaway	(21923.7)		(14354.3)
Nonrecurring Flyaway	(314.2)		(362.5)
Total Flyaway	(22237.9)		(14716.8)
Other Wpn System Costs	(4917.8)		(4711.5)
Peculiar Support	(168.0)		(89.8)
Initial Spares	(1769.9)		(1374.7)
Construction (MILCON)	368.4	46.8	46.7
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	37936.1	32913.5	32903.5
Escalation	10198.2	6363.6	5420.2
Development (RDT&E)	(-220.3)	(250.3)	(102.1)
Procurement	(10264.6)	(6102.0)	(5308.5)
Construction (MILCON)	(153.9)	(11.3)	(9.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	48134.3	39277.1	38323.7
b. (U) Quantity --			
Development (RDT&E)	8	4	4
Procurement	1205	646	646
Total	1213	650	650

(U) The four RDT&E aircraft reported above are production representative. There are also seven nonfully configured RDT&E a/c consisting of 2 Demonstration Validation Prototype (DVP) aircraft and 5 EMD.

c. (U) Foreign Military Sales --  
None.

d. (U) Nuclear Costs --  
None.

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12. (U) Unit Cost Summary:

	UCR	Current	Percent Change
	Baseline (JUL 2000 APB)	Estimate (Dec 2002 SAR)	
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	37936.1	32903.5	
(2) Quantity	1213	650	
(3) Unit Cost	31.275	50.621	+61.86
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	29093.6	20892.8	
(2) Quantity	1205	646	
(3) Unit Cost	24.144	32.342	+33.95

(U) Due to the EMD program restructure and the reduction in quantity (-561 a/c APA funded), the PAUC and APUC show significant increases. Several factors have increased the cost of the EMD program to include: schedule extension, risk mitigation, and additional scope of work for the EMD contract. The procurement program has seen increases due to weight growth, functionality changes, and labor/overhead rate changes, but the majority of the increase is due to the reduction of 561 a/c from the procurement estimates. Removing the impacts of the quantity reduction, the resultant increases are 18% for APUC and 23% for PAUC.

	UCR	Current	Percent Change
	Baseline (JUL 2000 APB)	Estimate (Dec 2002 SAR)	
c. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	48134.3	38323.8	
(2) Unit Cost	39.682	58.960	+48.58
d. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	39358.2	26201.4	
(2) Unit Cost	32.662	40.559	+24.18
e. (U) Changes from Previous SAR (DEC 2001)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	18.324	+56.74	
(2) APUC (BY\$)	8.385	+35.00	
(3) PAUC Quantity	-563	-46.41	
(4) PAUC (TY\$)	19.470	+49.30	
(5) APUC (TY\$)	9.369	+30.04	
f. (U) Initial SAR Information			
Initial SAR Date (JUN 2000):			
(1) Program Acquisition Cost (BY\$)		31.2	
(2) Program Acquisition Cost (TY\$)		39.6	
g. (U) Unit Cost PAUC Changes --			
PAUC grew by 18% due to the following estimating assumptions used by the CAIG: 7.5% wt growth; 2.0% functionality changes; 5.0% overhead rates and 3.5% estimating differences carried over from MSII.			

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

(U) Unit Cost APUC Changes --

The APUC grew 23% due to the items listed above for procurement and the following EMD changes: Air Vehicle cost growth, schedule stretch and additional scope.

h. (U) Impact of Perf or Sched Changes --

EMD Program has been extended to 2011 (5 years) and production has shifted from FY05-FY07.

i. (U) Program Management & Control --

The program has completed a restructure per the OCT 7 2002 DAB Review. Restructure was done to lessen risk in the program for cost, schedule and performance. The program has had many additional measures put in place to keep decision makers informed on latest progress.

The Contractor Program Office has restructured to a more streamlined single lead for each IPT. This replaces the previous structure with IPT leads at each prime contractor and a coordinator at the joint program office.

j. (U) Cost Control Actions --

The PMO will continue with the reestablishment of a new baseline and the review and analysis of the Earned Value Management Systems (EVMS) reports/data. All available contractor formatted progress reports will be monitored at the individual IPT level.

k. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): Boeing Sikorsky

(2) Contract Title: Comanche EMD

(3) Contract Number: DAAH23-00-C-A001

(4) Actual Cost of Work Performed (ACWP) to date: N/A

(5) Percent contract completed (BCWP/target cost): N/A

(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	N/A/	N/A/
Previous SAR	\$-58.8/	\$-25.6/
Current Values	\$-59.4/	\$-0.2/
Change from the Baseline Report	\$-59.4/	\$-0.2/
Change from the Previous SAR	\$-0.6/	\$25.4/

(U) Explanation of Variances --

Cost Variance and Schedule Variance reflect Baseline Report, SAR, Jun 2000 and Previous SAR Dec 2001 for DAAH23-00-C-A001 and DAAH23-02-C-0122.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

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

- (U) (1) Contractor(s): LHTEC  
(2) Contract Title: EMD SUPPORT PROGRAM  
(3) Contract Number: DAAH23-02-C-0122  
(4) Actual Cost of Work Performed (ACWP) to date: N/A  
(5) Percent contract completed (BCWP/target cost): 17.60  
(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$0.0/	\$0.0/
Previous SAR	\$0.0/	\$0.0/
Current Values	\$4.9/	\$-5.2/
Change from the Baseline Report	\$4.9/	\$-5.2/
Change from the Previous SAR	\$4.9/	\$-5.2/

Explanation of Variances -- None.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

1. General Comments -- None.

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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	8253.8	39358.2	522.3	48134.3
Previous Changes:				
Economic	-7.4	-398.5	-1.1	-407.0
Quantity	-81.3	+44.2	-	-37.1
Schedule	+230.0	-858.8	-	-628.8
Engineering	+845.4	-	-	+845.4
Estimating	+894.4	+254.7	-420.5	+728.6
Other	-	-	-	-
Support	+23.7	-753.5	-	-729.8
Subtotal	+1904.8	-1711.9	-421.6	-228.7
Current Changes:				
Economic	-104.6	-463.8	-1.6	-570.0
Quantity	-80.0	-12608.6	-	-12688.6
Schedule	+550.6	+652.5	-	+1203.1
Engineering	+540.9	-	-	+540.9
Estimating	+1000.6	+1267.1	-42.8	+2224.9
Other	-	-	-	-
Support	-	-292.2	-	-292.2
Subtotal	+1907.5	-11445.0	-44.4	-9581.9
Total Changes	+3812.3	-13156.9	-466.0	-9810.6
Current Estimate	12066.1	26201.3	56.3	38323.7

(U) Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	8474.1	29093.6	368.4	37936.1
Previous Changes:				
Quantity	-75.7	+29.4	-	-46.3
Schedule	+200.7	-	-	+200.7
Engineering	+759.2	-	-	+759.2
Estimating	+803.7	+248.1	-291.4	+760.4
Other	-	-	-	-
Support	+21.6	-454.9	-	-433.3
Subtotal	+1709.5	-177.4	-291.4	+1240.7
Current Changes:				
Quantity	-79.0	-8713.5	-	-8792.5
Schedule	+484.5	-	-	+484.5
Engineering	+476.2	-	-	+476.2
Estimating	+898.7	+914.9	-30.3	+1783.3
Other	-	-	-	-
Support	-	-224.8	-	-224.8
Subtotal	+1780.4	-8023.4	-30.3	-6273.3
Total Changes	+3489.9	-8200.8	-321.7	-5032.6
Current Estimate	11964.0	20892.8	46.7	32903.5

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-98.7
	Economic adjustment for negative program change. (Economic)	N/A	-5.9
	Decrease (from 6 to 4) 2 Fully Configured RDT/E EnditeMs due to Conversion to Comanche Restructure Program (Quantity)	-79.0	-80.0
	IOC Date Change and Blocking Strategy Revision (Schedule)	+275.9	+307.7
	Restructure of Systems Engineering Management & GFE (Schedule)	+98.9	+115.6
	Restructure Engine Program (Schedule)	+46.0	+53.8
	Operational Test and Evaluation due to Program Restructure (Schedule)	+63.7	+73.5
	Software Integration & Additional Test Analyze Fix (Engineering)	+244.6	+273.6
	Additional Flight Testing (Engineering)	+231.6	+267.3
	Adjustment for Current and Prior Inflation. (Estimating)	+27.0	+28.0
	Net of undistributed Reductions (SBIR, STTR, Recissions) (Estimating)	-60.7	-63.1
	Comanche Program Cost Growth Prior to Restructure (Estimating)	+568.6	+632.7
	Revised Estimates for Supplier Support of Flight Test Program (Estimating)	+58.6	+64.0
	Revised Estimates for Failure Reporting and Corrective Action System (FRACAS) (Estimating)	+73.7	+80.1
	Revised Estimates for High Resolution Displays (Estimating)	+35.6	+38.2
	Revised Estimates for EMD Mission Computer Cluster Changes for Obsolescence (Estimating)	+98.4	+113.7
	Revised Estimates for Full Production Qualification of Mission Equipment Package Hardware (Estimating)	+97.5	+107.0
	RDT&E Subtotal	<u>+1780.4</u>	<u>+1907.5</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-1123.1
	Economic adjustment for negative program change. (Economic)	N/A	+659.3
	Total Quantity Variance associated with decrease from 1207 to 646 aircraft.	-8695.0	-12582.8
	Quantity decrease from 1207 to 646 aircraft. (Quantity)	-8713.5	-12608.6

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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>
Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	0.0	+36.7
Stretchout of annual procurement buy profile. (Schedule)	0.0	+615.8
Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+18.5	-10.9
Tactical Common Data Link (TCDL) Unmanned Aerial Vehicle (UAV) Level 4 Control (Estimating)	+193.5	+246.5
Retrofit for MCC Block II (Estimating)	+116.3	+134.1
Retrofit for WIPs Block III (Estimating)	+88.8	+109.2
Weight Growth (Estimating)	+350.0	+498.4
Overhead RATES (Estimating)	+147.8	+289.8
Change in Initial Spares due to quantity reduction (QR) (Support)	-224.8	-292.2
Procurement Subtotal	<u>-8023.4</u>	<u>-11445.0</u>

(3) MILCON

Revised escalation indices. (Economic)	N/A	-3.3
Economic adjustment for negative program change. (Economic)	N/A	+1.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Estimate revised to meet changes in field sites and requirements (Estimating)	-30.5	-43.0
MILCON Subtotal	<u>-30.3</u>	<u>-44.4</u>

QR = Quantity 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	
39.68	-1.50	+14.79	+0.884	+2.13	+4.54	--	-1.57	+19.28	58.96

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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	
32.66	-1.33	+8.81	-0.319	--	+2.36	--	-1.62	+7.90	40.56

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	MAR 1987	JUN 1988	N/A	JUN 1988
Milestone II	MAR 1987	APR 2000	N/A	APR 2000
Milestone III	JAN 1994	DEC 2006	N/A	NOV 2009
IOC	N/A	DEC 2006	N/A	SEP 2009
Total Cost	2130.9	48134.3	0.0	38323.7
Total Quantity	N/A	1213	0	650
Prog Acq Unit Cost	N/A	39.7	0.0	59.0

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

a. RDT&E --

(U) Comanche EMD: Boeing Sikorsky, Huntsville, AL DAAH23-00-C-A001, CPAF Award: June 1, 2000 Definitized: June 1, 2000	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$3150.6	N/A	13

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$6555.1	N/A	9	\$6555.1	\$6555.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/02)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) Contractual information has been updated to reflect November 02 contract modification. Currently, the program baselines are being developed and first Cost Performance Report (CPR) with updated baseline data will be in March 03. Therefore, no performance data is included in this submission.

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

(U) <u>EMD SUPPORT PROGRAM:</u>			Initial Contract Price		
LHTEC, INDIANAPOLIS, IN			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH23-02-C-0122, CPFF			\$130.2	N/A	0
Award: January 31, 2002					
Definitized: January 31, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$178.0	N/A	0	\$172.4	\$178.0	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (10/31/02)			\$0.0	\$0.0	
Net Change			\$4.9	\$-5.2	
			\$4.9	\$-5.2	

Explanation of Change:

(U) The cost variance is favorable due to less than anticipated costs. The schedule variance is unfavorable due to late ramping up of staff. Increase in current contract price due to award of EMD engines.

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> (FY84-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-19)	<u>Total</u>
RDT&E	6858.6	1079.3	1181.6	2946.6	12066.1
Procurement	-	-	-	26201.3	26201.3
MILCON	10.6	-	-	45.7	56.3
O&M	-	-	-	-	-
Total	6869.2	1079.3	1181.6	29193.6	38323.7

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Comanche (RAH-66), December 31, 2002

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

b. Annual Summary -- COMANCHE

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

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				1.5	1.0
1985				100.9	71.3
1986				147.2	107.0
1987				183.6	137.6
1988				163.0	127.1
1989				218.2	177.0
1990				319.2	268.7
1991				386.4	337.6
1992				567.8	507.7
1993				428.6	392.3
1994				391.3	364.8
1995				499.4	474.6
1996				293.7	284.1
1997				332.4	325.2
1998				266.3	262.6
1999				353.1	352.2
2000				443.2	448.7
2001				576.3	590.7
2002				729.6	754.4
2003				834.0	874.0
2004				1015.1	1079.3
2005				1094.1	1181.6
2006				903.2	991.8
2007				685.6	766.1
2008				465.4	529.4
2009				347.2	402.1
2010				187.1	220.5
2011				27.2	32.6
2012				3.4	4.1
Subtotal	4			11964.0	12066.1

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				261.7	289.7
2007	15	155.4	579.3	857.1	965.9
2008	23	45.1	783.4	1332.2	1528.3
2009	35	75.1	944.7	1734.0	2025.0
2010	48	61.5	1261.5	1953.7	2322.5

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Comanche (RAH-66), December 31, 2002

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

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2011	60	17.9	1456.7	2001.1	2421.7
2012	60	7.5	1360.8	1868.3	2301.8
2013	60		1273.2	1813.6	2274.6
2014	60		1243.2	1687.3	2154.3
2015	60		1188.5	1645.1	2138.2
2016	60		1160.2	1606.8	2125.9
2017	60		1136.2	1575.1	2121.7
2018	60		1119.9	1509.7	2070.1
2019	45		846.7	1047.1	1461.6
Subtotal	646	362.5	14354.3	20892.8	26201.3

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				10.1	10.6
2003					
2004					
2005					
2006				1.2	1.3
2007				5.1	5.8
2008				1.7	2.0
2009				2.4	2.8
2010				3.0	3.6
2011				3.0	3.7
2012				3.0	3.7
2013				3.0	3.8
2014				3.0	3.9
2015				3.0	3.9
2016				3.0	4.0
2017				3.0	4.1
2018				2.2	3.1
2019					
Subtotal				46.7	56.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	650	362.5	14354.3	32903.5	38323.7

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Comanche (RAH-66), December 31, 2002

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): \$ 5956.7

(U) Percent Total Program Expended: 15.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Comanche is designed for two levels of maintenance: user level (similar to the current fleet AVUM level) and depot level. A majority of user level maintenance tasks will be repair by replacement. Repairs at the USER (AVUM) level will be performed by Military Personnel. Depot maintenance tasks will include component repair and major aircraft overhaul. Current program concept begins with Interim Contractor Support (ICS) at IOC until transitioning to a Performance Based Logistics (PBL) contractor/organic mix depot capability begins three years after FUE. Full transition to PBL will be complete after two additional years.

The Army Acquisition Objective (AAO) requires 819 total aircraft although the Acquisition Procurement Objective (APO) is for only 650 aircraft. During the October 2002 DAB Review, the DAE decided to review/resolve the total aircraft requirement as more definitized Objective Force information becomes available. Comanche O&S estimates reflect an interim distribution plan which fields 650 Comanche aircraft partially satisfying the emerging Objective Force Aviation Structure. Tables of Organization and Equipment (TOE) include 496 aircraft. The remaining 154 aircraft are fielded to training, Aviation Technical Test Center (ATTC), and float/attribution accounts. Per this plan, Comanches will be integrated into the following types of TOE units: Unit of Action; Unit of Employment 1 Reconnaissance, Surveillance, Target Acquisition; and Special Operation Forces. The O&S cost estimates shown in Table 18b are based on a peacetime flying hour rate of 18 hours per month or 216 hours per year.

Comanche O&S cost estimates include all MPA, O&M and DBOF funded costs throughout each aircraft's 20 year life cycle. They exclude OSD O&S cost elements that are APA and AMMO funded such as Post Production Software Support (PPSS) during Production, Interim Contractor Support, Training Ammunition & Missiles, and Modifications. Mission Personnel includes all Military Personnel cost. Unit Level Consumption includes Replenishment Consumables, Depot Level Repairables, and Petroleum, Oil and Lubricants (POL). Unit Level Consumption excludes Training Ammunition and Missiles which are AMMO funded. Depot Level Maintenance includes End Item Depot Maintenance and Second Destination Transportation. Contractor Support includes Field Maintenance Civilian Labor and excludes Interim Contractor Support which is Procurement funded. Sustaining Support includes O&M funded PPSS (after Production Phase),

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Comanche (RAH-66), December 31, 2002

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

and Program Management. Sustaining support excludes PPSS Support during the Production Phase and Modifications which are Procurement funded. Indirect Support includes O&M funded Replacement Training and Environmental Cost.

Comanche will be the first system fielded as part of the Objective Force; Antecedent aircraft N/A.

b. (U) Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	COMANCHE Average Annual Cost	Antecedent System
Mission Pay & Allowances	517.5	N/A
Unit Level Consumption	427.4	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	16.6	N/A
Contractor Support	24.8	N/A
Sustaining Support	100.0	N/A
Indirect Costs	47.1	N/A
Other	0.0	N/A
	N/A	N/A
Total	1133.4	N/A

Total O&S Cost	COMANCHE	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/14/2003 8:55:42 AM

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

AS OF DATE: December 31, 2002

INDEX

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1. (U) Designation and Nomenclature (Popular Name): Guided Multiple Launch Rocket System (GMLRS)
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:  
 Project Manager COL James C. Naudain  
 Precision Fires Rocket & Missile Sys Assigned: June 8, 2001  
 ATTN: SFAE-MSL-PF DSN 746-1195; COMM 256-876-1195  
 Redstone Arsenal, AL 35898-5700 craig.naudain@msl.redstone.army.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0673778 Project 784  
 PROCUREMENT:  
 (U) APPN 2032 ICN C65404 (Army)

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MAR 19 2003 10

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY POLICY  
DEPARTMENT OF DEFENSE

*JCS (S&T)*

~~Classified by: MLRS SCG, 8 October 1998  
Downgrade instructions: X3  
Declassify on: X3~~

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03-C-0441

6. Mission and Description:

DPICM

The GMLRS Dual Purpose Improved Conventional Munition (DPICM) is a multinational program with participants from five nations (United States, United Kingdom, France, Germany, and Italy). The mission of DPICM rockets is to attack/neutralize/suppress/destroy targets in the deep tactical battlefield. DPICM supports the Army's Objective Force by increasing lethality while drastically reducing the required logistics footprint from currently fielded artillery rocket systems. Additional benefits of the design are decreased potential for collateral damage (more precise delivery/smaller hazard footprint) and increased safety to friendly forces/civilians (higher initiation of primary fuze and/or incorporation of a Self Destruct Fuze (SDF) feature).

The DPICM rocket is transported and fired in a GMLRS DPICM Rocket Pod (RP) that consists of six DPICM rockets within a RP Container (RPC). Additionally, the DPICM development includes plans for application software packages for interfaces with the Multiple Launch Rocket System (MLRS) launchers (M270A1 and High Mobility Artillery Rocket Systems (HIMARS)). The DPICM guidance system uses a battlefield proven Nondevelopmental Item (NDI) Guidance Set Inertial Measurement Unit (IMU). This is the best example of how Horizontal Technology Integration (HTI) allows the DPICM to achieve high performance at low cost with minimum development risk.

The DPICM is the first major weapon system to adopt a new generation of Selective Available Anti-Spoofing Model (SAASM) Guidance Positioning System (GPS) receiver now mandated by the Joint Chief of Staff for Command, Control, Computers, Communications, and Intelligence (C4I) (J6).

(U) Unitary

The Unitary rocket provides Field Artillery medium and long-range rocket fires in support of brigade, division, corps, army, theater, joint/coalition forces and Marine Air-Ground Task Forces (MAGTF) to destroy, neutralize, or suppress the enemy in accordance with Army doctrine in situations and locations where DPICM munitions are either ineffective or impractical. It provides continuous protection of friendly forces in shaping zones and decisive operations zones from entry through redeployment and attacks enemy high value assets and facilities in all terrains and weather as well as in situations where collateral damage must be minimized.

The Unitary rocket can engage targets that are located in urban/complex terrain, or foliage/canopy-restricted terrain, and can be employed during inclement weather, i.e., Air Defense Radar sites, Command, Control Computers and Intelligence (C3I) sites, tactical command post, petroleum/oil/lubrication storage sites, ammunition storage facilities, and Division-level communications relay sites.

GMLRS, December 31, 2002

7. Executive Summary:

GMLRS

The Launcher portion of MLRS Upgrade Program has been redesignated as an ACAT II program and will no longer be reported in the SAR.

GMLRS, which reports the Tactical Rockets portion of the MLRS Upgrade Program, has been designated as a new ACAT I program.

(U) DPICM

The GMLRS DPICM program has successfully completed two Ballistic Flight Tests, six Engineering Design Flight Tests, and nine Production Qualification Tests.

As of December 2002, the GMLRS DPICM System Development and Demonstration Contract has experienced minimal cost and schedule variances. The Functional Configuration Audit and Production Readiness Reviews were successfully conducted. All performance specifications have been verified and production readiness was rated green by an Independent Government Assessment Team. After a successful Milestone C Decision in March, the program is now ready to proceed into Low Rate Initial Production. The GMLRS Engineering and Manufacturing Development (EMD) Contract is 97% complete.

(U) UNITARY

Operational requirements changes have mandated the development of a precision munition that has improved range over the M26 Basic MLRS with greater accuracy, effectiveness and controllable lethality.

The need for high probability of kill with reduced collateral damage to non-combatants and non-objective targets led to the development of GMLRS Unitary munitions.

The improved accuracy of Unitary munitions concentrates warhead effects with a small tactical target area. This capability allows for the successful engagement of military targets located in close proximity to non-combatant personnel and facilities with confidence the objective will be neutralized while minimizing collateral damage to surrounding non-military facilities and personnel. Minimized collateral damage is achieved by greatly improved delivery accuracy and controllable fragmentary dispersion. Unitary high explosive effects are concentrated at the impact point and quickly taper off. Combined with precision targeting, this results in a relatively small effects area with significantly higher probabilities of kill than DPICM.

The Unitary program successfully completed a Milestone B Decision in March 2003 which authorizes system development and program initiation.

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
GMLRS MS II EMD	MAR 1998	MAR 1998	JUL 1998
GMLRS LRIP Review	AUG 2001	APR 2003	MAR 2003(Ch-1)
GMLRS OT	JUL 2003	JUN 2005	AUG 2004(Ch-1)
GMLRS MS III	OCT 2003	FEB 2006	MAR 2003(Ch-1)
GMLRS IOC	APR 2004	NOV 2006	MAR 2006

Acronyms:

- EMD - Engineering and Manufacturing Development
- GMLRS - Guided Multiple Launch Rocket System
- IOC - Initial Operational Capability
- LRIP - Low Rate Initial Production
- MS - Milestone
- OT - Operational Testing

b. Current Change Explanations --

(Ch-1) The GMLRS program was accelerated as a result of the Crusader program being cancelled:

Milestone	FROM	TO
GMLRS LRIP Review	Apr 2003	Mar 2003
GMLRS OT	Nov 2005	Aug 2004
GMLRS MS III (LRIP)	Jun 2006	Mar 2003

9b. Schedule (Cont'd):

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Accuracy Range				
GMLRS Range Max	70	70 / 60	70	70
GMLRS Range Min	10	10 / 15	15	10
Effectiveness				
GMLRS Expected Fractional Damage	30%	30% / 30%	30	30%
Reliability				
GMLRS	0.95	0.95 / 0.92	.83*	.95
Hazardous Dud Rate	0%	0% / <1%	<4%**	<1%

\*Reliability of Guided MLRS is currently assessed at 81.5% (1.8% below the target point on RAM curve at Milestone C). However, contractor is running a pod with new external cabling through a salt fog test to validate change to the design. Given a successful retest, the reliability will be assessed at 88%.

\*\*The Dud rate is a function of range. Dud rate is currently less than 2% within 90% of the operational mode summary/mission profile (OMS/MP) ranges, which is various test scenarios based on TEMP requirements. Accuracy of rocket coupled with submunition improvements has resulted in an 88% reduction in dud rate per target and a 90% reduction in potentially hazardous area. Program continuing to improve design of M101 submunition and is pursuing self-destruct fuzes from four different vendors.

b. Current Change Explanations -- None

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	81.9	180.0	173.7
Procurement	1313.8	8560.1	9006.8
Tactical Rocket	(1313.8)		(8976.4)
Other Weapon System			(30.4)
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 1998 Base-Year \$	<u>1395.7</u>	<u>8740.1</u>	<u>9180.5</u>
 Escalation	 292.9	 2898.3	 2651.4
Development (RDT&E)	(3.4)	(13.7)	(10.8)
Procurement	(289.5)	(2884.6)	(2640.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>1688.6</u>	<u>11638.4</u>	<u>11831.9</u>
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>43182</u>	<u>140004</u>	<u>140004</u>
Total	<u>43182</u>	<u>140004</u>	<u>140004</u>

On March 7, 2003, the Army Acquisition Executive authorized an LRIP quantity of 1920 units, which does not exceed the 10% guidelines established in 10 U.S.C. 2400 Federal Acquisition Streamlining Act (FASTA).

The quantity of 140088 is incorrect in the FY 04 President's Budget; correct quantity is 140004.

c. Foreign Military Sales --

The GMLRS rocket development is a cooperative program with France, Germany, Italy, the United Kingdom, and the United States. The GMLRS EMD contract closed January 31, 2003.

The United States is negotiating a GMLRS Production Memo of Understanding with the European Partners.

Future FMS cases for Extended Range-MLRS and GMLRS will likely depend on availability of SDF.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (NOV 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1998 BY\$)	8740.1	9180.5	
(2) Quantity	140004	140004	
(3) Unit Cost	0.062	0.066	+6.45
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	8560.1	9006.8	
(2) Quantity	140004	140004	
(3) Unit Cost	0.061	0.064	+4.92

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	85.3	1603.3	-	1688.6
Previous Changes:				
Economic	-0.9	-75.7	-	-76.6
Quantity	-	+4156.9	-	+4156.9
Schedule	-	+170.5	-	+170.5
Engineering	-	-	-	-
Estimating	+103.6	+4648.2	-	+4751.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+102.7	+8899.9	-	+9002.6
Current Changes:				
Economic	-2.2	-338.2	-	-340.4
Quantity	-	-	-	-
Schedule	-	-90.6	-	-90.6
Engineering	+1.8	+877.6	-	+879.4
Estimating	-3.1	+660.4	-	+657.3
Other	-	-	-	-
Support	-	+35.0	-	+35.0
Subtotal	-3.5	+1144.2	-	+1140.7
Total Changes	+99.2	+10044.1	-	+10143.3
Current Estimate	184.5	11647.4	-	11831.9

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

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	-	+2985.3	-	+2985.3
Schedule	-	+1.7	-	+1.7
Engineering	-	-	-	-
Estimating	+92.7	+3505.6	-	+3598.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+92.7	+6492.6	-	+6585.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+2.1	+668.3	-	+670.4
Estimating	-3.0	+501.7	-	+498.7
Other	-	-	-	-
Support	-	+30.4	-	+30.4
Subtotal	-0.9	+1200.4	-	+1199.5
Total Changes	+91.8	+7693.0	-	+7784.8
Current Estimate	173.7	9006.8	-	9180.5

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-2.3
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Revised estimate to include insensitive munitions development effort. (Engineering)	+2.1	+1.8
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.2
Revised program estimate due to budget adjustments. (Estimating)	-4.2	-4.3
RDT&E Subtotal	<u>-0.9</u>	<u>-3.5</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-338.2
Acceleration of annual procurement buy profile. (Schedule)	0.0	-90.6
Revised estimate to Include unique Unitary hardware. (Engineering)	+447.5	+588.3
Revised estimate to cut in unique Unitary hardware into DPICM. (Engineering)	+220.8	+289.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised Program estimate due to budget adjustments. (Estimating)	-1.4	-1.5
Revised program estimate based on Army Cost Position. (Estimating)	+26.9	+30.6
Revised program estimate due to accelerated program. (Estimating)	+420.3	+558.8
Revised test plan and requirements to include DPICM and Unitary. (Estimating)	+51.6	+67.5
Revised program estimate to include Contractor Logistics Support. (Estimating)	+3.8	+4.5
Refinement of estimate of Other Weapon System cost (training and data). (Support)	+30.4	+35.0
Procurement Subtotal	<u>+1200.4</u>	<u>+1144.2</u>

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.039	-0.003	+0.002	+0.001	+0.006	+0.039	--	--	+0.045	0.085

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	
0.037	-0.003	+0.004	+0.001	+0.006	+0.038	--	--	+0.046	0.083

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	MAR 1998	N/A	JUL 1998
Milestone III	N/A	OCT 2003	N/A	MAR 2003
IOC	N/A	APR 2004	N/A	MAR 2006
Total Cost	N/A	1688.6	N/A	11831.9
Total Quantity	0	43182	0	140004
Prog Acq Unit Cost	N/A	0.0	N/A	0.1

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

a. Procurement --  
 GMLRS EMD:  
 LMMFC, GRAND PRAIRIE, TX  
 DAAH01-98-C-0033, CPAF  
 Award: November 4, 1998  
 Definitized: November 4, 1998

	Initial Contract Price		
	Target	Ceiling	Qty
	\$121.1	N/A	0

	Current Contract Price			Estimated Price At Completion	
	Target	Ceiling	Qty	Contractor	Program Manager
	\$145.8	N/A	0	\$139.8	\$142.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-2.3	\$-3.5
Cumulative Variances To Date (12/31/02)	\$-2.4	\$-0.6
Net Change	\$-0.1	\$2.9

Explanation of Change:

The unfavorable cost variance is due to additional costs for Production Qualification Testing (PQT) readiness and manpower.

The favorable schedule variance is due to completion of all Engineering Development Testing and PQT.

Contract Comments:

The GMLRS's total contract costs (reported above) are shared 50/50 between the U.S. and the European partners in accordance with the Memorandum of Understanding dated September 1998. The GMLRS EMD contract closed January 31, 2003.

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> (FY98-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-19)	<u>Total</u>
RDT&E	144.5	5.4	6.4	28.2	184.5
Procurement	36.6	107.8	112.6	11390.4	11647.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	181.1	113.2	119.0	11418.6	11831.9

b. Annual Summary -- Tactical Rocket

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1998 Dollars Nonrec</u>	<u>Flyaway FY 1998 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1998				13.5	13.6
1999				17.4	17.7
2000				25.9	26.8
2001				16.0	16.8
2002				43.1	45.6
2003				22.4	24.0
2004				5.0	5.4
2005				5.8	6.4
2006				5.6	6.3
2007				9.2	10.5
2008				9.1	10.6
2009				0.7	0.8
Subtotal				173.7	184.5

RDTE does not reflect Unitary funds.

Appropriation: 2032 - Missile Procurement, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1998 Dollars Nonrec</u>	<u>Flyaway FY 1998 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1996					
2003	108	6.9	19.1	33.7	36.6
2004	786	4.9	88.5	97.9	107.8
2005	1026	7.6	88.8	100.6	112.6
2006	1218	7.1	105.5	114.0	129.8
2007	2688	7.1	207.3	215.5	249.8
2008	5814	7.1	405.7	413.4	487.7

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

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2009	6942		466.6	475.4	570.9
2010	9000		610.5	610.6	746.6
2011	12000		779.5	779.7	970.5
2012	15000		933.9	934.2	1183.7
2013	15000		913.5	913.8	1178.7
2014	15000		898.4	898.7	1180.1
2015	15000		886.4	886.7	1185.3
2016	15000		876.6	876.9	1193.3
2017	15000		868.4	868.6	1203.3
2018	10422		787.0	756.0	1066.1
2019				31.1	44.6
Subtotal	140004	40.7	8935.7	9006.8	11647.4

The Guided MLRS begins production in FY 2003.

The quantity of 140088 is incorrect in the FY 04 President's Budget;  
correct quantity is 140004.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	140004	40.7	8935.7	9180.5	11831.9

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): \$ 104.7

Percent Total Program Expended: 0.9%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The unit for tracking O&S cost is the rocket pod. There are few personnel costs, maintenance costs, contractor supporting cost, or other O&S cost associated with it. The total number of rocket pods planned for production is 23,264.

Cost Estimate, January 30, 2003.

b. Costs -- (FY 1998 Constant (Base-Year) Dollars in Thousands)

Cost Element	Tactical Rocket Avg Annual Cost For Total Rocket Qty	Antecedent System
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	3.0	N/A
Contractor Support	0.6	N/A
Sustaining Support	2.5	N/A
Indirect Costs	6.6	N/A
Total	12.7	N/A

Total O&S Cost	Tactical Rocket	Antecedent System
BY\$ (In Millions)	147.3	N/A
TY\$ (In Millions)	216.9	N/A

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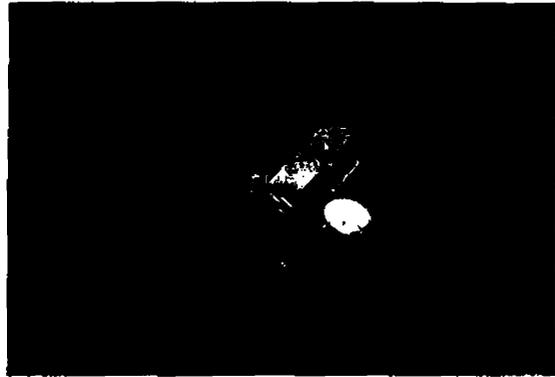
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM:** Advanced EHF

**AS OF DATE:** December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Advanced Extremely High Frequency (AEHF) Satellites

2. (U) DoD Component: USAF

Joint Participants:  
Canada, Netherlands & United Kingdom (UK MOU still pending)

3. (U) Responsible Office and Telephone Number:

SMC/MC	SES Christine Anderson
2420 Vela Way	Assigned: December 31, 2000
Suite 1467-A8	DSN 833-4877; COMM 310-336-4877
El Segundo, CA 90245-4659	chris.anderson@losangeles.af.mil

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

RDT&E:  
(U) PE 0603430F

PROCUREMENT:  
(U) APPN 3020 ICN ADV555 (Air Force)

SAF/PAS

03 0098

CONGRESSIONAL

**CLEARED**  
FOR OPEN PUBLICATION  
AS AMENDED

FEB 27 2003 4

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: System Protection Code (SPG), July 2001  
Downgrade instructions: Subject to Automatic Downgrade  
Requirement: Originating Agency Determination Required~~

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Advanced EHF, December 31, 2002

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated October 6, 2001.

Approved Program:

(U) USecAF Approved Acquisition Program Baseline (APB) dated February 14, 2003.

**6. (U) Mission and Description:**

(U) The Advanced Extremely High Frequency (AEHF) satellite system provides survivable, jam-resistant, worldwide, secure communications for the strategic and tactical warfighter. The AEHF Program is a follow-on to replenish the Milstar satellite constellation and to provide a Mission Control Segment that is backward compatible with Milstar. The program combines the Low Data Rate and Medium Data Rate functions of the Milstar II satellites into a single payload while providing greater capacity and throughput at higher data rates and lower cost. The AEHF satellites will be backward compatible to the Milstar satellite system. The terminal program offices will upgrade Milstar terminals and/or provide new terminals to be compatible with the extended data rates (XDR), which AEHF provides.

**7. (U) Executive Summary:**

(U) **Deputy Secretary of Defense (DEPSECDEF) Guidance:** Since approval of the Milestone B acquisition strategy, the DEPSECDEF directed the Air Force to do a comprehensive study to determine the technical feasibility of meeting or exceeding by 2010 the Full Operational Capability (FOC) that would have been achieved by a full AEHF constellation through an alternative architecture. The Transformational Communications Study (TCS) addressed alternative approaches to satisfy the AEHF FOC and reported their findings June 2002. Subsequent to the release of the TCS, the DEPSECDEF in December 2002 directed a change to the acquisition strategy, which removed AEHF satellites 4 and 5 from the program baseline. Under the revised strategy, FOC may no longer be satisfied by an AEHF-only constellation. Development of the Transformational Communications Architecture may lead to a combination of AEHF satellites and Transformational Communication satellites that will meet an FOC-equivalent capability. The current AEHF Acquisition Program Baseline (APB) reflects the new acquisition strategy.

(U) **System Development & Demonstration (SDD) Contract:** The Firm Fixed Price letter contract has been restructured as a Cost Plus Award Fee contract. Final negotiations were completed in August 2002, and the contract has been definitized at a value of \$2.591B for the basic contract, which includes development and production of the first two satellites and the mission control segment (MCS). Additionally, the sustaining engineering options for the MCS and the space segment were negotiated at a value of \$65.8M through FY08. The contract was restructured to reflect the impacts due to the loss of \$100M in FY02 funds (\$70M FY02 congressional appropriations reduction and delay of \$30M from the International Partners). The new launch dates for SV-1 and SV-2 are December 2006 and December 2007 respectively. The projected launch date for

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

SV-3 is April 2009. These changes caused an Initial Operational Capability (IOC) threshold breach as well as a significant increase to overall program costs. The USecAF approved a new APB that incorporates the new IOC threshold date of August 2009 as well as the revised strategy directed by the DEPSECDEF in December 2002.

(U) International Partners (IPs): Uncertainty of the TCS outcome made the AEHF International Partners (IPs) concerned over the ability of DOD to meet their communication resource requirements in the absence of a full AEHF constellation. These concerns caused difficulties in finalizing the draft Memorandums of Understanding (MOUs) and led the IPs to withhold \$30M of IP funding for AEHF in FY02 (\$20M-United Kingdom (UK); \$10M-Netherlands (NL)). Assistant Secretary of Defense for Command, Control, Communications and (ASD(C3I)) signed out letters reassuring all IPs that their requirements will be met with either a full AEHF constellation or AEHF satellites augmented with a TCS-based architecture. Following receipt of the ASD(C3I) letter, Canada transferred all FY01-02 funds (\$35.2M) to AEHF, and the MOU with the NL was signed on November 8, 2002 with initial funds (\$8M) received on December 13, 2002. Agreement in principle has been reached with the UK, however the UK formal approval process is expected to take until the April 2003 timeframe.

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	APR 1999	APR 1999	APR 1999
Contract Award System Definition	AUG 1999	AUG 1999	AUG 1999
Milestone B (DAB)	JUN 2001	JUN 2001	SEP 2001
Contract Award EMD/Production	JUN 2001	JUN 2001	NOV 2001
Initial Operational Capability (IOC)	JUL 2008	FEB 2009	FEB 2009
Full Operational Capability (FOC)	JAN 2012	N/A	N/A (Ch-1)
Tailored Milestone C (DAB)	MAR 2005	N/A	N/A (Ch-2)
Key Decision Point C	N/A	JUN 2004	AUG 2004 (Ch-2)

b. Current Change Explanations --

(U) (Ch-1) - Due to a change in acquisition strategy driven by definition of the Transformational Communication Architecture strategy, FOC may no longer be satisfied by an AEHF only constellation. Development of the Transformational Communications Architecture may lead to a combination of AEHF satellites and Transformational Communications satellites that will meet an FOC-equivalent capability originally intended with an AEHF only constellation.

(Ch-2) - Tailored Milestone C was replaced by Key Decision Point (KDP) C, which is scheduled to occur after System CDR in accordance with the National Security Space Acquisition Policy 03-01. This is intended to be a tailored production KDP C to authorize fabrication and assembly of Satellite #3.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Coverage	Provide global coverage	N/A / N/A	N/A	N/A (Ch-1)
Capacity	1.2 Gbps CMTW, 600 Mbps Strategic	1.2 Gbps/ Support CMTW, / at least 500 Mbps/ for CMTW Scenario / and at least 350 Mbps / for Strategic / Scenario	N/A	Support at least 500 Mbps for CMTW Scenario and at least 350 Mbps for Strategic Scenario
Nuclear Protection	Provide assured communications	Provide assured communi- cations / Provide assured communi- cations	N/A	Provide assured communi- cations

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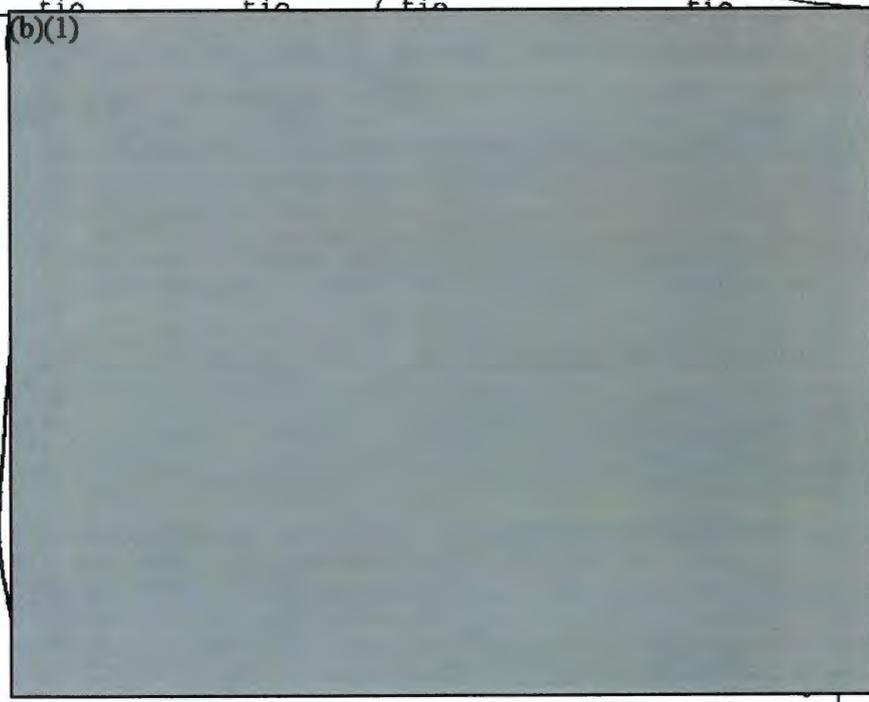
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10a. (U) Performance Characteristics (Cont'd):

<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
to	to / to		to
surviva- ble	surviva-/ ble / ble		surviva- ble
nuclear forces	nuclear / nuclear forces / forces		nuclear forces
exposed to the environ- ment	exposed / exposed to the / to the environ-/ ment / ment		exposed to the environ- ment
speci- fied in NCGS-89- 06, and for those critical networks that support the follow- ing critical func- tio	speci- / speci- fied in / fied in NCGS-89-/ 06, and / 06, and for / for those / those critical/ networks/ networks that / that support / support the / the follow- / follow- ing / ing critical/ critical func- / func- tio / tio		speci- fied in NCGS-89- 06, and for those critical networks that support the follow- ing critical func- tio

Anti-Jam Protection



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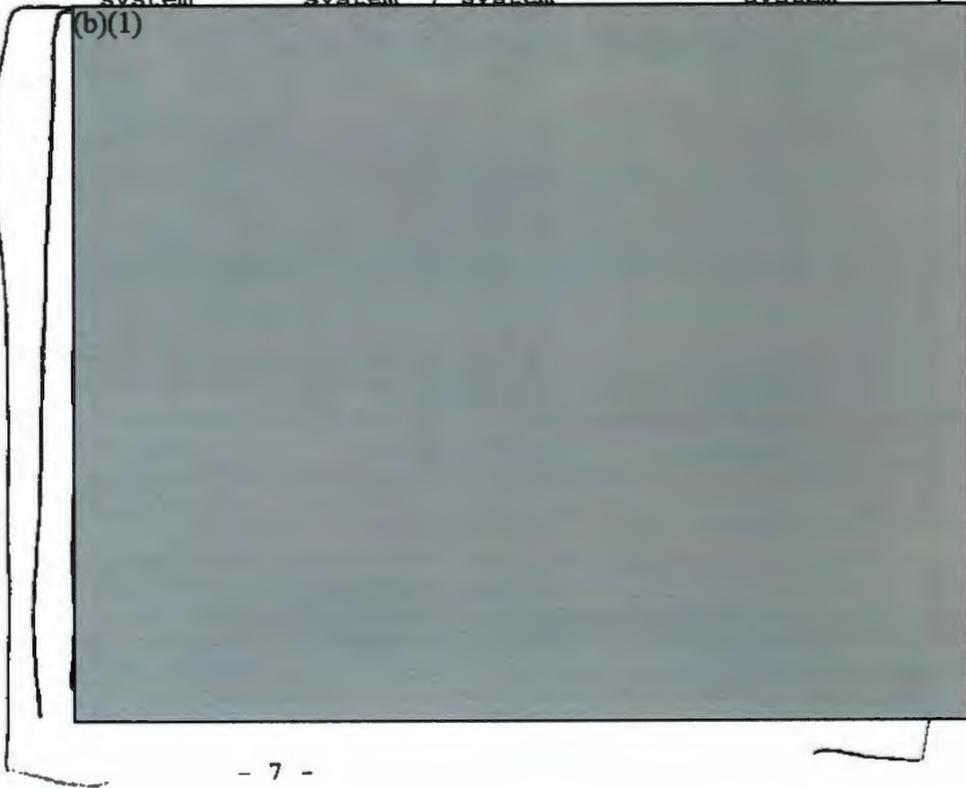


10a. (U) Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	military branches EHF terminals	military/branches/ EHF / terminals	military/branches EHF	military branches EHF
MILSTAR Backward Compatible	Operate with the Milstar system, at all LDR and MDR terminal supported data rates, throughout the Milstar transition to the AEHF system	Operate with the/ Milstar / system, / at all / LDR and / MDR / terminal/ supported- / ed data / rates, / through- / out the / Milstar / transi- / tion to / the AEHF / system /	Operate with the Milstar system, at all LDR and MDR terminal supported data rates, throughout the Milstar transition to the AEHF system N/A	Operate with the Milstar system, at all LDR and MDR terminal supported data rates, throughout the Milstar transition to the AEHF system

AEHF Data Rates

(b)(1)



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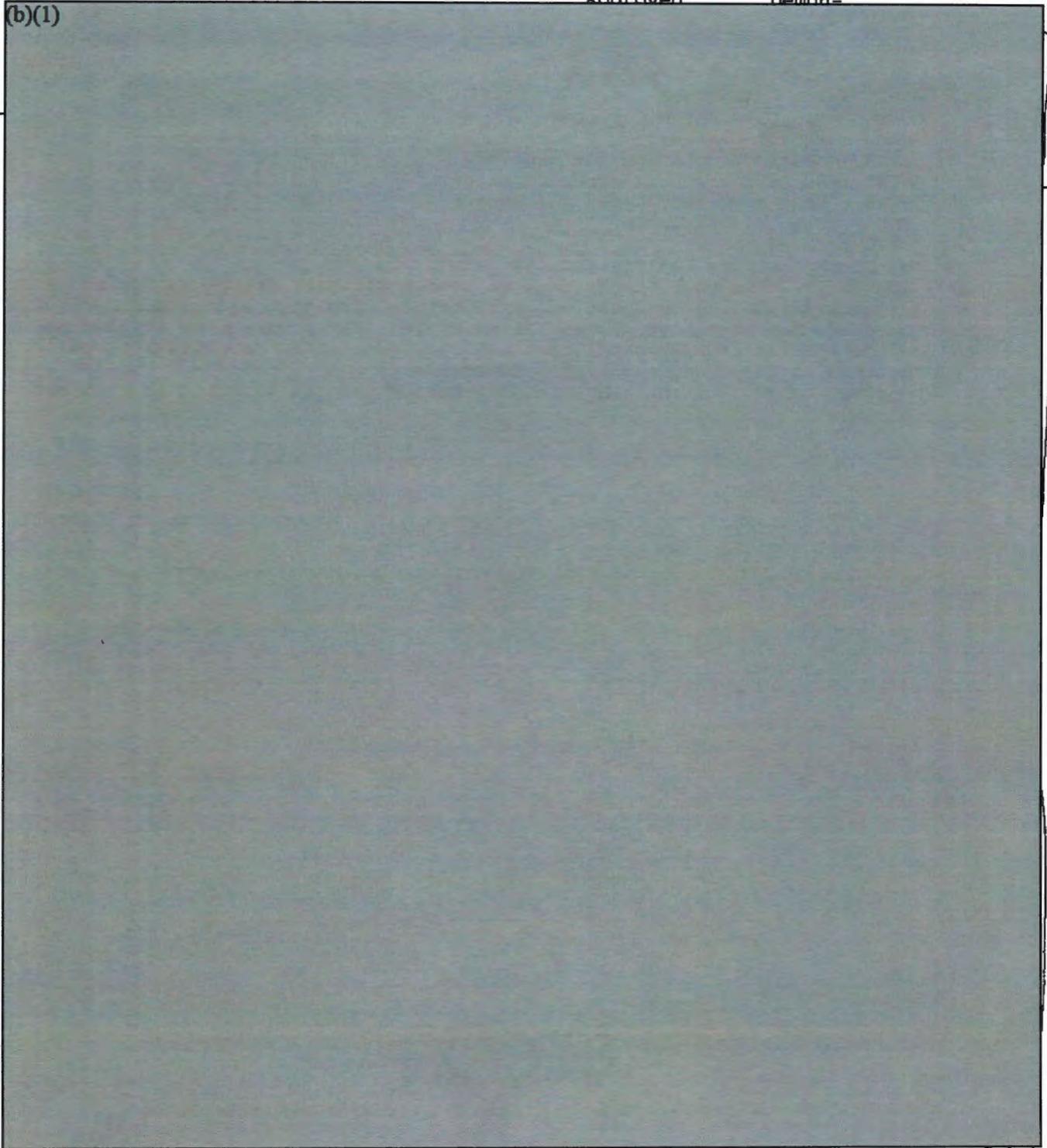
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10a. (U) Performance Characteristics (Cont'd):

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

Acronym List:

CMTW - Combined Major Theater War  
HGEC - High Gain Earth Coverage  
HRCA - High Resolution Coverage  
LDR - Low Data Rate  
LGEC - Low Gain Earth Coverage  
MDR - Medium Data Rate  
MRCA - Medium Resolution Coverage  
NCGS - Nuclear Criteria Group Secretariat  
STAR - System Threat Assessment Report  
SOD - Standoff Distance

b. Current Change Explanations --

(U) (Ch-1) Due to a change in acquisition strategy driven by definition of the Transformational Communication Architecture strategy, global and worldwide coverage may not be solely satisfied by the AEHF program but instead met by a combination of AEHF satellites and next generation satellites to be defined in the Transformational Communications Architecture. The APB was updated to reflect the acquisition strategy changes directed in December 2002.

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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)	4074.2	4389.9	4257.7
Procurement	1205.0	465.5	462.9
Flyaway	(1205.0)		(439.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(23.9)
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 2002 Base-Year \$	<u>5279.2</u>	<u>4855.4</u>	<u>4720.6</u>
Escalation	366.1	243.7	196.3
Development (RDT&E)	(190.7)	(203.2)	(160.2)
Procurement	(175.4)	(40.5)	(36.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>5645.3</u>	<u>5099.1</u>	<u>4916.9</u>
b. (U) Quantity --			
Development (RDT&E)	2	2	2
Procurement	3	1	1
Total	<u>5</u>	<u>3</u>	<u>3</u>

(U) Note: LRIP is not applicable for the AEHF program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	4855.4	4720.6	
(2) Quantity	3	3	
(3) Unit Cost	1618.467	1573.533	-2.78
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	465.5	462.9	
(2) Quantity	1	1	
(3) Unit Cost	465.500	462.900	-0.56

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4264.9	1380.4	-	5645.3
Previous Changes:				
Economic	-104.1	-	-	-104.1
Quantity	-	-	-	-
Schedule	-	+73.1	-	+73.1
Engineering	-	-	-	-
Estimating	-53.0	-	-	-53.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-157.1	+73.1	-	-84.0
Current Changes:				
Economic	-28.6	-2.6	-	-31.2
Quantity	-	-969.3	-	-969.3
Schedule	-	+12.9	-	+12.9
Engineering	-	-	-	-
Estimating	+338.7	-22.5	-	+316.2
Other	-	-	-	-
Support	-	+27.0	-	+27.0
Subtotal	+310.1	-954.5	-	-644.4
Total Changes	+153.0	-881.4	-	-728.4
Current Estimate	4417.9	499.0	-	4916.9

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

(U) Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4074.2	1205.0	-	5279.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+106.6	-	+106.6
Engineering	-	-	-	-
Estimating	-136.5	-	-	-136.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-136.5	+106.6	-	-29.9
Current Changes:				
Quantity	-	-849.0	-	-849.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+320.0	-23.6	-	+296.4
Other	-	-	-	-
Support	-	+23.9	-	+23.9
Subtotal	+320.0	-848.7	-	-528.7
Total Changes	+183.5	-742.1	-	-558.6
Current Estimate	4257.7	462.9	-	4720.6

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-28.6
Adjustment for Current and Prior Inflation. (Estimating)	+2.9	+3.0
Increased costs associated with the rebaselined RDT&E program due to the FY02 \$100M funding cut (\$70M congressional appropriations reduction and delay of \$30M from International Partners). The rebaselined program required the following:	+270.6	+280.7
1) restoral in FY04-09 of the \$70M congressional appropriations reduction		
2) additional 512 man years in FY02-09 due to staffing inefficiencies		
3) renegotiation of subcontractor effort, which increased costs by approximately \$22M in FY02-09. (Estimating)		
Restoral of FY06-07 developmental requirements deferred in the FY03 President's Budget. (Estimating)	+124.1	+133.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Transfer of Joint Terminal Engineering Office (JTEO) effort to Military Satellite Communications (MILSATCOM) Terminals program. (Estimating)	-15.0	-15.7
General Congressional reductions (e.g. Small Business Innovation Research). (Estimating)	-40.4	-40.3
Delay of \$30M of FY02 International Partner funding; \$8M restored in FY03; remaining \$22M is currently in negotiations. (Estimating)	-22.2	-22.0
RDT&E Subtotal	<u>+320.0</u>	<u>+310.1</u>
 (2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-16.2
Economic adjustment for negative program change. (Economic)	N/A	+13.6
Quantity Variance associated with eliminating procurement of two satellites (satellites #4 and #5). (Quantity)	-683.7	-782.4
Quantity Variance associated with eliminating advanced parts for two satellites (satellites #4 and #5) (Quantity)	-165.3	-186.9
Delayed procurement for satellite #3 from FY04 to FY06. (Schedule)	0.0	+12.9
Delayed purchase of advanced parts for satellite #3 from FY03 to FY05. (Estimating)	0.0	+3.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Revised estimate for satellite #3. (Estimating)	-24.0	-25.9
Change in Peculiar Support: On-orbit operational support added in FY08 and FY09 for satellite #3 until transition to O&M. (Support)	+23.9	+27.0
Procurement Subtotal	<u>-848.7</u>	<u>-954.5</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	
1129.06	-45.10	+429.61	+28.67	--	+87.73	--	+9.00	+509.91	1638.97

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	
460.13	-2.60	-49.03	+86.00	--	-22.50	--	+27.00	+38.87	499.00

(U) Tailored Milestone C was replaced by Key Decision Point (KDP) C, which is scheduled to occur after System Critical Design Review (CDR) in accordance with the National Security Space Acquisition Policy 03-01. This is intended to be a tailored production KDP C to authorize fabrication and assembly of Satellite 3.

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	APR 1999	APR 1999	N/A	APR 1999
Milestone B	FEB 2001	SEP 2001	N/A	SEP 2001
Milestone C	FEB 2001	MAR 2005	N/A	N/A
IOC	NOV 2007	JUL 2008	N/A	FEB 2009
Total Cost	2690.6	5645.3	N/A	4916.9
Total Quantity	2	5	N/A	3
Prog Acq Unit Cost	1345.3	1129.1	N/A	1639.0

(U) Tailored Milestone C was replaced by Key Decision Point (KDP) C, which is scheduled to occur after System Critical Design Review (CDR) in accordance with the National Security Space Acquisition Policy 03-01. This is intended to be a tailored production KDP C to authorize fabrication and assembly of Satellite 3.

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

a. RDT&E --	Initial Contract Price			
(U) SDD Letter Contract:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Lockheed Martin, Sunnyvale, CA				
F04701-02-C-0002, CPAF	\$2698.0	\$2698.0	2	
Award: November 16, 2001				
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>
\$2591.5	\$0.0	2	\$2591.5	\$2591.5
				<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 Firm Fixed Price letter contract has been restructured as a Cost Plus Award Fee contract. Final negotiations were completed in August 2002 and the contract has been definitized at a value of \$2.591B for the basic contract, which includes development and production of the first two satellites and the mission control segment. Additionally, the sustaining engineering options for the MCS and the space segment were negotiated at a value of \$65.8M through FY08.

(U) Contract Comments:

Contractor cost variance reporting was pending the formal Integrated Baseline Review (IBR) that was successfully completed in February 2003. The contract price of \$2591.5M does not include \$274.4M of potential award fee. The contract price will be updated as the contractor incrementally earns award fee for contract performance.

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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</u> (FY95-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-18)	<u>Total</u>
RDT&E	1866.1	817.1	604.7	1130.0	4417.9
Procurement	-	-	95.0	404.0	499.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1866.1	817.1	699.7	1534.0	4916.9

b. Annual Summary -- AEHF

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				25.0	23.1
1996				33.0	31.0
1997				33.9	32.3
1998				35.7	34.2
1999				56.4	54.6
2000				91.4	89.8
2001				230.7	229.8
2002				492.3	494.8
2003				862.7	876.5
2004				791.8	817.1
2005				577.0	604.7
2006				382.5	407.4
2007				277.1	300.4
2008				155.0	171.0
2009				97.2	109.1
2010				13.7	15.7
2011				13.6	15.8
2012				13.6	16.1
2013				13.7	16.5
2014				12.9	15.9
2015				12.6	15.7
2016				12.2	15.5
2017				11.9	15.4
2018				11.8	15.5
Subtotal	2			4257.7	4417.9

(U) Footnote:

The Research and Development (3600) Appropriation funding profile identified in this SAR includes both US funding and \$250M in International

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

Partner (IP) funding. The yearly breakout of the IP funding is as follows:

IP Funds (\$M)	
FY02	35.2
FY03	73.0
FY04	58.0
FY05	52.0
FY06	25.0
FY07	4.0
FY08	2.8
Total	250.0

The Research and Development (3600) Appropriation funding profile identified in this SAR does not include \$143.2M (FY03-FY09) of Defense Emergency Response Funds (DERF) in PE 0603430F, which will be distributed to multiple USAF programs requiring radiation hardening parts. The yearly breakout of the DERF is as follows:

DERF (\$M)	
FY03	19.0
FY04	19.0
FY05	21.0
FY06	20.0
FY07	21.0
FY08	21.4
FY09	21.8
Total	143.2

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003					
2005				89.5	95.0
2006	1		439.0	349.5	377.1
2007					
2008				10.6	11.8
2009				13.3	15.1
Subtotal	1		439.0	462.9	499.0

(U) Footnote:

The Missile Procurement (3020) Appropriation funding profile identified in this SAR reflects what is currently in the FY04 President's Budget (PB) request. The FY04 PB request includes a profile consistent with the DEPSECDEF direction for a 3 satellite program.

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Advanced EHF, December 31, 2002

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		439.0	4720.6	4916.9

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): \$ 1043.5

(U) Percent Total Program Expended: 21.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The AEHF Operating and Support (O&S) costs cover all operational activities for both the space segment (3 satellites) and ground segment for a ten year mean mission duration after on-orbit checkout of satellite #3 in FY09 through FY18. The O&S estimate is an update to the Program Office Estimate (POE) formally approved at Milestone B in October 2001. The updates were based on the new definitized System Development & Demonstration contract.

The Antecedent system (MILSTAR) costs are based on validated requirements in the Air Force Space Command (AFSPC) Logistics Support Requirements Brochures built for the FY04 President's Budget Request. The Milstar O&S costs cover all operational activities for both the space segment (5 satellites) and ground segment for an anticipated design life of ten years for FY04-FY13.

Both the AEHF and Milstar annual average costs are based on O&S for the full constellation, since many of the O&S costs are system-level costs instead of specific satellite costs. The estimates assume that AEHF and Milstar will be operated in parallel by the 4th Space Operations Squadron in Schriever Air Force Base. These estimates were finalized on April 15, 2002 with AFSPC's budget request to Headquarters Air Force.

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

b. (U) Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	AEHF Annual Average for Constellation	MILSTAR Annual Average for Constellation
Mission Pay & Allowances	9.6	16.9
Unit Level Consumption	7.5	13.2
Intermediate Maintenance	0.0	0.0
Depot Maintenance	2.2	3.9
Contractor Support	1.5	2.6
Sustaining Support	22.2	39.0
Indirect Costs	2.6	4.6
Total	45.6	80.2

Total O&S Cost	AEHF	MILSTAR
BY\$ (In Millions)	456.0	801.5
TY\$ (In Millions)	559.7	899.8

Report Creation Date: 03/21/2003 11:06:54 AM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: F/A-22 Raptor**

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): F/A-22 Raptor
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  

ASC/YF	Col Thomas J. Owen
2725 C Street, Bldg 553	Assigned: November 21, 2002
Aeronautical Systems Center	DSN 785-4167; COMM (937) 255-4167
WPAFB, OH 45433-7424	Thomas.Owen@WPAFB.AF.MIL
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0207138F  
(U) PE 0603109F (Shared)  
(U) PE 0603230F  
(U) PE 0604227F (Shared)  
(U) PE 0604239F  
(U) PE 0604250F Project 643393, 643786  
PROCUREMENT:  
(U) APPN 3010 ICN 10F022 (Air Force)  
MILCON:  
(U) PE 0207219F  
(U) PE 0604239F

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated February 3, 1992.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 2, 2003.

6. (U) Mission and Description:

(U) The F/A-22 Program is developing the next-generation multimission air dominance fighter for introduction in the early 2000s to counter emerging proliferating world-wide threats. The F/A-22 is a multi-role fighter designed to penetrate enemy airspace and achieve a first-look, first-kill capability against multiple targets. The F/A-22 Engineering and Manufacturing Development (EMD) phase is based on the Weapon System Specification formulated from data developed during the previous Advanced Tactical Fighter (ATF) Demonstration/Validation Prototype phase. The current EMD program consists of design, fabrication, and development testing of 9 EMD flight test vehicles and 25 engines; updating of the Avionics Flying Test Bed and using it to develop and integrate the EMD avionics suite; and design and development of the F/A-22 support and training system. The on-going production program will deliver F/A-22s, along with the required Alternate Mission Equipment (AME), support equipment, and training systems. The F/A-22 Program, from the outset, has placed emphasis on balancing affordability, performance, survivability, and reliability/maintainability. The F/A-22 is characterized by a low observable, highly maneuverable airframe, new engines capable of supersonic cruise without afterburners, and advanced integrated avionics.

7. (U) Executive Summary:

(U) The F/A-22 EMD and production programs were capped per the National Defense Authorization Act for FY98. However, the FY02 Authorization Conference removed the EMD cap on December 13, 2001. Accounting for Out of Production Parts (OPP) transfers, revised inflation assumptions and changes resulting from the FY00 Appropriations bill, the adjusted cap for the production program is \$36.794B. At the time of the F/A-22 LRIP DAB (August 2001), the Air Force Service Cost Position (SCP) for the F/A-22 production program exceeded the planned cost cap by \$5.4B. Subsequent to the LRIP decision, \$5.4B was added to the production program.

Production Cost Reduction Plans (PCRP) are used as one of the primary affordability initiatives. Initiated in 1997, PCRP are composed of two types of savings initiatives (Production Improvement Plans (PIPs) and Lean Enterprise Initiatives). PIPs are investments made to improve manufacturing processes or incorporate new technology to reduce costs. Lean Enterprise Initiatives are the application of Lean principles to factory, above factory floor, and supplier costs. PCRP are funded by a combination of the contractor and

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

government. The PCRPs process is active today within the F/A-22 Team where ideas are generated that become PIPs or Lean Enterprise Initiatives which result in cost savings that are required to reach program affordability targets.

The F/A-22 program identified significant schedule and cost increase in the EMD Estimate at Completion (EAC). As a result, the Air Force chartered a Red Team in November 2002 to conduct a sufficiency review of the SPO's estimate. This effort resulted in the addition of \$876M to complete the EMD program. This increase was due primarily to extending the EMD phase through December 2005 to fully develop and test the avionics software integration and envelope expansion efforts. The Air Force committed to fund this cost increase within F/A-22 resources by transferring funds from the Modernization RDT&E and Procurement appropriations, which resulted in the reduction of 7 aircraft from the planned quantity.

The Air Force intention is to procure an objective of 339 aircraft for \$43B. However, the program office currently forecasts that 276 aircraft can be purchased (both estimates include PRTV/PRTV II aircraft). This decrease is due to the recent transfer of funds from Production to EMD and higher than expected recurring costs from the Lot 3 negotiations. The F/A-22 enterprise is working on cost reduction initiatives to allow procurement of additional aircraft above the 276 forecast under the program's buy-to-budget philosophy.

According to a recently completed Air Force study, the Air Force validated that a minimum of 381 F/A-22 aircraft are required to accomplish the defense strategy as defined in the FY04-09 Defense Planning Guidance (DPG).

Production schedule performance is still behind contract. In 2002, behind schedule delivery of aircraft was reduced from twelve to seven months. LM Aero has developed a comprehensive set of schedule performance improvement plans in addition to the PCRPs that are expected to maintain the current improvement trend through 2003. Full recovery is planned to be complete by 2004.

An Acquisition Decision Memorandum was signed on December 05, 2002 authorizing the obligation of additional funds against the Lot 3 Production Undefined Contractual Action (UCA) for up to 23 aircraft through March 31, 2003. The engine full procurement UCA was awarded on December 23, 2002. Both the engines and production Lot 3 Full requirements definitization contracts are planned for award in March 2003 following a DAB decision.

The CY01 Program Criterion was met with the completion of the Full Scale Airframe Fatigue Test Status report released on September 24, 2001. The CY02 Program Criteria was met with (1) the completion of the first lifetime of fatigue testing on the full-scale airframe in May 2002 and (2) the November 2002 update of the inspection requirements and life-limited parts list.

The program criteria summarized below were being used to monitor the progress

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

of the F/A-22 program for entrance into further procurement activities. The criteria measured progress towards achieving test objectives in the following specific areas: flying qualities; air vehicle structure; supercruise; low observable performance; maintainability; and avionics maturity.

The USD(AT&L) approved the following CY02 Program Criteria for LRIP Lot 3 and Lot 4 Long Lead:

- Complete 1st fatigue life testing and provide updated life limits and airframe inspection requirements.
- Release avionics software for projects for EMD flight testing and the Air Combat Simulator.
- Complete RCS baseline measurement on a second EMD aircraft.
- Conduct first flight of the initial PRTV 1 aircraft.
- Successfully complete a guided AIM-120 missile test at supercruise with an Integrated Test Vehicle, with a goal of doing it live.
- Initiate guided AIM-9 testing.
- Conduct an update to the LRIP production readiness review on risk items identified at that review, and also on key suppliers to demonstrate that critical parts flow, system availability, major assembly, and actual final assembly load dates support scheduled delivery dates for LRIP Lot 3 aircraft. Results will then be reported to OSD prior to the Lot 3 production decision.
- Release flight test envelope for AFOTEC to begin unmonitored flight for initial pilot training, with a goal of releasing the Step 1 envelope.

All criteria have been completed as of November 25, 2002.

Progress towards the start of DIOT&E continues. The DIOT&E training flight envelope was released in November and the testing flight envelope is projected to be completed before the start of DIOT&E. Progress continues towards release of OFP 3.1.1FT-2 for DIOT&E training (3.1.1FT-2 has completed Level 4 Certification). The remaining DIOT&E aircraft were accepted by the Air Force in October (4010) and November (4011). There has been significant progress towards completing the modifications necessary to make the DIOT&E jets production representative for training and DIOT&E.

Factors affecting EMD Closure are on track for completion. Avionics software version 3.1.3 is dependent upon utilization of the Raptor Avionics Integration Lab (RAIL), which may recover up to four months of schedule risk. Based on current test performance, the Step 3 flight envelope will be delivered in February, 2005.

Demonstrated flight test capabilities to date include: supercruise, flight above 50,000 feet, airspeed greater than 760 Knots Calibrated Airspeed (KCAS)/2.0 Mach, Angle of Attack from -60 deg to greater than +60 deg, separation tests of AIM-9 and AIM-120 missiles, guided launch of three AIM-120 missiles and one AIM-9M, and load factor from -2g to 9g.

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

Air Combat Command's first Raptor (00-012) was delivered to Nellis AFB on January 14, 2002 via the Air Force's very first Raptor deployment. Raptor 00-012 flew from Lockheed Martin's Marietta plant to Edwards AFB, where it completed its low observability baseline sorties. Nellis AFB held an Operational Activation Ceremony on January 17, 2002 to commemorate the event.

For the first time ever, Air Force pilots and maintainers have been generating sorties using validated and verified interactive electronic technical data via the F/A-22's revolutionary Integrated Maintenance Information System (IMIS). To date, Nellis' Training Systems have been up and running at 100% for 12 consecutive months, and their IMIS has enjoyed very nearly the same success rate. The first maintenance training class of 22 technicians was completed and five classes are currently underway.

Tyndall AFB Ready for Training (RFT) date has slipped due to the late electronic classroom delivery of the Instructor-Led Weapons & Tactics Trainer (ILWTT) classroom from April 2003 to August 2003. Beneficial Occupancy Date (BOD) changed from September 1, 2002 to February 10, 2003 for pilot training only. Maintenance training remains scheduled for April 2003. Training work-arounds are being identified and implemented and no projected impacts to first pilot training or start dates at Tyndall are expected.

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>Development</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate (SAR)</u>	<u>Program (APB)</u>	<u>Estimate</u>
Milestone I (DSARC)	OCT 1986	OCT 1986	OCT 1986
Dem/Val Contract Award (Airframe only)	OCT 1986	OCT 1986	OCT 1986
Early Operational Assessment			
Start	OCT 1986	OCT 1986	OCT 1986
Complete	MAR 1991	MAR 1991	MAR 1991
System Requirements Review	MAY 1987	MAY 1987	MAY 1987
System Design Review	NOV 1989	NOV 1989	NOV 1989
Prototype First Flight	JUN 1990	JUN 1990	AUG 1990
Milestone II (DAB)	JUN 1991	JUN 1991	JUN 1991
EMD Contract Award	AUG 1991	AUG 1991	AUG 1991
Preliminary Design Review Complete	OCT 1992	APR 1993	APR 1993
Critical Design Review Complete	OCT 1993	FEB 1995	FEB 1995
Engine Initial Flight Release	OCT 1994	APR 1997	MAY 1997
PPV Long Lead	JAN 1995	N/A	N/A
First Flight	SEP 1995	MAY 1997	SEP 1997
DT&E			
Start	SEP 1995	MAY 1997	SEP 1997
Complete	DEC 1999	DEC 2005	DEC 2005 (Ch-1)
PPV Contract Award	JAN 1996	N/A	N/A
Low Rate Initial Production (LRIP)	OCT 1996	AUG 2001	AUG 2001
Decision			
Low Rate Production Contract Award	JAN 1997	AUG 2001	SEP 2001
LRIP First Delivery	JAN 1999	MAR 2003	JUN 2003 (Ch-2)
Dedicated IOT&E			
Start	JUN 1999	OCT 2003	OCT 2003 (Ch-3)
Complete	SEP 1999	JUN 2004	JUN 2004 (Ch-3)
Milestone III	DEC 1999	SEP 2004	SEP 2004 (Ch-4)
High Rate Production Contract Award	JAN 2001	NOV 2005	NOV 2005
Initial Operational Capability	SEP 2003	DEC 2005	DEC 2005
Organic Organizational Maintenance	SEP 2003	N/A	N/A
Capability			
Required Assets Availability (RAA)	OCT 2002	SEP 2005	SEP 2005
Organic Depot Activation	SEP 2003	N/A	N/A

b. Current Change Explanations --

(U)

	<u>FROM</u>	<u>TO</u>
	<u>Dec 01</u>	<u>Dec 02</u>

(Ch-1) DT&E Complete (Current Estimate): Aug 02 Dec 05  
DT&E activities will support EMD through its completion. The DT&E Complete date has been realigned to correspond with EMD completion in Dec 05.

(Ch-2) LRIP First Delivery (Current Estimate): Mar 03 Jun 03  
Current estimate for LRIP first delivery has shifted due to late aircraft deliveries resulting from various factors including the mechanics strike

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Reason for Classification: E. O. 12958, Section 1.5(a)  
 F/A-22 Raptor, December 31, 2002

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

and Lockheed Martin, parts shortages on the line, and foreign object damage issues.

(Ch-3) DIOT&E

Start (Current Estimate): Apr 03 Oct 03  
 Complete (Current Estimate): Dec 03 Jun 04

DIOT&E Start has been moved due to avionics challenges and the availability of modified aircraft. DIOT&E Complete has shifted as a result of the Start change.

(Ch-4) Milestone III (Current Estimate): Mar 04 Sep 04

MS III has been revised as a result of the shift of DIOT&E since the results of DIOT&E contribute to the decision to proceed into full rate production.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Range-Mission Radius Sub & Supersonic**	260+100 (b)(1)	260+100 / 260+100	TBD	327+100# (Ch-1) #
Subsonic Mission Payload, Internal Missile Load**	8cc	N/A / N/A 8cc / 4 AIM-120 + 2 AIM-9	DEL TBD	DEL 6 AIM-120C + 2 AIM-9#
Reduced All-Aspect Radar Cross Section (RCS)				
Front Sector RCS**, +	*	* / *	TBD	***
Maneuverability (max power sustained G) (30000 ft) (mach) @0.9 Mach**	4.0	3.9 / 3.7	TBD	3.7
C-141's/24 PAI Squadron For Deployment (#a/c)**	8	8 / 8	TBD	*** (Ch-1)

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Sortie Generation Rate (Wartime, per day)	(b)(1)				
Days 1 to 6**	(b)(1)				
Mean Time Between Maintenance (MTBM) (hrs)**	3.0	3.0 / 3.0	TBD	3.1	
Supercruise**					
Vmax/Opt Alt/Mil Power (Mn)	1.5	1.5 / 1.5	TBD	1.73	(Ch-1)
Acceleration/.8-1.5/ 30K (sec)**	54	54 / 54	TBD	50.95	(Ch-1)
Radar Detection Range (RDR)**,+ USD(A) Risk	*	* / *	TBD	(b)(1)	(Ch-1)
Assessment Items:					
Mission Effective- ness (Compared to current operational F-15 at time of IOT&E)	2	2 / 2	TBD	2###	
Direct on-and-off Maintenance Personnel (spaces per ac)	8.7	8.7 / 8.7	TBD	###	(Ch-1)
Weight Empty	42500	44065 / 44065	TBD	43019	(Ch-1)
Engine Thrust (.9 Mach @ 30K, Max)	14450	14450 / 14450	TBD	17112	(Ch-1)
(1.5 Mach @ 45K, Mil)	8000	8000 / 8000	TBD	9408	(Ch-1)
Fuel Consumption (specific fuel consumption)					
(.9 Mach @45K @2850 lbs thrust)	1.008	1.008 / 1.008	TBD	.970	(Ch-1)
(1.5 Mach @45K @8390 lbs thrust)	1.202	1.202 / 1.202	TBD	1.136	(Ch-1)
Warning Time *	*	* / *	TBD	###	
Angle of Arrival (AOA) @ X Freq *	*	* / *	TBD	###	

(U) \* Classification/control is beyond the level of this document.

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

- (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.

b. Current Change Explanations --

(Ch-1) (b)(1)

(b)(1)

	FROM	TO
	Dec 01	Dec 02
(U) Combat Radius		
Sub & Supersonic (nm)	322+100	327+100
(U) C-141's/24 PAI Squadron		
For Deployment	6.6	8.8
(U) Supercruise		
(U) Vmax/Opt Alt/Mil	1.75	1.73
(U) Acceleration, 0.8-1.5, 30,000 (sec)	51.6	50.95
(U) Radar Detection	(b)(1)	(b)(1)
(U) Direct on-and-off Maint Personnel	7.8	9.3
(U) Aircraft Weight (lbs) - Empty	42975.5	43019
(U) Engine Thrust		
(U) .9 Mach @30K, Max	17340	17112
(U) 1.5 Mach @ 45K, Mil	9550	9408
(U) Fuel Consumption (specific fuel consumption)		
(U) .9 Mach @45K @2850 lbs thrust	.962	.970
(U) 1.5 Mach @45K @8390 lbs thrust	1.128	1.136

Notes:

- The Dec 02 output of the Logistics Composite Model (LCOM) run indicated an Achieved-to-Date value of 8.8. The program is aggressively working the top drivers to get the value back down below the threshold requirement.
- The Dec 02 output of the LCOM model run indicated an Achieved-to-Date value of 9.3. The program is aggressively working the top drivers to get the value back down below the threshold requirement.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	16560.0	24388.3	24388.3
Procurement	43510.0	31361.4	31361.4
Airframe	(21485.7)		(16079.6)
Engines	(5993.7)		(4088.0)
Avionics	(9250.6)		(4951.7)
Special Projects			(201.9)
Munitions			(73.7)
Total Nonrecurring			(1613.1)
In-line Modernization			(159.9)
Total Flyaway	(36730.0)		(27167.9)
Other Weapon Systems	(1032.1)		(461.2)
Peculiar Support	(1896.1)		(3713.8)
Initial Spares	(3851.8)		(18.5)
Construction (MILCON)	200.0	465.8	465.8
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	60270.0	56215.5	56215.5
Escalation	38839.0	15569.8	15569.8
Development (RDT&E)	(2969.0)	(4261.8)	(4261.8)
Procurement	(35762.0)	(11142.1)	(11142.1)
Construction (MILCON)	(108.0)	(165.9)	(165.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	99109.0	71785.3	71785.3
b. (U) Quantity --			
Development (RDT&E)	0	8	8
Procurement	648	270	270
Total	648	278	278

(U) These figures represent the FY04 PB position, with one exception. The in-line modernization procurement funding above includes estimates for the completion of Spiral 3B efforts through FY11. The current estimate includes the impacts of the December 2002 program restructure which transferred \$113M (FY03) from Modernization and \$763M (FY03 - \$106M, FY04 - \$371M, FY05 - \$210M, FY06 - \$76M) from Production to pay for the \$876M EMD Estimate At Completion (EAC) increase. The 278 total includes 2 PRTV, 6 PRTV II, and 2 fully configured EMD aircraft.

The Air Force intention is to procure an objective of 339 aircraft for \$43B. However, the program office currently forecasts that 276 aircraft can be purchased (both estimates include PRTV/PRTV II aircraft). This decrease is due in part to the recent transfer of funds from Production to EMD and higher than expected recurring costs from the Lot 3 negotiations. The F/A-22 enterprise is working on cost reduction initiatives to allow procurement of additional aircraft above the 276 forecast under the program's buy-to-budget philosophy.

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F/A-22 Raptor, December 31, 2002

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (APR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	56215.5	56215.5	
(2) Quantity	278	278	
(3) Unit Cost	202.214	202.214	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	31361.4	31361.4	
(2) Quantity	270	270	
(3) Unit Cost	116.153	116.153	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
Development Estimate	19529.0	79272.0	308.0	99109.0
Previous Changes:				
Economic	-813.2	-8750.2	-54.4	-9617.8
Quantity	+542.0	-34052.9	-	-33510.9
Schedule	+2427.2	+3798.7	-	+6225.9
Engineering	+1471.2	+88.5	+5.0	+1564.7
Estimating	+2771.2	+7849.0	+230.2	+10850.4
Other	-	-	-	-
Support	+214.4	-5114.3	-	-4899.9
Subtotal	+6612.8	-36181.2	+180.8	-29387.6
Current Changes:				
Economic	-56.3	+425.7	-9.9	+359.5
Quantity	-	-6106.4	-	-6106.4
Schedule	-	+415.5	-	+415.5
Engineering	+1667.3	+177.9	-	+1845.2
Estimating	+897.3	+4919.1	+152.8	+5969.2
Other	-	-	-	-
Support	-	-419.1	-	-419.1
Subtotal	+2508.3	-587.3	+142.9	+2063.9
Total Changes	+9121.1	-36768.5	+323.7	-27323.7
Current Estimate	28650.1	42503.5	631.7	71785.3

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F/A-22 Raptor, December 31, 2002

**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	+429.4	-16093.6	-	-15664.2
Schedule	+1840.1	+13.2	-	+1853.3
Engineering	+1087.3	+130.2	+4.0	+1221.5
Estimating	+2363.2	+6049.8	+152.4	+8565.4
Other	-	-	-	-
Support	+215.1	-2331.9	-	-2116.8
Subtotal	+5935.1	-12232.3	+156.4	-6140.8
Current Changes:				
Quantity	-	-3336.4	-	-3336.4
Schedule	-	-	-	-
Engineering	+1203.9	+123.2	-	+1327.1
Estimating	+689.3	+3551.5	+109.4	+4350.2
Other	-	-	-	-
Support	-	-254.6	-	-254.6
Subtotal	+1893.2	+83.7	+109.4	+2086.3
Total Changes	+7828.3	-12148.6	+265.8	-4054.5
Current Estimate	24388.3	31361.4	465.8	56215.5

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year    Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-56.3
Additional funding for system modernization. (Engineering)	+1292.2	+1780.3
Transfer of funding from Modernization to EMD for Estimate At Completion (EAC) increase. (Engineering)	-88.3	-113.0
Adjustment for Current and Prior Inflation. (Estimating)	+21.8	+27.5
Congressional reduction and miscellaneous adjustments. (Estimating)	-4.9	-6.2
Transfer of funding from Procurement for EAC increase. (Estimating)	+584.3	+763.0
Transfer of funding from Modernization for EMD EAC increase. (Estimating)	+88.1	+113.0
RDT&E Subtotal	+1893.2	+2508.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-959.7

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic adjustment for negative program change. (Economic)	N/A	+1385.4
Total Quantity Variance associated with decrease of 56 aircraft. (Quantity)	-3336.4	-6106.4
Loss of 7 aircraft due to transfer of funding from Procurement for EMD EAC increase. (Quantity) (Estimating)	-578.0	-763.0
Stretchout of annual procurement buy profile. (Schedule)	0.0	+415.5
Additional Funding for System Modernization (Engineering)	+123.2	+177.9
Adjustment for Current and Prior Inflation. (Estimating)	+105.8	+135.6
Congressional reductions and miscellaneous adjustments. (Estimating)	-34.2	-44.4
Updated Estimate		
Reduced estimate for savings resulting from Production Cost Reduction Plans. (Estimating)	+412.6	+572.2
Increase due to updated Risk Assessment. (Estimating)	+896.9	+1263.0
Increased engine recurring costs. (Estimating)	+530.1	+734.3
Increased airframe recurring costs. (Estimating)	+2208.7	+3006.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Quantity profile change. (Estimating)	+9.3	+14.3
Adjustment for Current and Prior Inflation. (Support)	+15.7	+24.5
Change in Initial Spares related to reduction of aircraft. (QR) (Support)	-1.7	-2.6
Change in Peculiar Support related to reduction of aircraft. (QR) (Support)	-265.6	-437.7
Change in Other Weapon Systems related to reduction of aircraft. (QR) (Support)	-3.0	-3.3
Procurement Subtotal	<u>+83.7</u>	<u>-587.3</u>
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-9.9
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+2.0

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~~REASON FOR CLASSIFICATION: E.O. 12958, Section 1.4(a)~~

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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 funding for New Mission MILCON. (Estimating)		+107.9	+150.8
MILCON Subtotal		+109.4	+142.9

QR = Quantity 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		
152.95	-33.30	+61.04	+23.89	+12.27	+60.50	--	-19.13	+105.27	258.22	

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	-30.83	+22.52	+15.61	+0.987	+47.29	--	-20.49	+35.09	157.42	

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

Item/Event	SAR		SAR		Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	Current Estimate	
Milestone I	OCT 1986	OCT 1986	N/A	OCT 1986	
Milestone II	JUN 1991	JUN 1991	N/A	JUN 1991	
Milestone III	DEC 1999	DEC 1999	N/A	SEP 2004	
IOC	SEP 2003	SEP 2003	N/A	DEC 2005	
Total Cost	99109.0	99109.0	N/A	71785.3	
Total Quantity	648	648	N/A	278	
Prog Acq Unit Cost	153.0	153.0	N/A	258.2	

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

a. RDT&E --		Initial Contract Price		
(U) <u>EMD ENGINE (P&amp;W):</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
UNITED TECHNOLOGIES CORP., E. HARTFORD CT				
F33657-91-C-0007, CPFF		\$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>Contractor</u>	<u>Program Manager</u>	
\$2393.7	N/A	\$2448.1	\$2448.1	
Previous Cumulative Variances		<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (11/30/02)		\$-37.1	\$-7.0	
Net Change		\$-31.5	\$-6.1	
		\$5.6	\$0.9	

Explanation of Change:

(U) The Performance Measurement Baseline was updated to reflect the Fil9 EMD Restructure which was placed on contract on August 25, 1997.

Through November 2002, the cumulative unfavorable cost variance was -\$31.5M (-1.4%). This is an improvement of \$5.6M from the December 2001 SAR. The cumulative variance drivers include the Nozzle, Engine Development Test, Controls, Compressor, and Augmentor WBS elements.

Through November 2002, the cumulative unfavorable schedule variance was -\$6.1M (-0.28%). This variance is an improvement of \$.9M from the December 2001 SAR. The cumulative variance drivers include Test Facilities, Controls, Support System Data, Engine Development Test, and Externals WBS elements.

In February 2001, Pratt & Whitney established an Over Target Baseline of \$17.6M.

(U) <u>F/A-22 LOT 1 (LMA):</u>		Initial Contract Price		
LOCKHEED MARTIN AERO CORP, MARIETTA GA		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-99-C-0036, FFP				
Award: December 31, 1999		\$1918.6	N/A	10
Definitized: December 31, 1999				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1918.6	N/A	\$1918.6	\$1918.6	

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F/A-22 Raptor, December 31, 2002

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

Explanation of Change:

None.

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

b. Procurement --		Initial Contract Price		
(U) F/A-22 EMD (LMAC):		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN AERO CORP, Marietta GA		\$9550.1	N/A	11
F33657-91-C-0006, CPAF				
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>
\$14692.9	N/A	9	\$15042.9	\$15042.9
Previous Cumulative Variances		<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (11/30/02)		\$-465.0	\$-22.0	
Net Change		\$-488.9	\$-13.2	
		\$-23.9	\$8.8	

Explanation of Change:

(U) There was an overall unfavorable change of \$23.9M in the cost variance (CV) for this period (November 30, 2002 CPR data) since the December 2001 SAR (November 30, 2001 CPR data). In addition, the May 31, 2002 CPR included an Over-Target-Baseline (OTB) that added a budget of \$254M. During this current period, Forward Fuselage, Airframe Analysis & Integration (A&I), Final Assembly & Checkout, Navigation & Identification (CNI) Environmental Control Systems (ECS) and EAFB Aircraft Test & Evaluation, experienced the most significant variances. The primary contributor to the Forward Fuselage cumulative cost variance is associated with Fabrication Material. This has been addressed in previous reports and results from increased material support for the fab of the Fatigue & Static Test Article and EMD Lots 2-4 vehicles due to design changes and elevated scrap and rework rates.

Almost half of the Aft Fuselage cumulative cost variance is due to producibility problems at Aerojet and the added manpower to meet schedule. The Airframe Analysis A&I variance is mainly due to fabrication and assembly overruns and additional manpower required over the course of EMD for developmental/change activities. The Final Assembly and Checkout variance is primarily due to higher than planned costs in the development of the special technology coatings application techniques by robotics and developmental changes with the tooling fixtures in Coating Operations. The

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

ECS variance is due chiefly to subcontractor Honeywell VCS effort which caused increased costs due to improvements with compressor aero performance and stator insulation durability (Quantum Shield). EAFB Mission Avionics has a positive cost variance due to lower than planned staffing levels caused by anticipated manpower buildup in the SIL due to aircraft/hardware/personnel availability. The EAFB Aircraft Test & Evaluation variance is due primarily from LMAC actual rates exceeding budgeted rates, use of support personnel for which there was no budget allocated and unexpected overtime required to meet flight schedules affected by A/C maintenance downtime at EAFB. The key factors for the CNI cost variance are software development slips to support integration and testing and late hardware deliveries.

As of November 30, 2002, the LMA cumulative cost variance is -\$488.9M, (-3.80%). (At the time of the establishment of the first Over-Target Baseline (OTB), October 2001, for \$230.0M, LMA's cumulative cost variance was -\$472.2M and this will continue to be the "baseline" cost variance. The second of three OTBs for \$254.1M was incorporated in the May 2002 CPR. The third OTB, which will include the results of the Joint Targeted Baseline review and EAC update, will be reported in the December 02 Final CPR.) During this reporting period, the incorporation of year-to-date (YTD) Overhead rates, G&A, Final Assembly & Checkout and Avionics A&I contributed significantly to the decline of the cumulative CV. Besides the incorporation of YTD Overhead rates, the negative and positive variances in G&A and Overhead/Other Burdens are caused by unfavorable cost variances and direct costs in several lower level labor accounts, that when rolled up to Tier II/Tier III levels, broke one of the established reporting thresholds (+/- 10% and \$2.0M). The Final Assembly & Checkout negative variance was due to late parts and the subsequent late posting of their costs for subsystems related to 4009. The Avionics A&I negative variance was mainly caused by the purchase of equipment for the IHAT relocation to the RAIL lab.

(U) F/A-22 Lot 2 (LMA):	Initial Contract Price		
LOCKHEED MARTIN AERO CORP, MARIETTA GA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-00-C-0020, FFP	\$2520.3	N/A	13
Award: December 30, 1999			
Definitized: December 30, 1999			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2520.3	N/A	\$2520.3	\$2520.3

Explanation of Change:

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

(U) This is the current contract value (price and cumulative obligation).

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

(U) <u>F/A-22 Lot 3 AB:</u>	Initial Contract Price		
LOCKHEED MARTIN AERO CORP, MARIETTA GA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-01-C-2095, FFP	\$3302.2	N/A	23
Award: December 4, 2001			
Definitized: December 4, 2001			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$3302.2	N/A	23	\$3302.2	\$3302.2

Explanation of Change:

(U) This is the current contract value (price and cumulative obligation).

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

(U) <u>F/A-22 PRTV/PRTV II:</u>	Initial Contract Price		
LOCKHEED MARTIN AERO CORP, MARIETTA GA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-97-C-0030, FFP	\$2018.2	N/A	8
Award: November 20, 1998			
Definitized: November 20, 1998			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2018.2	N/A	8	\$2018.2	\$2018.2

Explanation of Change:

None.

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</u> (FY83-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-12)	<u>Total</u>
RDT&E	24825.8	936.5	585.4	2302.4	28650.1
Procurement	11198.4	4263.0	4494.7	22547.4	42503.5
MILCON	161.0	31.2	41.6	397.9	631.7
O&M	-	-	-	-	-
Total	36185.2	5230.7	5121.7	25247.7	71785.3

(U) RDT&E Balance To Complete is composed of EMD (\$76M) and Modernization (\$2226.4M). Funding for EMD ends in FY06. Modernization reflects only funding within the FYDP (FY06-09) and will continue to fund spiral development activities indefinitely.

Procurement Balance To Complete includes funding in FY10-11 (\$81.9M) to complete in-line Spiral 3B efforts.

b. Annual Summary -- Advanced Tactical Fighter

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1990 Dollars Nonrec</u>	<u>Flyaway FY 1990 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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	1606.8
1993				1717.4	1925.2
1994				1806.0	2058.8
1995				1962.7	2280.6
1996				1820.3	2153.4
1997				1513.3	1814.5
1998				1666.8	2010.2
1999				1284.7	1566.1

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

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				1810.1	2239.1
2001				1125.7	1411.6
2002				693.0	877.3
2003				707.8	906.0
2004				720.9	936.5
2005				443.8	585.4
2006				363.7	487.7
2007				469.7	640.7
2008				441.1	612.7
2009				397.0	561.3
Subtotal	8			24388.3	28650.1

(U) The EMD cost increase is made up of \$876M. In November 2002, SAF/AQ commissioned a Red Team to complete an EMD sufficiency review and an assessment of program risk. In December 2002, the Air Force transferred \$113M from the FY03 Modernization account and \$763M from Production (FY03-\$106M, FY04-\$371M, FY05 - \$210M, FY06 - \$76M) into EMD to pay for Estimate At Completion (EAC) cost increase. The production transfer into EMD reduced the planned aircraft buy by seven.

Additional funds were added to modernization (PE 0207138F) for new spiral development capabilities, including key initiatives to meet Air Force Global Strike CONOPS requirements.

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997			6.2	6.2	7.5
1998			59.2	59.2	72.4
1999	2	57.1	559.2	643.4	795.2
2000			225.7	225.8	283.1
2001	10	172.2	1585.1	2006.7	2536.5
2002	13	441.0	1634.7	2368.9	3022.7
2003	20	406.4	2577.4	3456.0	4468.6
2004	22	191.1	2545.5	3239.5	4253.5

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

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005	24	117.1	2712.4	3362.3	4485.3
2006	26	85.1	2532.8	3050.0	4138.9
2007	32	80.0	2585.2	3086.2	4262.0
2008	32	24.6	2466.2	2934.5	4125.9
2009	32	21.7	2325.7	2773.3	3968.6
2010	32	15.6	2180.9	2435.2	3548.1
2011	25	1.2	1484.9	1633.6	2422.7
2012				6.9	10.4
2013					
2014					
2015					
Subtotal	270	1613.1	25481.1	31287.7	42401.4

(U) As a result of transferring \$763M from Production to EMD as well as higher than expected recurring costs from recent Lot 3 negotiations, the program office forecasts that 276 aircraft can be purchased (includes 6 PRTV II aircraft).

BP10 funds in PE 0207138F are reflected in this summary, including \$81.9M (TYS) of funding in FY10-11 to complete in-line Spiral 3B efforts.

Appropriation: 3011 - Procurement of Ammunition, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999			0.3	0.3	0.4
2000			1.1	1.1	1.4
2001					
2002			3.4	3.4	4.3
2003			4.9	4.9	6.3
2004			7.2	7.2	9.5
2005			7.0	7.0	9.4
2006			8.0	8.0	10.9

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

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

Appropriation: 3011 - Procurement of Ammunition, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007			7.8	7.8	10.8
2008			8.5	8.5	12.0
2009			8.6	8.6	12.3
2010			8.5	8.5	12.4
2011			8.4	8.4	12.4
Subtotal			73.7	73.7	102.1

(U) Per Air Force guidance, funding for chaff and flares must be in the munitions appropriations. Funds were reprogrammed from 3010 to munitions in Sep 98.

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				3.9	4.6
1996				10.1	12.1
1997				3.6	4.4
1998					
1999					
2000				14.9	18.6
2001				20.0	25.3
2002				41.8	53.4
2003				32.9	42.6
2004				23.7	31.2
2005				31.1	41.6
2006				44.2	60.1
2007				69.3	96.0
2008				105.5	148.7
2009				64.8	93.1
2010					
Subtotal				465.8	631.7

(U) The MILCON increase resulted from the lessons learned from current beddowns and site surveys, maturing knowledge of facility requirements and project site specific conditions, and overseas cost factors. In addition, the Annual Planning and Program Guidance was changed to require the new mission MILCON modernization/investment Total Obligation Authority (TOA) be allocated to each weapons system to fund Planning and Design (P&D) of

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

~~Reason for Classification: E.O. 12958, Section 1.4(b)~~  
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F/A-22 Raptor, December 31, 2002

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

MILCON requirements within that program.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	278	1613.1	25554.8	56215.5	71785.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	8	3
Procurement	270	2

(U) Percent Total Program Quantities Delivered: 1.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 24051

(U) Percent Total Program Expended: 33.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

In December 2000, the Air Force Cost Analysis Improvement Group (AFCAIG) worked with the F/A-22 System Program Office and the F-15 System Program Office to develop updated estimates of both the F/A-22 and F-15C to provide an equitable comparison of ownership costs. In addition, the Air Force Studies and Analysis Agency (AFSAA) completed a Campaign Analysis that compared the combat effectiveness of the F/A-22 vs. the F-15.

The F-15C is antecedent to the F/A-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 the Visibility and Management of Operating and Support Costs (VAMOSOC) database. 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.

For purposes of this cost comparison, the F/A-22 concept of operations was 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. 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

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~~Reason for Classification: E.O. 12958, Section 1.4(b)~~

Reason for Classification: E.O. 12958, Section 1.5(a)

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F/A-22 Raptor, December 31, 2002

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

F/A-22 was 339. Total aircraft included in the F/A-22 O&S estimate in this study is 283, the number of Primary Aircraft Inventory (PAI) aircraft.

The F/A-22 estimate was based on a combination of AFI 65-503 Cost and Planning Factors and information provided in the contractor's Affordability Analysis.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Advanced Tactical Fighter F-22 Squadron/Year During Steady State	Avg Annual Cost Per F-15C Squadron
Mission Pay & Allowances	14.7	24.8
Unit Level Consumption	30.1	37.4
Intermediate Maintenance	0.0	0.0
Depot Maintenance	3.5	5.6
Contractor Support	2.1	0.0
Sustaining Support	12.0	15.1
Indirect Costs	9.0	15.5
Total	71.4	98.4

Total O&S Cost	Advanced Tactical Fighter	Avg Annual Cost Per
BY\$ (In Millions)	19254.1	N/A
TY\$ (In Millions)	37036.9	N/A

Report Creation Date: 04/03/2003 9:37:06 AM

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Reason for Classification: E.O. 12958, Section 1.5(a)

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

CONGRESSIONAL

AS OF DATE: December 31, 2002

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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	GS-15 Richard O. Bleau
Electronic Systems Center	Assigned: April 15, 2002
75 Vandenberg Drive	DSN 478-5725; COMM (781)377-5725
Hanscom AFB, MA 01731-2119	richard.bleau@hanscom.af.mil

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

RDT&E:

- (U) PE 0207581F
- (U) PE 0603770F
- (U) PE 0604270F (Shared) Project 3894 Project 3894 (Shared)
- (U) PE 0604616F
- (U) PE 0604770D
- (U) PE 0604770F

PROCUREMENT:

- (U) APPN 3010 ICN 0207581F (Air Force)

MILCON:

- (U) PE 0604770F

**CLEARED**  
FOR OPEN PUBLICATION

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by Joint STARS Classification Guide dated 10 Jun 98  
Downgrade instructions not subject to automatic Downgrade  
Declassify on: Originating Agency Determination Required (OADR)~~

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Joint STARS, December 31, 2002

**5. (U) References:**

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated October 24, 1996.

Approved Program:

(U) CAE Approved Acquisition Program Baseline (APB) dated October 15, 2001.

**6. (U) Mission and Description:**

(U) The Joint Surveillance Target Attack Radar System (JSTARS) 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. JSTARS 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. JSTARS also plays a critical C2 battle management role providing precise real-time targeting information to direct attack aircraft, friendly artillery, and standoff missile batteries. JSTARS 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 Corps Commander's own choosing. JSTARS is also identified as one of the core assets that provides rapidly employable, information superiority. JSTARS 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 situation awareness, battle management, and precision engagement capability for the Joint Force Commander. There is no antecedent system.

**7. (U) Executive Summary:**

(U) JSTARS has reorganized into a Single Integrated Operating Environment with several related programs, all of which share a capabilities focus for Ground Moving Target Indication (GMTI)--JSTARS, Multi-Sensor Command and Control Aircraft (MC2A) and Multi-Platform Radar Technology Insertion Program (MP-RTIP). Our product areas include: Platforms, Sustainment, Support and Training Systems, Battle-Management Command & Control (BMC2), and Analysis & Integration.

In October 2002, our Warfighting customer, the Active Duty 93d Air Control Wing (ACW) and the Air National Guard 116 Bomber Wing were combined into an Active Duty/Air National Guard Future Total Force Wing at Robins AFB, redesignated as the 116 ACW. In addition to meeting contingency and deployment requirements as they develop, the Wing is also focused on issues associated with this first-ever blended Wing concept such as manning and process adjustments associated with funding and requirements.

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

**Platforms:** Since our last SAR we delivered two JSTARS E-8Cs to the Warfighter, both of which were over a month ahead of schedule. P-13 was delivered on April 25, 2002 and P-14 on August 19, 2002 [P-14 marked our tenth consecutive early delivery].

Northrop Grumman Corporation (NGC) remains ahead of schedule on the production aircraft being refurbished at their Lake Charles, LA facility. Our next aircraft (P-15) is on track to deliver ahead of its contract schedule date of March 31, 2003. P-16 is scheduled to deliver to the Warfighter in March 2004 and P-17 (inducted to the NGC production line on April 1, 2002) is scheduled to deliver in March 2005.

Our platforms team is leading an effort to re-engine the E-8C. As reported in the last SAR, Congress designated JSTARS as a "re-engine lease" pilot program, and SAF/AQ approved our strategy to have NGC conduct a competitive source selection, which resulted in Pratt & Whitney's JT8D-219 engine being selected. The Air National Guard (ANG) has submitted our re-engine requirement into the ANG FY04 Aircraft Modernization Requirements process. In addition, we are working on a lease vs. buy analysis study to report back to OSD by April 2003. SAF/AQI is coordinating draft Congressional language required for program execution, if directed.

**Sustainment:** The NGC Total System Support Responsibility (TSSR) team continues to excel in support of the Warfighter. JSTARS average Mission Capability (MC) Rate for fiscal year 2002 was 79.5%, exceeding the Air Combat Command (ACC) standard of 75%. In support of Operation Enduring Freedom (OEF), 100% of JSTARS scheduled missions were flown, 247 sorties. In addition, the fleet achieved a 98.4% Mission Effectiveness Rate.

**Support and Training Systems:** We delivered an initial Distributed Mission Training (DMT) capability with a Support and Training System Mission and Maintenance Trainer in November 2002. Our first full motion Weapon System Trainer (WST) will be Ready-for-Training in March 2003 and we plan to deliver a second in November 2003.

We also continue to work with the AWACS Global Air Traffic Management (GATM) team to identify common issues and refine a common approach for our programs. A top effort is our pursuit of fleet certification for Reduced Vertical Separation Minimum (RVSM) operations that enables us to fly at optimal altitudes around the world.

**Battle Management Command and Control (BMC2):** We are in the retrofit/delivery phase of our Computer Replacement Program (CRP) Commercial Off The Shelf (COTS) open computing architecture and the Improved Data Modem (IDM) Time Critical Targeting (TCT) link to the Apache Longbow. We also awarded an EMD contract for another TCT capability, Link 16 Attack Support Upgrade (ASU) in response to an Air Force request to accelerate JSTARS Link 16 to maintain pace with that of F-15Es, enabling greater TCT capability.

Our Satellite Communications (SATCOM) focus is now on fleet installation of the

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

ARC-231 radio, which will be completed in conjunction with the migration of Airborne Command and Control Center (ABCCC) functionality to the E-8C platform. We plan to deliver three fully capable Demand Assigned Multiple Access (DAMA) SATCOM/ABCCC jets to the 116 ACW by the end of FY04. Ten of fourteen ABCCC roles migrated to the JSTARS platform with delivery of an Advanced Analysis Toolset as a spiral capability on January 22, 2003.

Since a need for Joint Services Work Stations (JSWS) was identified as an Operation Allied Force "Lesson Learned," the Air Force has procured twenty-one of these portable versions of the Army Common Ground Station.

**Analysis and Integration:** We continue to support our role as informal Air Force and cross-service lead for integrating Ground Moving Target Indicator (GMTI).

The Air Force is the lead Service for US participation in establishing an option for a NATO-owned and operated Alliance Ground Surveillance (AGS) core-capability. The US contribution to the sensor technology will be from the Air Force MP-RTIP program, therefore status updates will be provided by the MP-RTIP program in their acquisition reports.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- 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:

Note 1: Procurement funding (BY \$5555.5M) exceeds the Acquisition Program Baseline (APB) threshold (BY \$5418.2M) approved by SAF/AQ on October 15, 2001 due to the addition of an aircraft (P-17) in the FY03 budget. A proposed APB revision is in coordination at this time.

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9. (U) Schedule:  
a. Milestones --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
Milestone IIA	SEP 1985	SEP 1985	SEP 1985
FSD Contract Award	SEP 1985	SEP 1985	SEP 1985
First Test Flight	APR 1988	APR 1988	APR 1988
Milestone IIB	APR 1988	APR 1988	APR 1988
System CDR	NOV 1988	NOV 1988	NOV 1988
Contractor Flight Test Start	APR 1989	APR 1989	APR 1989
Operational Field Demo I	JUL 1990	JUL 1990	SEP 1990
System-level Perf. Verf.-start	SEP 1991	SEP 1991	OCT 1991
DT&E Start	JUN 1991	JUN 1991	OCT 1991
DAB Program Review, LRIP	MAR 1993	MAR 1993	MAY 1993
Software Support Facility Delivery (MSSF Phase I)	MAY 1996	MAY 1996	AUG 1996
DT&E Complete (FOFSD)	JUN 1995	JUN 1995	SEP 1995
MOT&E			
Start	JUN 1995	JUN 1995	NOV 1995
Complete	FEB 1996	FEB 1996	JUL 1996
Milestone III	JUN 1996	JUN 1996	SEP 1996
Full Rate Production Contract Award	JUN 1997	JUN 1997	JUN 1997
First Aircraft Delivery to ACC	FEB 1996	FEB 1996	JUN 1996
First Training Squad Ready for Trng	SEP 1996	SEP 1996	SEP 1996
Depot Support Date	JAN 1996	JAN 1996	MAY 1996
First SDS Installation (Group A)	FEB 1996	FEB 1996	FEB 1996
Required Assets Availability (RAA)	SEP 1996	SEP 1996	FEB 1997
Organic Support Capability	SEP 1997	SEP 1997	NOV 1997
IOC	SEP 1997	SEP 1997	DEC 1997
Mature Reliability	SEP 1998	N/A	N/A
Follow-On OT&E Start	FEB 1998	FEB 1998	AUG 1997

(U) Acronym List:

ACC: Air Combat Command  
CDR: Critical Design Review  
DAB: Defense Acquisition Board  
DT&E: Developmental Test and Evaluation  
FSD: Full Scale Development  
FOFSD: Follow-on Full Scale Development  
IOC: Initial Operational Capability  
LRIP: Low Rate Initial Production  
MOT&E: Multi-Operational Test and Evaluation  
MSSF: Mission Software Support Facility  
OT&E: Operational Test and Evaluation  
SDS: Self Defense Suite

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

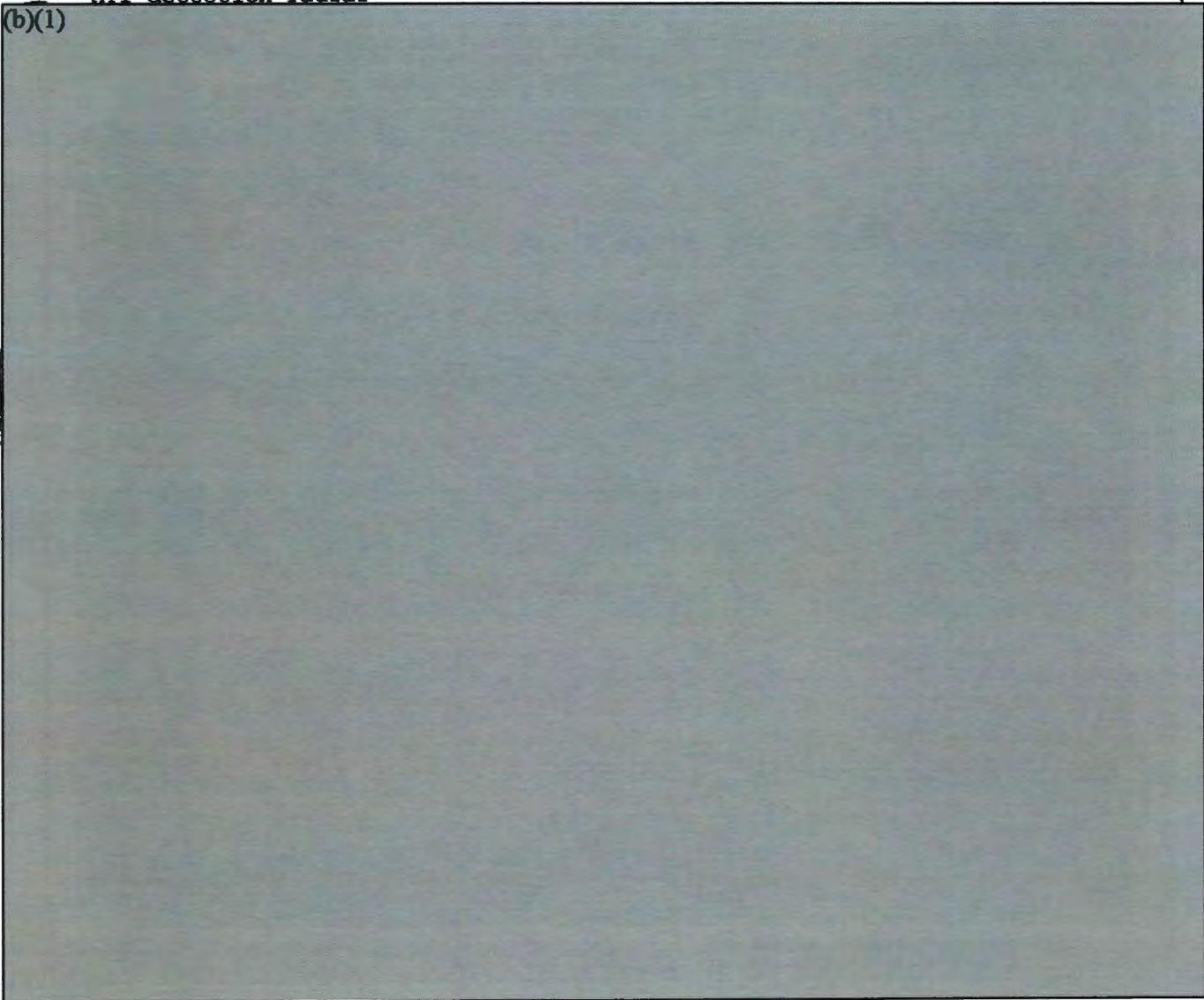
b. Current Change Explanations -- None

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>
MTI detection radial				

(b)(1)



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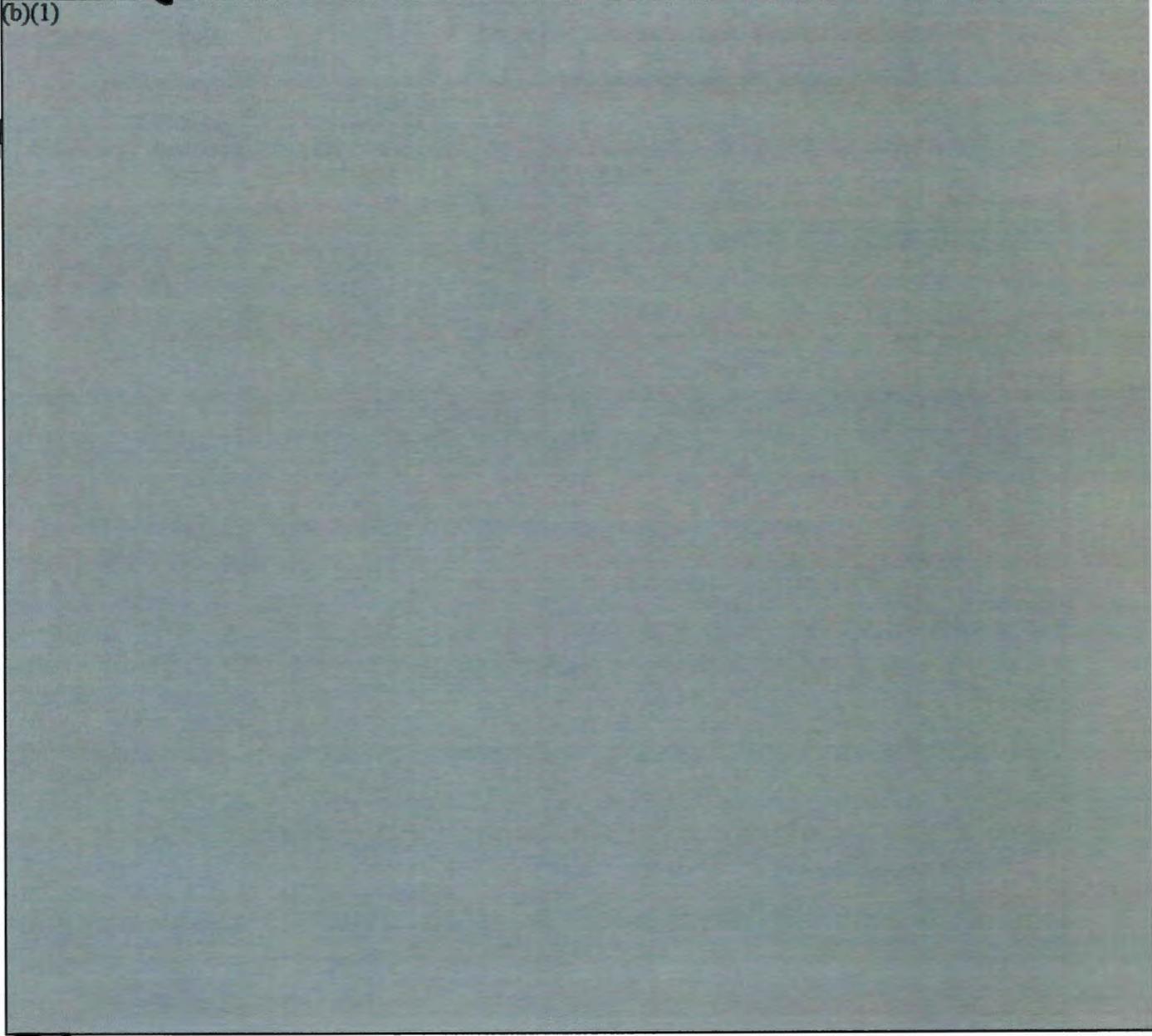
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10a. ~~(b)(1)~~ Performance Characteristics (Cont'd):

(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 --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	3820.4	4051.0	4316.5
Procurement	5982.4	4925.6	5543.1
Recurring	(4570.5)		(3967.7)
Non-Recurring	(196.5)		(102.3)
Total Flyaway	(4767.0)		(4070.0)
Other Wpn Sys	(585.6)		(946.6)
Other			(0.0)
Total Other Wpn Sys	(585.6)		(946.6)
Peculiar Support	(58.8)		(84.1)
Initial Spares	(571.0)		(442.4)
Construction (MILCON)	129.5	113.4	113.4
Acquisition O&M	0.0	0.0	0.0
Total FY 1998 Base-Year \$	<u>9932.3</u>	<u>9090.0</u>	<u>9973.0</u>
Escalation	-170.2	-429.8	-320.8
Development (RDT&E)	(-465.8)	(-431.8)	(-398.1)
Procurement	(296.5)	(4.7)	(80.0)
Construction (MILCON)	(-0.9)	(-2.7)	(-2.7)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>9762.1</u>	<u>8660.2</u>	<u>9652.2</u>
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	<u>19</u>	<u>16</u>	<u>17</u>
Total	20	17	18

(U) The Low Rate Initial Production (LRIP) quantity approved at the Joint STARS Milestone III Decision was 19 aircraft. The Quadrennial Defense Review (QDR) recommendation to reduce the Joint STARS fleet from 19 to 13 took effect with the FY99 budget.

Since then, a 14th procurement aircraft was approved in the FY00 budget, a 15th in the FY01 budget, a 16th in the FY02 budget (reflected in our October 15, 2001 APB above), and a 17th in the FY03 budget (a proposed JSTARS APB revision reflecting the additional aircraft is in coordination at this time). The annual buy quantity is limited by available funding.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (OCT 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1998 BY\$)	9090.0	9973.0	
(2) Quantity	17	18	
(3) Unit Cost	534.706	554.056	+3.62
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	4925.6	5543.1	
(2) Quantity	16	17	
(3) Unit Cost	307.850	326.065	+5.92

(U) The latest approved Acquisition Program Baseline (APB) (15 Oct 01) reflects 16 procurement aircraft. A proposed APB revision reflecting our additional aircraft (P-17) and associated costs is in coordination at this time.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	3354.6	6278.9	128.6	9762.1
Previous Changes:				
Economic	-2.9	+0.6	-0.7	-3.0
Quantity	-	-606.7	-	-606.7
Schedule	-10.7	-	-	-10.7
Engineering	+348.6	+146.5	-8.2	+486.9
Estimating	+148.4	-383.9	-9.0	-244.5
Other	-	-	-	-
Support	+24.8	+219.1	-	+243.9
Subtotal	+508.2	-624.4	-17.9	-134.1
Current Changes:				
Economic	-15.6	-22.3	-	-37.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+83.1	+75.9	-	+159.0
Estimating	-17.9	-76.0	-	-93.9
Other	-	-	-	-
Support	+6.0	-9.0	-	-3.0
Subtotal	+55.6	-31.4	-	+24.2
Total Changes	+563.8	-655.8	-17.9	-109.9
Current Estimate	3918.4	5623.1	110.7	9652.2

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Joint STARS, December 31, 2002

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	-	-463.6	-	-463.6
Schedule	-7.9	-	-	-7.9
Engineering	+309.0	+130.1	-7.7	+431.4
Estimating	+119.4	-313.9	-8.4	-202.9
Other	-	-	-	-
Support	+23.8	+220.5	-	+244.3
Subtotal	+444.3	-426.9	-16.1	+1.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+67.2	+64.2	-	+131.4
Estimating	-20.8	-70.3	-	-91.1
Other	-	-	-	-
Support	+5.4	-6.3	-	-0.9
Subtotal	+51.8	-12.4	-	+39.4
Total Changes	+496.1	-439.3	-16.1	+40.7
Current Estimate	4316.5	5543.1	113.4	9973.0

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-15.6
Congressional reductions, reprogramming, and misc cuts. (Estimating)	-20.8	-17.9
Additional funding in FY08 & FY09 to include Spiral Development, Automatic Target Recognition, Reliability and Maintainability efforts and Communications. (Engineering)	+112.5	+132.0
Funding received for Airborne Battlefield Command & Control Center (ABCCC). (Engineering)	+7.1	+8.1
Congressional plus-ups for Global Air Traffic Management (GATM) and Joint Services Work Stations (JSWS). (Support)	+5.4	+6.0
Funding moved to Command & Control Intelligence Surveillance & Reconnaissance/Tactical Data Link (C2ISR/TDL), PE: 0207448F. (Engineering)	-52.4	-57.0
RDT&E Subtotal	+51.8	+55.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-23.4

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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>
Economic adjustment for negative program change. (Economic)	N/A	+1.1
Congressional reductions, reprogramming. (Estimating)	-70.3	-76.0
Additional funding in FY08 & FY09 for Reliability and Maintainability, Kill Chain Minor Mods, Global Air Traffic Management, and Automatic Target Recognition. (Engineering)	+64.2	+75.9
Reduction in initial spares as a result of Air Force offsets. (Support)	-6.3	-9.0
Procurement Subtotal	<u>-12.4</u>	<u>-31.4</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	
488.10	-2.27	+20.53	-0.594	+35.88	-18.80	--	+13.38	+48.13	536.23

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	-1.28	+3.19	--	+13.08	-27.05	--	+12.36	+0.302	330.77

(U) NOTE: The SAR Planning Estimate (PE) Total Cost of 1388.2 was based on the RDT&E program only.

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 1985	SEP 1985	SEP 1985	SEP 1985
Milestone III	N/A	SEP 1996	SEP 1996	SEP 1996
IOC	TBD	SEP 1997	DEC 1997	DEC 1997
Total Cost	1388.2	6741.9	9762.1	9652.2
Total Quantity	0	21	20	18
Prog Acq Unit Cost	0.0	321.0	488.1	536.2

(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. Procurement --		Initial Contract Price		
(U) Prod Lot VIII (P-14):		Target	Ceiling	Qty
Northrop Grumman Corp, Melbourne FL		\$72.1	N/A	1
F19628-98-C-0003, FPIF				
Award: July 16, 1999				
Definitized: May 12, 2000				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Contractor	Program Manager	
\$224.8	\$241.7	\$200.8	\$199.7	
	Qty		Cost Variance	Schedule Variance
	1		\$18.8	\$-0.3
Previous Cumulative Variances			\$30.9	\$-0.7
Cumulative Variances To Date			\$12.1	\$-0.4
Net Change				

Explanation of Change:

(U) The decrease in current contract price and estimated price at completion respectively are attributable to price adjustments as a result of changes in the Aircraft Quantity Baseline, incorporation of the 02-3 Rate Notice and a number of Grass Roots EAC reductions over the past 12-month reporting period.

The Cumulative Cost Variance on Lot VIII (P-14) (Cost Performance Report date: 20 Feb 03) is attributable to the following actions: adjustment to correct materials accounts for sub-contractor billings, and Lake Charles workforce efficiencies (specifically labor, other direct costs and pooling allocations running significantly less than planned).

(U) Contract Comments:

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

This production contract is a hybrid: over 90% of the contract is Fixed Price Incentive Firm, the remaining portion may be Firm Fixed Price and/or Cost Plus Fixed Fee as necessary.

**Please note:** As of this reporting period this contract is 100% complete, aircraft P-14 was delivered to the Warfighter on August 19, 2002. This contract will not be reported in future SARs.

(U) Prod Lot IX (P-15):			Initial Contract Price		
Northrop Grumman Corp, Melbourne FL			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F19628-99-C-0023, FPIF			\$35.7	N/A	1
Award: February 28, 2000					
Definitized: March 20, 2000					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$238.8	\$242.4	1	\$214.0	\$209.3	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date			\$10.9	\$1.7	
Net Change			\$28.3	\$0.2	
			\$17.4	\$-1.5	

Explanation of Change:

(U) Favorable cost variance (Cost Performance Report date: 20 Feb 03) in aircraft acquisition due to labor efficiencies and pooling allocations on the production line, coinciding program management efficiencies have also taken place in addition to some refurbishment activities not occurring as projected. Also in Group "A" fabrication, savings was realized due to a Rolling Meadows rate recalculation and a resulting underun, reflected in the current variance at completion.

(U) Contract Comments:

This production contract is a hybrid: over 90% of the contract is Fixed Price Incentive Firm, the remaining portion may be Firm Fixed Price and/or Cost Plus Fixed Fee as necessary.

**Please note:** As of this reporting period this contract is 90% complete, with aircraft P-15 scheduled to deliver to the Warfighter by March 31, 2003. This contract will not be reported in future SARs.

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

(U) Prod Lot X (P-16):  
 Northrop Grumman Corp, Melbourne FL  
 F19628-01-C-0015, FPIF  
 Award: March 17, 2001  
 Definitized: June 17, 2002

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$38.4	N/A	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$226.6	\$234.5	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$225.5	\$224.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$5.1	\$2.2
Net Change	\$5.1	\$2.2

Explanation of Change:

(U) The Lot X (P-16) contract was defnized since the last SAR for \$221.8M on June 17, 2002. The current favorable cost/schedule variance (Cost Performance Report date: 20 Feb 03) is due to refurbishment activities being worked ahead of plan with associated costs running behind plan. Aircraft sub-system favorable cost variance attributable to Offload material and aircraft Mod material costs running behind level of effort plan.

(U) Contract Comments:

This production contract is a hybrid: over 90% of the contract is Fixed Price Incentive Firm, the remaining portion may be Firm Fixed Price and/or Cost Plus Fixed Fee as necessary.

(U) Prod Lot XI (P-17):  
 Northrop Grumman, Melbourne, FL  
 F19628-02-C-0022, FPIF  
 Award: March 30, 2002  
 Definitized: March 28, 2003

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$46.3	N/A	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$101.0	\$0.0	1

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

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

(U) Currently \$46.3M of long lead and \$54.7M of termination liability funding is on an Undefined Contract Action with a projected definitization date of 28 March 03. First Cost reporting expected 75 days after contract definitization.

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

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

<u>Appropriation</u>	Prior Years (FY82-03)	Budget Year (FY04)	Budget Year (FY05)	Balance To Complete (FY06-09)	<u>Total</u>
RDT&E	3431.1	58.4	89.5	339.4	3918.4
Procurement	5397.8	44.7	48.4	132.2	5623.1
MILCON	110.7	-	-	-	110.7
O&M	-	-	-	-	-
Total	8939.6	103.1	137.9	471.6	9652.2

b. Annual Summary -- JSTARS

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				50.8	32.6
1983				46.6	31.3
1984				58.7	41.0
1985				67.4	48.6
1986				211.2	156.1
1987				388.9	300.2
1988				417.0	330.7
1989				276.3	229.6
1990				115.6	99.1
1991				261.6	232.6
1992				368.5	337.2
1993				335.3	313.2
1994				292.6	278.0
1995				161.7	156.5
1996				158.9	156.5

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

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				204.9	204.7
1998				106.7	107.2
1999				73.0	74.2
2000				69.5	71.7
2001				91.2	95.3
2002				70.6	74.5
2003				56.6	60.3
2004				54.0	58.4
2005				81.4	89.5
2006				115.2	128.7
2007				69.9	79.5
2008				62.1	71.9
2009				50.3	59.3
Subtotal	1			4316.5	3918.4

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				145.0	137.2
1993	2	14.5	511.0	658.7	631.7
1994	2	6.0	528.0	551.5	537.7
1995	2	32.0	561.5	682.8	675.3
1996	2	15.3	404.7	503.1	504.1
1997	2	17.3	472.1	535.3	541.7
1998	1	17.2	230.7	345.7	352.3
1999	2		361.9	613.3	631.1
2000	1		200.5	339.1	354.0
2001	1		220.8	335.1	352.9
2002	1		227.7	367.6	390.8
2003	1		248.8	268.3	289.0
2004				40.9	44.7
2005				43.5	48.4
2006				14.9	16.9
2007				21.4	24.6
2008				48.4	56.7
2009				28.5	34.0
Subtotal	17	102.3	3967.7	5543.1	5623.1

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Joint STARS, December 31, 2002

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

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				0.6	0.5
1990				0.4	0.4
1991				2.0	1.8
1992				20.1	18.8
1993				11.3	10.8
1994				25.1	24.4
1995				14.5	14.3
1996				6.9	6.9
1997				18.5	18.6
1998				14.0	14.2
Subtotal				113.4	110.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	18	102.3	3967.7	9973.0	9652.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	14	14

(U) Percent Total Program Quantities Delivered: 83.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7772

(U) Percent Total Program Expended: 80.5%

(U) Since the last SAR we delivered two JSTARS aircraft to the Warfighter, P-13 and P-14 (each of which were delivered ahead of contract schedule). Our next aircraft is scheduled to deliver by March 31, 2003, which will bring our Total Program Quantities Delivered up to 88.9%. Therefore at this time next year the JSTARS program will be over 90% delivered.

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

O&S costs were based on refurbished Boeing 707 aircraft operating at 63 hours per aircraft per month powered by the TF-33B engine. The support concept priced assumes two-levels (organizational/depot) of support on the Prime Mission Equipment (PME). The airframe support will be Government organizational level support. The remaining support will be accomplished via a Total System Support Responsibility (TSSR) contract with Northrop Grumman (NG). The TSSR contract provides for sustainment of the air vehicle, ground support system, operational and maintenance trainers, integrating supply chain and spares management, system engineering, and technical data. NG fully integrates TSSR activities with the USAF blue suit operational-level maintenance personnel to provide seamless weapon system sustainment from flight line to depot. Under the TSSR concept, industry and government partnering exists between NG and the Warner Robins Air Logistic Center (WR-ALC). The Depot Maintenance Activity Group (DMAG) structure within the ALC is an essential requirement for execution of the approved Joint STARS TSSR Acquisition Strategy. This partnering provides for government furnished supplies and services to be performed by the depot as an integral part of NG's performance. This is consistent with statutory requirements/policies and with the designation of Joint STARS as a pilot project under Air Force Acquisition Lightning Bolt 99-7, Product Support Partnership. The Operations and Support period for the current estimate has a nine-year Ramp Up (FY96-05) and Steady State to FY25. The Steady State costs presented below were extracted from the latest CLS Brochure dated September 13, 2002 assuming a total of 17 aircraft. The total O&S cost is a Total Ownership Cost from 1996-2025 and is based on a 17 aircraft fleet.

There is no antecedent system.

b. (U) Costs -- (FY 1998 Constant (Base-Year) Dollars in Millions)

Cost Element	JSTARS Annual Costs - First Year SS FY04	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	40.6	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	60.4	N/A
Contractor Support	19.0	N/A
Sustaining Support	45.9	N/A
Indirect Costs	28.5	N/A
Mission Personnel	103.6	N/A
	N/A	N/A
Indirect Costs	N/A	N/A
Total	298.0	N/A

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

Total O&S Cost	JSTARS	Avg Annual Cost Per
BY\$ (In Millions)	8232.1	N/A
TY\$ (In Millions)	9927.7	N/A

Report Creation Date: 03/19/2003 10:22:34 AM

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

PROGRAM: E-2C AEW (HAWKEYE)

AS OF DATE: December 31, 2002

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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 (PMA-231) CAPT. Robert J. LaBelle  
 Bldg #2272, Suite 455, NAVAIRSYSCOM Assigned: September 1, 2002  
 47123 Buse Road Unit IPT DSN 757-7363; COMM (301) 757-7363  
 Patuxent River, MD 20670-1547 LabelleRJ@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

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E-2C AEW (HAWKEYE), December 31, 2002

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 1995.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated March 10, 2003.

6. (U) Mission and Description:

(U) The Northrop 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 provides area surveillance, intercept, search and rescue, communication relay, and strike/air traffic control. Principal subsystems include APS-138/139/145 radar and ALR-73 Passive Detection Systems which allow the E-2C to detect emitters/targets well beyond radar range.

Plans and funding were established for the E-2C Mission Computer Upgrade (MCU) in order to: (1) take advantage of improved sensor and communication capabilities resulting from the Update Development Program (UDP II), (2) exploit emerging Commercial Off-The-Shelf Technologies (COTS), and (3) address supportability issues occurring with the current 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 offered possible upgrade approaches. Funding was identified and a Mission Computer Upgrade (MCU) Milestone IV/II was approved by ASN(RDA) in September 1994. Full Rate Production of MCU was approved in May 1998 and was incorporated in FY 1999 through FY 2003 E-2C multi-year procurement (MYP).

From FY 1999 through FY 2003, Navy purchased a total of 21 E-2C airframes under a fully-funded, five year, firm-fixed-price MYP. The multi-year contract was awarded on April 26, 1999 and definitized on September 23, 1999. Logistics elements of the proposal were definitized in December 1999. The entire MYP contract, including Foreign Military Sales (FMS) aircraft, is fully negotiated and priced.

Funding for follow-on production from FY 2004 through FY 2007 is included in the FY 2004 President's Budget. MYP has been requested for total of four (4) Hawkeye 2000 aircraft and four (4) TE-2C trainer aircraft over the four (4) year period.

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

Note: The APN-1 procurement costs in FY 2008 and beyond represent the Advanced Hawkeye Program configuration of the E-2C aircraft, which will be its own Major Defense Acquisition Program and will be reported in a separate SAR once it is officially designated as such. A program element (PE) #0604234N has been established for the Advanced Hawkeye program, and as a result, the APN-1 procurement costs in FY 2008 and beyond will be reported in the Advance Hawkeye SAR.

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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
IOC	APR 1992	APR 1992	APR 1992
Milestone III	JUN 1994	JUN 1994	OCT 1994
FRP Contract Award	JUN 1994	JUN 1994	DEC 1994
FOC	OCT 1994	OCT 1994	OCT 1994
FOT&E	JUN 1997	JUN 1997	JUN 1997
Organic Support Capability Date	JUN 1998	JUN 1998	JUN 1998
Service Depot Support Date	JUN 1999	JUN 1999	JUN 1999
Mission Computer Upgrade (MCS)			

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Mission Computer Upgrade (MCS)			
Milestone II	SEP 1994	SEP 1994	SEP 1994
Navy Program Review - LRIP I	MAR 1997	MAR 1997	AUG 1997
First Flight of Production Representative Aircraft	SEP 1998	SEP 1998	NOV 1998
Initial Operational Capability (IOC)	JUN 1999	JUN 1999	OCT 1999
Milestone III	NOV 1999	MAY 2001	AUG 2001

(U) Acronyms:

FOC            Full Operational Capability  
 FOT&E        Final Operational Test and Evaluation  
 FRP           Full Rate Production  
 IOC           Initial Operational Capability  
 LRIP          Low Rate Initial Production

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated 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-427 / T56-A-427	T56-A-427	T56-A-427
Crew	5	5 / 5	5	5
Speed (KIAS)				
Max Speed @13,500 ft (KIAS)	315	315 / 315	315	315
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				
Range (nm)	(b)(1)	N/A / N/A	(b)(1)	

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Azimuth (deg)	(b)(1)	N/A	/ N/A	(b)(1)		
Radar Detection Range (AN/APS-145) (nm)	(b)(1)			(b)(1)		
Overwater (C-141 target) (nm)	(b)(1)	N/A	/ N/A	(b)(1)		
Systems Accuracy (CEP to Target at 200 nm range) (nm)	(b)(1)	N/A	/ N/A	(b)(1)		
Mission Computer Upgrade (MCS)						
System Weight (lbs)	150	150	/ 300	192	192	(Ch-1)
Load Time (sec)	45	45	/ 270	227	227	(Ch-2)
In-Flight Reload (sec)	20	20	/ 144	3.9	3.9	(Ch-2)
Operational Availability	0.97	0.97	/ 0.93	.98	.97	

(U) Acronyms:

KIAS                      Knots Indicated Air Speed  
 nm                        Nautical Mile  
 AN/APS-145              Advanced Airborne Surveillance Radar  
 CEP                        Circular Error Probable

b. Current Change Explanations --

(U) (Ch-1) System Weight changed from 174 lbs. to 192 lbs. due to individual components for MCU weighing more than initial estimate.

(Ch-2) Load Time changed from 243 seconds to 227 seconds and In-Flight Reload changed from 20 seconds to 3.9 seconds due to operational software optimization.

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

a. (U) Cost --	Production <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	205.7	430.6	406.7
Procurement	2422.0	3442.1	3472.5
Airframe & Changes	(1914.2)		(2462.3)
Engine & Accessories	(206.2)		(230.6)
Electronics	(87.5)		(219.1)
Armament & Other GFE	(5.6)		(13.8)
Nonrecurring			(95.7)
Total Flyaway	(2213.5)		(3021.5)
Other Weapons Sys Cost	(141.1)		(234.2)
Peculiar Support	(0.0)		(81.6)
Initial Spares	(67.4)		(135.2)
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 1994 Base-Year \$	2627.7	3872.7	3879.2
 Escalation	 560.2	 497.6	 456.5
Development (RDT&E)	(18.2)	(37.4)	(31.7)
Procurement	(542.0)	(460.2)	(424.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	3187.9	4370.3	4335.7

(U) Notes:

1. SAR, APB baselines and the current estimate dollar values (then-year and base-year) represent E-2C aircraft and the MCU end-items. These two end-items were consolidated in April 1997.
2. The E-2C program received \$39.1M for spare engines and \$12.6M for E-2C Weapon Replacement Assembly (WRA) Pack-up Kits as part of the Defense Emergency Response Funding (DERF).
3. The APN-1 procurement costs in FY 2008 and beyond represent the Advanced Hawkeye Program configuration of the E-2C aircraft, which will be its own Major Defense Acquisition Program and will be reported in a separate SAR once it is officially designated as such. A program element (PE) #0604234N has been established for the Advanced Hawkeye program, and as a result, the APN-1 procurement costs in FY 2008 and beyond will be reported in the Advance Hawkeye SAR.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	<u>36</u>	<u>44</u>	<u>44</u>
Total	36	44	44

(U) There are no Low Rate Initial Production (LRIP) quantities approved for the

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

E-2C reprocurd aircraft.

c. (U) Foreign Military Sales --  
Normal; heading 1;

**Foreign Military Sales (FMS):**

<u>COUNTRY</u>	<u>QTY</u>	<u>DOLLARS (\$M)</u>	<u>LOA* DATE</u>
Israel**	4	178.8	January 1976
Japan	13	860.1	September 1979
Egypt	6	1,115.8	August 1983
Singapore	4	180.7	January 1983
France	2	513.0	April 1995

**Direct Commercial Sales (DCS):**

<u>COUNTRY</u>	<u>QTY</u>	<u>DOLLARS (\$M)</u>	<u>LOA DATE</u>
Taiwan	4	201.5	September 1989

**FMS Sales w/future deliveries:**

<u>COUNTRY</u>	<u>QTY</u>	<u>DOLLARS (\$M)</u>	<u>LOA DATE</u>
Taiwan	4	285.6	September 1999
France	1	232.0	November 2000

Note:

\* LOA - Letter Of Agreement

\*\* Three (3) E-2C Hawkeye aircraft are in the process of being sold as Third Party Sales from Israel to Mexico.

d. (U) Nuclear Costs --  
None.

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12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	3872.7	3879.2	
(2) Quantity	44	44	
(3) Unit Cost	88.016	88.164	+0.17
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	3442.1	3472.5	
(2) Quantity	44	44	
(3) Unit Cost	78.230	78.920	+0.88

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	-13.0	-236.6	-	-249.6
Quantity	-	+360.3	-	+360.3
Schedule	-	+21.5	-	+21.5
Engineering	+178.4	+163.2	-	+341.6
Estimating	+74.7	+1.4	-	+76.1
Other	-	-	-	-
Support	-1.0	+175.7	-	+174.7
Subtotal	+239.1	+485.5	-	+724.6
Current Changes:				
Economic	-0.4	-27.8	-	-28.2
Quantity	-	+218.6	-	+218.6
Schedule	-	+27.3	-	+27.3
Engineering	-	+19.8	-	+19.8
Estimating	-24.2	+121.1	-	+96.9
Other	-	-	-	-
Support	-	+88.8	-	+88.8
Subtotal	-24.6	+447.8	-	+423.2
Total Changes	+214.5	+933.3	-	+1147.8
Current Estimate	438.4	3897.3	-	4335.7

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E-2C AEW (HAWKEYE), December 31, 2002

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

(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	-	+298.5	-	+298.5
Schedule	-	+27.8	-	+27.8
Engineering	+154.7	+139.4	-	+294.1
Estimating	+67.2	+25.0	-	+92.2
Other	-	-	-	-
Support	-	+168.6	-	+168.6
Subtotal	+221.9	+659.3	-	+881.2
Current Changes:				
Quantity	-	+178.8	-	+178.8
Schedule	-	+22.6	-	+22.6
Engineering	-	+12.0	-	+12.0
Estimating	-20.9	+103.9	-	+83.0
Other	-	-	-	-
Support	-	+73.9	-	+73.9
Subtotal	-20.9	+391.2	-	+370.3
Total Changes	+201.0	+1050.5	-	+1251.5
Current Estimate	406.7	3472.5	-	3879.2

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year    Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices (Economic)	N/A	-1.4
Economic adjustment for negative program change (Economic)	N/A	+1.0
Adjustment for current and prior inflation (Estimating)	+0.9	+0.9
UHF Electronically Scanned Array (UESA) Project Unit was removed from the program and transferred to Office of Naval Research (ONR) (Estimating)	-23.3	-27.5
Small Business Innovation Research (SBIR) adjustment (Estimating)	-0.4	-0.4
Additional functional capabilities to accommodate changes to Cooperative Engagement Capability (CEC) adaptive layer, Satellite Communications, Combat Identification and Theater Air and Missile Defence (TAMD) in FY 2008 and FY 2009 (Estimating)	+2.9	+3.8
Reduction in Indirect Costs and Navy Working Capital Fund (NWCFF) Rates (Estimating)	-0.3	-0.3
Miscellaneous Business Reform/Economic Assumption/Information Technology Cost Growth (Estimating)	-0.5	-0.5

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
FY 2002 Management Reform/Economic Assumption (Estimating)	-0.2	-0.2
RDT&E Subtotal	<u>-20.9</u>	<u>-24.6</u>
 (2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-28.4
Economic adjustment for negative program change (Economic)	N/A	+0.6
Total Quantity Variance associated with increase of 3 aircraft from 41 to 44 (QR)	+204.8	+250.4
- Quantity increase of 3 units (Quantity)	+178.8	+218.6
- Allocation to Schedule variance resulting from Quantity Change (QR) (Schedule)	+3.8	+3.7
- Allocation to Engineering variance resulting from Quantity Change (QR) (Engineering)	+18.8	+27.9
- Allocation to Estimating variance resulting from Quantity Change (QR) (Estimating)	+3.4	+0.2
Stretchout of annual procurement buy profile by two years (QR) (Schedule)	+18.8	+23.6
Communication Navigation System/Air Traffic Management (CNS/ATM) integration (Engineering)	+5.9	+7.8
On-Board Oxygen Generating System (OBOGS) integration (Engineering)	+3.0	+3.8
Configuration change between TE-2C and HE2000 (Engineering)	-15.7	-19.7
Adjustment for current and prior inflation (Estimating)	+11.7	+13.3
Additional Contractor/Government Furnished Equipment (CFE/GFE) for new aircraft (QR) (Estimating)	+61.2	+74.3
Revised estimate associated with increased quantity (QR) (Estimating)	+27.6	+33.3
Adjustment for current and prior inflation (Support)	+2.9	+3.1
Increase in Initial Spares due to additional aircraft (QR) (Support)	+32.8	+38.4
Reduction in Peculiar Support funding (Support)	-0.5	-0.1
Increase in Tech Pubs and Production Support due to additional aircraft (QR) (Support)	+38.7	+47.4
Procurement Subtotal	<u>+391.2</u>	<u>+447.8</u>

QR = Quantity related changes.

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E-2C AEW (HAWKEYE), December 31, 2002

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	-6.31	-2.94	+1.11	+8.21	+3.93	--	+5.99	+9.99	98.54

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	
82.33	-6.01	-1.81	+1.11	+4.16	+2.78	--	+6.01	+6.24	88.58

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	N/A	N/A	N/A
Milestone II	N/A	N/A	SEP 1994	SEP 1994
Milestone III	N/A	N/A	NOV 1999	AUG 2001
IOC	N/A	N/A	JUN 1999	OCT 1999
Total Cost	0.0	N/A	3187.9	4335.7
Total Quantity	0	0	36	44
Prog Acq Unit Cost	0.0	N/A	88.6	98.5

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

a. Procurement --

(U) FY98 Production A/C:

Northrop-Grumman Corp, Bethpage NY  
 N00019-96-C-0195, FFP  
 Award: December 15, 1996  
 Definitized: October 31, 1997

Target	Initial Contract Price	
	Target	Ceiling
\$186.6	N/A	Qty 3

Current Contract Price		
Target	Ceiling	Qty
\$186.6	N/A	3

Estimated Price At Completion	
Contractor	Program Manager
\$186.6	\$186.6

Explanation of Change:

None.

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

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

(U) Contract Comments:

The FY 1998 Congressional plus-up aircraft is not included on this contract. Contract award for the original three (3) FY 1998 aircraft was in December 1996 and negotiated in conjunction with the FY 1997 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 (4) aircraft. The plus-up aircraft is included in the FY 1999 MYP contract. This aircraft was delivered in FY 2001. This will be the final report for this contract.

(U) <u>FY99-03 E-2C Multiyear:</u> Northrop-Grumman Corp, Bethpage NY N00019-97-C-0147, FFP Award: April 26, 1999 Definitized: September 23, 1999	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1293.8	\$1293.8	21

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1293.8	\$1293.8	21	\$1293.8	\$1293.8

Explanation of Change:

None.

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

(U) Contract Comments:

The entire MYP contract is fully negotiated and priced. The total cost of the MYP contract is \$1,555.4 million which includes \$1,293.8 million for USN aircraft plus \$261.6 million for FMS aircraft.

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E-2C AEW (HAWKEYE), December 31, 2002

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 (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	415.5	9.1	2.3	11.5	438.4
Procurement	2921.9	232.2	248.0	495.2	3897.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3337.4	241.3	250.3	506.7	4335.7

b. Annual Summary -- E-2C HAWKEYE

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

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				17.8	18.0
1995				48.1	49.7
1996				56.8	59.6
1997				55.9	59.4
1998				56.5	60.5
1999				41.7	45.2
2000				34.9	38.4
2001				41.9	46.7
2002				17.3	19.4
2003				16.4	18.6
2004				7.9	9.1
2005				2.0	2.3
2006				5.2	6.2
2007				1.4	1.7
2008				1.5	1.8
2009				1.4	1.8
Subtotal				406.7	438.4

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				36.6	37.8
1995	4		251.1	276.3	289.6
1996	3		180.0	199.1	211.6
1997	4	1.4	259.8	277.5	297.4
1998	4	11.0	261.3	299.9	325.2

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E-2C AEW (HAWKEYE), December 31, 2002

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

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	3	8.5	184.2	371.6	408.0
2000	3	9.5	192.8	353.0	392.5
2001	5	4.6	299.7	297.5	334.1
2002	5		320.4	279.0	316.8
2003	5	3.0	317.2	268.4	308.9
2004	2	16.7	159.6	198.6	232.2
2005	2	13.5	170.5	208.7	248.0
2006	2	13.7	168.5	217.0	262.3
2007	2	13.8	160.7	189.3	232.9
Subtotal	44	95.7	2925.8	3472.5	3897.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	44	95.7	2925.8	3879.2	4335.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	21	21

(U) Percent Total Program Quantities Delivered: 47.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2696.4

(U) Percent Total Program Expended: 62.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
ASSUMPTIONS ARE FOR FLEET SQUADRONS:

Flight Hours Per Aircraft Per Month 37.1  
 Number of Aircraft/Squadron 4.0  
 Consumption Rate, Gal/Hr 391.0  
 POL Cost, JP-5, Per Barrel, FY 1997 \$44.52  
 Date of estimate, February 2003

There is no antecedent program.

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E-2C AEW (HAWKEYE), December 31, 2002

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

This estimate does not include Advance Hawkeye. Hawkeye 2000 Mission Pay & Allowances includes Squadron Personnel only. Indirect Costs do not include Fleet Readiness Squadron Support. Total O&S Cost increase is driven by adding three (3) additional Hawkeye 2000 aircraft.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	E-2C HAWKEYE Avg Annual Cost Per Squadron	No Antecedent System
Mission Pay & Allowances	6.9	N/A
Unit Level Consumption	7.5	N/A
Intermediate Maintenance	1.9	N/A
Depot Maintenance	3.3	N/A
Contractor Support	0.0	N/A
Sustaining Support	1.5	N/A
Indirect Costs	5.0	N/A
Total	26.1	N/A

Total O&S Cost	E-2C HAWKEYE	No Antecedent System
BY\$ (In Millions)	5254.0	N/A
TY\$ (In Millions)	8383.0	N/A

Report Creation Date: 03/18/2003 5:58:18 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: CH-47F (ICH)**

**AS OF DATE: December 31, 2002**

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1. Designation and Nomenclature (Popular Name): CH-47F Improved Cargo Helicopter (ICH)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Office of the Project Manager	LTC Newman D. Shufflebarger
Cargo Helicopters, ATTN: SFAE-AV-CH	Assigned: August 1, 2000
Building 5678	DSN 897-3396; COMM (256) 313-3396
Redstone Arsenal, AL 35898-5280	newman.shufflebarger@peoavm.redstone.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0203744A Project D430

PROCUREMENT:

APPN 2031 ICN AA0252 (Army) (Shared)

Item Control Number AA0252 is shared with modifications performed after the aircraft are fielded. This does not include RECAP. RECAP is rolled into flyaway cost. As a result our Total Program Base-Year funding reflected in section 16b will not match the CAIG estimate.

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DEPARTMENT OF DEFENSE

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CH-47F (ICH), December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated May 19, 1998.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated July 26, 2002.

**6. Mission and Description:**

The CH-47F program, completed EMD in December 2002 and entered LRIP January 2003, is a rebuild of the current CH-47D helicopter with selected upgrades which extends the service life by twenty years, increases operational performance (lift capability and range), and upgrades the cockpit with digital communication/navigation capability allowing interoperability on the digital battlefield. Additionally, the rebuild of the airframe incorporates vibration reduction through stiffening structural components which should reduce operating and support cost. The Vice Chief of Staff of the Army has directed incorporation of Full Component Recapitalization, Special Operations Aviation (SOA) aircraft (36 MH-47G aircraft), Global Air Traffic Management (GATM) (civil airspace interoperability), Air Warrior (aviator ensemble), and Digital Source Collector (DSC) (flight data recorder). Continued support, coverage, and sustainment of Maneuver, Fire Support, Air Defense, and Survivability mission areas will be provided by the CH-47F. Its mission is transportation of ground forces, class III/class V supplies, and battle critical cargo in support of all future contingencies.

A Service Life Extension Program, the CH-47F, a legacy to objective force system, will sustain the aging CH-47D fleet. It will be fielded as a direct replacement for a portion of the CH-47D fleet.

The CH-47F program will retain most of the subsystems currently on the CH-47D, recapitalize 103 dynamic components and repair the remaining parts as required. The mission payload and range requirements will be met through installation of the T55-GA-714A engines on all CH-47D aircraft prior to induction or on the production line for the CH-47F program.

**7. Executive Summary:**

The EMD contract ended shortly after delivery of the second aircraft in December, 2002. AAE mandated program test review prior to entry into LRIP. PM and Test and Evaluation Working Integrated Product Team devised a coordinated plan and the CH-47F program was approved to award the LRIP lot 1 contract. The LRIP I contract was awarded for 1 CH-47 (FPI) and an option for 6 MH-47G (CPFF) was awarded January 31, 2003. Long Lead LRIP lot II was awarded for 16 aircraft on January 31, 2003 which supports production calendar year 2004. President's Budget 2004 accelerated MH-47G production and provided 16 production units in LRIP lot II and lot III full rate production.

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**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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:

The Army was directed to transfer an additional 16 CH-47Ds for incorporation into the CH-47F program to be remanufactured as Army Special Operations (ARSOA)MH-47Gs. The Army will produce 6 MH-47Gs in FY 03, 16 in FY 04, and 12 in FY 05. The Army will meet the intent by producing all MH-47Gs (No CH-47Fs) in LRIP Lot 2 with deliveries beginning in FY 05. The PM assesses the following preliminary programmatic impacts: First Unit Equipped (FUE) for CH-47F slips 21 months (mandatory re-baseline).

**9. Schedule:**

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
ORD Approval	NOV 1997	NOV 1997	NOV 1997
Milestone II ASARC	NOV 1997	NOV 1997	DEC 1997
EMD Contract Award	MAR 1998	MAR 1998	MAY 1998
Critical Design Review (CDR)	SEP 1999	SEP 1999	SEP 1999
LRIP (#1) Contract Award	DEC 2001	DEC 2002	DEC 2002
IOT&E			
Start	FEB 2002	MAR 2004	APR 2004 (Ch-1)
Finish	MAR 2002	MAY 2004	MAY 2004 (Ch-1)
LRIP (#2) Contract Award	MAR 2003	DEC 2003	DEC 2003
LRIP (#1) First Delivery	MAY 2003	OCT 2004	OCT 2004
Milestone III ASARC	JAN 2004	NOV 2004	NOV 2004
Full Rate Production Contract Award	FEB 2004	DEC 2004	DEC 2004
First Unit Equipped	SEP 2004	FEB 2006	NOV 2007 (Ch-2)

First Unit Equipped will be a Heavy Lift Helicopter Company of 14 aircraft.

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

b. Current Change Explanations --

(Ch-1) - Test unit unavailability changed IOT&E, as follows:

NameFromTo

IOTE start July 2002 April 2004

IOTE finish August 2002 May 2004.

(Ch-2) - Accelerated MH-47G production caused First Unit Equipped (FUE) to change from February 2006 to November 2007.

**10. Performance Characteristics:**

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Self-deploy w/30 min fuel reserve (nm)	1260	1260 / 1056	1065	1260
Transport 16,000 lbs of internal/external cargo (nm)	100	100 / 50	83.7	100
Transport combat equipped troops:				
Number of Troops	44	44 / 31	31	44
Range (nm)	150	150 / 100	157	150
Reliability:				
Mean Time Between Essential Maintenance Actions (MTBEMA) (flt hrs)	3.5	3.5 / 3.3	N/A	3.5
Maintenance:				
Total Maintenance Ratio (mmh/flt hr)	9.2	9.2 / 9.8	N/A	9.2

(1) Performance requirements were achieved at 4000 ft above sea level and 95 degrees Fahrenheit.

(2) Confidence level at Milestone III, for Reliability, is 70 percent. Confidence level after 1000 flight hours by FUE unit is 90 percent.

The self deployment mission was demonstrated by the U.S Army Aviation Technical Test Center (ATTC) on November 2, 2002. The aircraft, under actual conditions, demonstrated an operational radius of 1065 nm. Approximately 40 minutes of fuel remained at the completion of this flight. Based on the actual aircraft configuration and operating condition, the performance predicted by analysis was 1087 nm. The same analytical tool predicts that the aircraft, under the PIDS specific configuration and actual conditions encountered, will perform with an operational radius of

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

1071 nm, or 1125 nm when the winds are discounted. Additionally, the analytical tool predicts that the aircraft, under the Combat Developer specific configuration and actual conditions encountered, will perform with an operational radius of 1092 nm, or 1148 nm when the winds are discounted. In all cases the ORD required range of 1056 nm was surpassed.

b. Current Change Explanations -- None

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	136.3	156.2	157.2
Procurement	2387.3	5413.8	5559.4
Flyaway	(2167.4)		(3724.3)
Other Weapon System Cost			(1785.2)
Peculiar Support	(172.0)		(1.0)
Initial Spares	(47.9)		(48.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1997 Base-Year \$	<u>2523.6</u>	<u>5570.0</u>	<u>5716.6</u>
 Escalation	 591.8	 1410.1	 1460.1
Development (RDT&E)	(6.5)	(7.1)	(7.0)
Procurement	(585.3)	(1403.0)	(1453.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3115.4</u>	<u>6980.1</u>	<u>7176.7</u>
 b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	<u>300</u>	<u>337</u>	<u>337</u>
Total	<u>302</u>	<u>339</u>	<u>339</u>

Two years of Low Rate Initial Production (LRIP) for up to 30 aircraft was approved at Milestone II. The President's Budget reflects revised LRIP quantities with 7 in FY03 and 16 in FY04 for a total of 23 quantities. However, only the first aircraft in LRIP I will be a CH-47F and all remaining aircraft will be MH-47G's.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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CH-47F (ICH), December 31, 2002

**12. Unit Cost Summary:**

	UCR Baseline (JUL 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	5570.0	5716.6	
(2) Quantity	339	339	
(3) Unit Cost	16.431	16.863	+2.63
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	5413.8	5559.4	
(2) Quantity	337	337	
(3) Unit Cost	16.065	16.497	+2.69

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	142.8	2972.6	-	3115.4
Previous Changes:				
Economic	-1.9	-109.1	-	-111.0
Quantity	-	+325.3	-	+325.3
Schedule	+3.4	+71.1	-	+74.5
Engineering	-	+1163.7	-	+1163.7
Estimating	+9.4	+1537.4	-	+1546.8
Other	-	-	-	-
Support	-	+599.1	-	+599.1
Subtotal	+10.9	+3587.5	-	+3598.4
Current Changes:				
Economic	-	+0.3	-	+0.3
Quantity	-	-	-	-
Schedule	-	+50.6	-	+50.6
Engineering	-	-	-	-
Estimating	+10.5	+401.5	-	+412.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+10.5	+452.4	-	+462.9
Total Changes	+21.4	+4039.9	-	+4061.3
Current Estimate	164.2	7012.5	-	7176.7

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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	136.3	2387.3	-	2523.6
Previous Changes:				
Quantity	-	+232.1	-	+232.1
Schedule	+2.9	-	-	+2.9
Engineering	-	+812.7	-	+812.7
Estimating	+8.6	+1572.3	-	+1580.9
Other	-	-	-	-
Support	-	+236.0	-	+236.0
Subtotal	+11.5	+2853.1	-	+2864.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+9.4	+319.0	-	+328.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+9.4	+319.0	-	+328.4
Total Changes	+20.9	+3172.1	-	+3193.0
Current Estimate	157.2	5559.4	-	5716.6

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
IOT&E (Estimating)	+9.4	+10.5
RDT&E Subtotal	+9.4	+10.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.3
Stretchout of annual procurement buy profile. (Schedule)	0.0	+50.6
PBD 600 (Estimating)	+295.9	+375.2
Estimating Adjustment (Estimating)	+23.1	+26.3
Procurement Subtotal	+319.0	+452.4

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CH-47F (ICH), December 31, 2002

**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	
10.32	-0.327	-0.168	+0.369	+3.43	+5.78	--	+1.77	+10.85	21.17

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	
9.91	-0.323	-0.118	+0.361	+3.45	+5.75	--	+1.78	+10.90	20.81

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	NOV 1997	N/A	DEC 1997
Milestone III	N/A	JAN 2004	N/A	NOV 2004
FUE	N/A	SEP 2004	N/A	NOV 2007
Total Cost	N/A	3115.4	N/A	7176.7
Total Quantity	0	302	0	339
Prog Acq Unit Cost	N/A	10.3	N/A	21.2

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

a. Procurement --

CH-47F IPP:  
BOEING HELICOPTERS, Philadelphia PA  
DAAH23-01-C-0028, CPIF  
Award: May 1, 2001  
Definitized: N/A

Initial Contract Price	Price		
	Target	Ceiling	Qty
	\$26.8	\$	

Current Contract Price

Target	Ceiling	Qty
\$52.2	\$	

Estimated Price At Completion

Contractor	Program Manager
\$52.1	\$52.2

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date (12/19/02)	<u>\$2.5</u>	<u>\$-1.1</u>
Net Change	\$2.5	\$-1.1

Explanation of Change:

Unfavorable schedule variance is attributable to airframe and dynamics. This unfavorable schedule variance is the primary driver of the positive cost variance.

Contract Comments:

The EMD contract concluded in December 2002 and as a result is no longer reported.

The IPP contract reflected above was awarded in two parts. The first part, \$26.8M, was to support LRIP quantities. The second award, \$25.4M, was to support full rate production quantities.

LRIP Lot I: Boeing Helicopters, Philadelphia PA DAAH23-03-C-0022, CPFF Award: December 20, 2002 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$94.1	\$94.5	7

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$94.1	\$94.5	7	\$	\$94.1

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

Explanation of Change:

Earned Value Management Data will begin June 2003.

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CH-47F (ICH), December 31, 2002

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> (FY96-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-17)	<u>Total</u>
RDT&E	153.5	10.7	-	-	164.2
Procurement	422.9	347.7	361.7	5880.2	7012.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	576.4	358.4	361.7	5880.2	7176.7

b. Annual Summary -- ICH

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1997 Dollars Nonrec</u>	<u>Flyaway FY 1997 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1996				4.3	4.3
1997				16.8	16.9
1998				20.6	20.9
1999				23.3	23.9
2000				26.0	27.1
2001				36.5	38.7
2002				17.1	18.4
2003				3.0	3.3
2004				9.6	10.7
Subtotal	2			157.2	164.2

Appropriation: 2031 - Aircraft Procurement, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1997 Dollars Nonrec</u>	<u>Flyaway FY 1997 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2001				56.9	60.7
2002				93.8	101.7
2003	7	49.2	178.1	236.2	260.5
2004	16		224.2	309.6	347.7
2005	16		210.1	316.2	361.7
2006	23		263.6	370.6	432.0
2007	22		248.8	339.8	403.7
2008	25		274.3	397.4	481.0
2009	26		278.8	413.9	510.5
2010	26		273.3	399.0	501.5
2011	26		270.2	406.9	521.2
2012	27		275.7	400.0	522.0

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

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2013	26		259.4	392.9	522.5
2014	25		246.8	378.2	512.5
2015	25		244.6	373.3	515.5
2016	25		238.2	374.2	526.9
2017	22		189.0	300.5	430.9
Subtotal	337	49.2	3675.1	5559.4	7012.5

Total Program Base Year (BY\$) in section 16b does not match the CAIG estimates because the CAIG includes modifications to the aircraft after it is fielded and the PM does not include them in the SAR.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	339	49.2	3675.1	5716.6	7176.7

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	2	2
Procurement	0	0

Percent Total Program Quantities Delivered: 0.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 131.4

Percent Total Program Expended: 1.8%

The expenditures shown above are as of January 31, 2003.

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Costs are based on 300 CH-47F aircraft accumulating a total of 49,404 hours per year over 20 years of operation. Reliability/Maintainability will show a 25 percent improvement (25 percent less cost for Reliability/Maintainability driven O&S cost elements).

The CH-47D costs are also based on 300 aircraft accumulating a total of 49,404 hours per year over 20 years of operation.

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CH-47F (ICH), December 31, 2002

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

This information based on an approved Army Cost Position dated March 30, 2002. A new comparison is being developed as a result of First Unit Equipped (FUE) being slipped to November 2007.

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Thousands)

Cost Element	ICH Average Annual Per Aircraft	CH-47D Average Annual Per Aircraft
Mission Pay & Allowances	426.4	426.4
Unit Level Consumption	101.2	118.5
Intermediate Maintenance	83.9	104.6
Depot Maintenance	180.6	683.3
Contractor Support	0.0	0.0
Sustaining Support	183.0	183.0
Indirect Costs	0.0	0.0
Total	975.1	1515.8

Total O&S Cost	ICH	CH-47D
BY\$ (In Millions)	4640.9	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 3/18/2003 2:20:39 PM

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

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Advanced Anti-Tank Weapon System - Medium (Javelin)
2. (U) DoD Component: Army  
  
Joint Participants:  
USMC
3. (U) Responsible Office and Telephone Number:  
Department of Army COL John P. Weinzettle  
PEO - Tactical Missiles Assigned: September 15, 2000  
ATTN: SFAE-MSL-CC DSN 746-7194; COMM (256) 876-7194  
RSA, AL 35898-5720 John.Weinzettle@msl.army.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0604611  
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)

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DIRECTORATE FOR PLANS, POLICY, INFORMATION  
AND SECURITY AFFAIRS  
DEPARTMENT OF DEFENSE

~~Classified by: Javelin, SGC, PEO Tactical Missiles, dated 29 March 1999  
Downgrade instructions:  
Declassify on: X3~~

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03-c-0426

Javelin, December 31, 2002

5. (U) References:

SAR Baseline (Production Estimate):

(U) AAE Approved Acquisition Program Baseline (APB) dated September 18, 1997.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 2, 2001.

6. (U) Mission and Description:

(U) The Javelin system is a medium range, imaging infrared, fire-and-forget, manportable, antitank weapon system developed for the U.S. Army and U.S. Marine Corps (USMC) to meet the Combat Developer's (CBTDEV's) requirements as specified in the Joint Service Operational Requirement (JSOR), dated 12 December 1988. Javelin satisfies 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 classified 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 enhancing 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 since the last SAR submitted to Congress. During this reporting period, the Javelin Project Office was responsible for managing the joint Army/Marine Corps Javelin Weapon System. This included continuing the production and fielding/deployment phases of the acquisition cycle.

Javelin has been/is deployed in support of Operation Enduring Freedom (OEF), first with the US Marine Corps and then with the US Army. The Javelin program was approved for Life Cycle Contractor Support (LCCS) in March 2002, and an LCCS contract was signed in January 2003. Javelin missile deliveries resumed after resolution of production issues with 3398 missiles delivered in 2002.

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

Missile deliveries continue on schedule. The Close Combat Missile Systems Project Office again highlighted Javelin's versatility, this time through a demonstration in which Javelin missiles were fired from Improved Target Acquisition System (ITAS) platforms. During 2002, the Project Office completed Foreign Military Sales (FMS) test cases for the United Kingdom and Norway, resulting in Javelin being selected the winner of the United Kingdom's Light Forces Anti-Armor Weapon System competition (Norway has not yet concluded its competition). FMS cases signed include Jordan, Lithuania, Taiwan, Australia, and Ireland. In December the signing of the fourth and final year of the second Javelin multiyear contract was accomplished.

The Army fielded Javelin to Units in Schofield Barracks, HI, Fort Wainwright, AK, Fort Lewis, WA, and Fort Hood, TX. The Army also completed accelerated Javelin fieldings to Units in Vicenza, Italy, Fort Stewart, GA, Fort Benning, GA, and Germany. The Marines completed fielding Javelin to its service in August to include Units in Kaneohe Bay, HI, 29 Palms, CA, Perrysburg, OH, Waukegan, IL, Springfield, MO, Camp Edwards, MA, Garden City, NY, and Moundsville, WV.

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 --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Joint Service Op Requirement Approved	APR 1986	APR 1986	APR 1986
Milestone I (DSARC)	MAY 1986	MAY 1986	MAY 1986
Proof of Principle Contract Award	AUG 1986	AUG 1986	AUG 1986
Proof of Principle Complete	DEC 1988	DEC 1988	DEC 1988
Milestone II (DAB)	JUN 1989	JUN 1989	JUN 1989
FSD Contract Award	JUN 1989	JUN 1989	JUN 1989
Pre-Prod Qual Test			
Start	JUN 1990	JUN 1990	JUN 1990
Complete	DEC 1993	DEC 1993	DEC 1993
Training Force Dev Test and Experimentation (FDT&E)			
Start	FEB 1993	FEB 1993	FEB 1993
Complete	APR 1993	APR 1993	APR 1993
Prototype Delivery	NOV 1992	NOV 1992	NOV 1992
IOT&E			
Start	SEP 1993	SEP 1993	SEP 1993
Complete	DEC 1993	DEC 1993	DEC 1993
LRIP Decision (DAB)	JUN 1994	JUN 1994	JUN 1994
LRIP I Contract Award	JUN 1994	JUN 1994	JUN 1994
LRIP II Contract Award	MAR 1995	MAR 1995	MAR 1995
First LRIP Delivery	OCT 1995	OCT 1995	OCT 1995
Prod Verification Test			
Start	NOV 1995	NOV 1995	NOV 1995
Complete	APR 1996	APR 1996	APR 1996
LRIP III Contract Award	FEB 1996	FEB 1996	FEB 1996
LRIP II Delivery	OCT 1996	OCT 1996	OCT 1996
Limited User Test			
Start	APR 1996	APR 1996	APR 1996
Complete	JUN 1996	JUN 1996	JUN 1996
Live Fire Test			
Start	JUN 1996	JUN 1996	JUN 1996
Complete	DEC 1996	DEC 1996	DEC 1996
First Unit Equipped	JUN 1996	JUN 1996	JUN 1996
IOC	OCT 1996	OCT 1996	OCT 1996
Full Rate Production (ASARC)	MAY 1997	MAY 1997	MAY 1997
Full Rate Production Contract Award	MAY 1997	MAY 1997	MAY 1997
LRIP III Delivery	OCT 1997	OCT 1997	OCT 1997
First Full Rate Production Delivery	OCT 1998	OCT 1998	OCT 1998
Follow-on Operational Test and Evaluation			
Start	JAN 1999	N/A	N/A
Complete	APR 1999	N/A	N/A
Organic Depot Level Support Capability	JUL 2001	JUL 2003	JAN 2003(Ch-1)
Milestone IIIB (DAB)	N/A	N/A	N/A

(U) ACRONYMS:

ASARC - Army Systems Acquisition Review Council

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

- DAB - Defense Acquisition Board
- DSARC - Defense Systems Acquisition Review Council
- FDT&E - Force Development Testing & Experimentation
- FSD - Full Scale Development
- IOT&E - Initial Operational Test & Evaluation
- IOC - Initial Operational Capability
- LRIP - Low Rate Initial Production

b. Current Change Explanations --

(U) (Ch-1) Current estimate for Depot Level Support Capability changed from JUL 2003 to JAN 2003 due to the approval of Javelin Life Cycle Contractor Support (LCCS). LCCS was approved in March 2002 by the AAE and an LCCS contract was awarded in January 2003.

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Min range (m)	(b)(1)				
Degraded	(b)(1)				
Full	(b)(1)				
Max range (m)	(b)(1)				
Hit probability (Ph/reliable rnd)	(b)(1)				
Kill probability	(b)(1)				
Given a reliable shot (Pk/s)	(b)(1)				
Given engagement opportunity (Pk/e)	(b)(1)				
(U) System weight (lbs)	35	35 / 49.5	48.6	48.6	(Ch-2)
(U) Missile operational reliability	.92	.92 / .92	.94	.94	(Ch-3)
(U) Cmd Launch Unit MTBOMF (hrs)	129	129 / 129	360	360	(Ch-4)
(U) Cmd Launch Unit MTTR (hrs)	<1.5	<1.5 / 1.5	.77	.77	

(U) ACRONYMS:

- MTBOMF - Mean Time Between Operational Mission Failures.
- MTTR - Mean Time To Repair.

Objectives/thresholds/current estimates are at MS III except P(k/e) and Missile operational reliability. Values shown are objectives representing desired performance and minimum acceptable thresholds.

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

1. (U) Full lethality must be met at both minimum and maximum 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.
3. (U) Probability of kill given a reliable shot P(k/s). A reliable shot is defined by a reliable launch and reliable flight. The P(k/s) must be attained against both stationary and evasively maneuvering targets at all ranges (min to max).
4. (U) Probability of kill given an engagement opportunity P(k/e). Values shown are defined at 1200 meters in fog oil or white phosphorous against a specific threat target.
5. (U) Missile Operational Reliability is established at system maturity which is three years after MSIII (May 00).

b. Current Change Explanations --

(U) (Ch-1) Current estimate of kill probability given a reliable shot (Pk/s) was changed from (b)(1) to account for new tracker with higher lethality.

(U) (Ch-2) Previous estimate (48.5 pounds) and demonstrated performance (48.3 pounds) of System weight have been changed to 48.6 pounds based on the current FRP configuration.

(Ch-3) Demonstrated performance of Missile operational reliability changed from .84 to .94 based on latest test data.

(Ch-4) Previous estimate (214 hours) and demonstrated performance (188 hours) for CLU MTBOMF changed to 360 hours based on CLU reliability data from both testing and field usage. Previous estimate included LRIP CLU data which is not representative of FRP CLU inventory.

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

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	877.0	872.6	874.7
Procurement	2914.1	3177.3	3094.0
Round Flyaway	(2018.1)		(1998.5)
CLU Flyaway	(516.8)		(615.0)
Non-recurring			(107.3)
Total Flyaway	(2534.9)		(2720.8)
Other Weapon System Cos	(51.1)		(78.2)
Training Devices	(245.5)		(253.3)
Plant Closure	(16.6)		(10.5)
Total Other Wpn Sys	(313.2)		(342.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.0)		(31.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1997 Base-Year \$	<u>3791.1</u>	<u>4049.9</u>	<u>3968.7</u>
Escalation	134.9	61.6	37.6
Development (RDT&E)	(-109.7)	(-106.8)	(-106.6)
Procurement	(244.6)	(168.4)	(144.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3926.0</u>	<u>4111.5</u>	<u>4006.3</u>

(U) Values shown include USMC program.

b. (U) Quantity --

Development (RDT&E)	48	57	57
Procurement	28453	24472	23369
Total	<u>28501</u>	<u>24529</u>	<u>23426</u>

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) were produced during low rate initial production (LRIP).

c. (U) Foreign Military Sales --

Javelin FMS sales include the following:

<u>Country</u>	<u>Round Qty</u>	<u>Total Case</u>
Australia	12	\$2.1M
Australia	5	\$0.4M
Norway	10	\$1.4M

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

Lithuania	74	\$9.6M
Jordan	115	\$15.1M
United Kingdom	14	\$4.4M
Taiwan	360	\$39.8M
Australia	96	\$13.2M

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	4049.9	3968.7	
(2) Quantity	24529	23426	
(3) Unit Cost	0.165	0.169	+2.42
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	3177.3	3094.0	
(2) Quantity	24472	23369	
(3) Unit Cost	0.130	0.132	+1.54

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	+1.5	-69.5	-	-68.0
Quantity	-	+73.2	-	+73.2
Schedule	-	-15.9	-	-15.9
Engineering	+10.7	-	-	+10.7
Estimating	-11.4	+317.5	-	+306.1
Other	-	-	-	-
Support	-	-12.9	-	-12.9
Subtotal	+0.8	+292.4	-	+293.2
Current Changes:				
Economic	-	-15.0	-	-15.0
Quantity	-	-213.6	-	-213.6
Schedule	-	+0.4	-	+0.4
Engineering	-	-	-	-
Estimating	-	+16.9	-	+16.9
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	-	-212.9	-	-212.9
Total Changes	+0.8	+79.5	-	+80.3
Current Estimate	768.1	3238.2	-	4006.3

(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	-	+94.0	-	+94.0
Schedule	-	-	-	-
Engineering	+10.7	-	-	+10.7
Estimating	-13.0	+250.6	-	+237.6
Other	-	-	-	-
Support	-	-4.8	-	-4.8
Subtotal	-2.3	+339.8	-	+337.5
Current Changes:				
Quantity	-	-173.7	-	-173.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+15.0	-	+15.0
Other	-	-	-	-
Support	-	-1.2	-	-1.2
Subtotal	-	-159.9	-	-159.9
Total Changes	-2.3	+179.9	-	+177.6
Current Estimate	874.7	3094.0	-	3968.7

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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>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-30.0
	Economic adjustment for negative program change. (Economic)	N/A	+15.0
	Total Quantity Variance associated with decrease of 2,526 units. Rounds reduced by 2,425 from 25,794 to 23,369. CLUs reduced by 101 from 4,867 to 4,766. (Quantity)	-173.7	-213.6
	Final year of CLU production stretched out over two years. (Schedule)	0.0	+0.4
	Adjustment for Current and Prior Inflation (Estimating)	+15.0	+16.9
	Adjustment for Current and Prior Inflation. (Support)	+2.8	+3.0
	Reduction of Initial Spares requirement associated with reduction of CLUs. (QR) (Support)	-1.7	-1.8
	Reduction in Training Devices requirement associated with reduction of CLUs. (QR) (Support)	-2.8	-3.3
	Revised estimate for Plant Closure. (Support)	+0.5	+0.5
	Procurement Subtotal	-159.9	-212.9

QR = Quantity 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		
0.138	-0.004	+0.025	-0.001	--	+0.014	--	-0.001	+0.033	0.171	

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	
0.111	-0.004	+0.020	-0.001	--	+0.014	--	-0.001	+0.028	0.139

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

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	N/A	MAY 1986	MAY 1986	MAY 1986
Milestone II	N/A	MAY 1989	JUN 1989	JUN 1989
Milestone III	N/A	JUN 1994	MAY 1997	MAY 1997
IOC	N/A	DEC 1995	JUN 1996	JUN 1996
Total Cost	N/A	3936.5	3926.0	4006.3
Total Quantity	N/A	70631	28501	23426
Prog Acq Unit Cost	N/A	0.1	0.1	0.2

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

(U) Multiyear I:	Initial Contract Price		
	Target	Ceiling	Qty
TI/Martin Joint Venture, Tuscon AZ DAAH01-97-C-0209, FFP Award: May 31, 1997 Definitized: N/A	\$745.0	N/A	6492

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$762.2	N/A	6745	\$762.2	\$762.2

Explanation of Change:

(U) No change from the last SAR.

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

(U) Contract Comments:

This is a three year firm-fixed-price, multi-service, multi-year contract. Program Years 1, 2, & 3 are funded and awarded.

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

(U) <u>Multiyear II:</u> Raytheon/LM Joint Venture, Tucson AZ DAAH01-00-C-0108, FFP Award: August 7, 2000 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1236.0	N/A	11805

Current Contract Price	Estimated Price At Completion
<u>Target</u> <u>Ceiling</u> <u>Qty</u>	<u>Contractor</u> <u>Program Manager</u>
\$1269.0      N/A      12319	\$1269.0      \$1269.0

Explanation of Change:

(U) The Multiyear II contract price changes are as follows:

\$ 1236.0	Initial Price
+ 23.3	Options for rounds
+ 7.4	Option for CLUs and BCUs
+ 7.3	Option for FMS case
+ 1.1	Options for Initial Spares
- 5.3	Reduction of FTT IS qty
- 0.8	Cost savings realized
-----	
\$ 1269.0	Current Price

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

(U) Contract Comments:

This is a four year firm-fixed-price, multi-service, multi-year contract. Program years 1, 2, 3, and 4 are funded and awarded.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY86-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-08)	<u>Total</u>
RDT&E	766.1	1.0	1.0	-	768.1
Procurement	2926.8	143.9	118.8	48.7	3238.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3692.9	144.9	119.8	48.7	4006.3

b. Annual Summary -- Javelin

Appropriation: 2040 - Research, Development, Test & Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1997 Dollars Nonrec</u>	<u>Flyaway FY 1997 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				88.7	79.8
1992				132.9	122.3
1993				105.8	99.7
1994				49.2	47.2
1995				30.6	29.9
1996				2.2	2.2
1997				5.9	5.9
1998				7.4	7.5
1999				3.9	4.0
2000				1.8	1.9
2001				0.5	0.5
2002				2.6	2.8
2003				0.5	0.5
2004				0.9	1.0
2005				0.9	1.0
Subtotal	57			874.7	768.1

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

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	141	0.7	28.6	37.7	38.2
1998	380	1.8	45.1	56.4	57.8
1999	741	5.2	65.7	79.9	83.2
2000	986	0.9	78.0	90.2	94.9
2001	305		25.2	28.0	29.8
2002				0.9	1.0
2003				0.9	1.0
2004				0.1	0.1
2005				0.1	0.1
Subtotal	2553	8.6	242.6	294.2	306.1

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				19.1	18.3
1994	703	48.9	176.0	210.9	206.1
1995	872	9.7	176.9	211.1	210.0
1996	1010	1.7	175.9	200.2	200.8
1997	1020	3.3	164.2	194.8	197.4
1998	894	3.9	114.6	133.8	137.2
1999	3569	21.0	278.9	328.1	341.5
2000	2392	6.8	231.3	331.2	348.6
2001	2776	2.6	280.8	308.4	328.0
2002	4139	0.8	370.2	382.0	411.0
2003	1478		183.4	203.3	222.0
2004	901		110.1	129.7	143.8
2005	1062		108.6	105.3	118.7
2006				15.3	17.5
2007				16.8	19.6
2008				9.8	11.6
Subtotal	20816	98.7	2370.9	2799.8	2932.1

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	20873	98.7	2370.9	3674.5	3700.2
Navy	2553	8.6	242.6	294.2	306.1
Grand Total	23426	107.3	2613.5	3968.7	4006.3

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	57	57
Procurement	7538	8325

(U) Percent Total Program Quantities Delivered: 35.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2809.4

(U) Percent Total Program Expended: 70.1%

(U) Procurement deliveries include Army and Marine Corps rounds for FY94 through FY99. Deliveries are currently 2 months ahead of contract.

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) has a 3 level support concept: Unit (organic), Direct Support (organic), and Depot (contractor). Unit level maintenance consists of visual inspection, Preventive Maintenance Checks and Services, exterior cleaning, battery replacement, and Built In Test (BIT) check. Direct Support level maintenance consists of BIT/BITE check and removal/replacement of CLU external components from the ASL. Depot level maintenance consists of CLU internal repair, CLU component repair, and CLU overhaul.

(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.

Fielding began in June 1996. Interim Contractor Support was utilized from June 1996 through mid January 2003. Life Cycle Contractor Support (LCCS) was approved in March 2002 and began on January 17, 2003. The CLU sustainment period covers 20 years of operation, maintenance, and modification. Military pay and allowances represent over 65% 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 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 and contractor logistics support 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

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

specific replacement training, costs associated with permanent change of station, and base operations.

Total annual cost projection changed from \$120.4M to \$111.8M which is an \$8.6M improvement.

Data source: Javelin - Project Office Estimate, updated December 2002, average over 14 years fully fielded (i.e. no ramp up or down) (sustainment years (FY06 through FY19)), Army only; Antecedent - DRAGON II Life Cycle Cost Estimate, dated August 1984, 20 years sustainment, Army only.

b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

Cost Element	Javelin Avg Annual Cost for Javelin Program	DRAGON II (ANTECEDENT) Avg Annual Cost for DRAGON Program
Mission Pay & Allowances	78.2	103.0
Unit Level Consumption	1.7	25.8
Intermediate Maintenance	0.0	0.4
Depot Maintenance	0.4	24.0
Contractor Support	15.4	0.0
Sustaining Support	2.7	5.5
Indirect Costs	13.4	40.0
Total	111.8	198.7

Total O&S Cost	Javelin	DRAGON II (ANTECEDENT)
BYS (In Millions)	2236.0	3974.0
TYS (In Millions)	4268.5	7586.3

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N-16 MH-60S

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

PROGRAM: MH-60S

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): MH-60S FLEET COMBAT SUPPORT HELICOPTER

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

Air ASW, Assault and Special Mission CAPT William Shannon	
Programs (PMA-299), 47123 Buse Road	Assigned: September 22, 2000
Unit IPT, Suite 156	DSN 757-5409; COMM 301-757-5409
Patuxent River, MD 20670-1547	shannonwe@navair.navy.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604212N	Project H9213, H2415, H2772, H2773, H9213, H1709
PE 0604216N	Project H3053

PROCUREMENT:

APPN 1506 ICN 024000	(Navy)
APPN 1810 ICN 424800	(Navy)

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**5. References:**

SAR Baseline (Production Estimate):

DAE Approved Acquisition Program Baseline (APB) dated July 8, 1998.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated November 9, 2002.

**6. Mission and Description:**

The Helicopter Combat Support (HC) mission is to maintain forward deployed fleet sustainability through rapid airborne delivery of materials and personnel and to support amphibious operations through search and rescue coverage. The primary roles of the aircraft are vertical replenishment (VERTREP); internal transport of passengers, mail and cargo, vertical on board delivery (VOD); airhead operations; and day/night search and rescue (SAR). The aircraft secondary roles include torpedo and drone recovery, noncombatant evacuation operations (NEO), Sea Air Land (SEAL) and Explosive Ordnance Disposal (EOD) support. Annex A to the MH-60S ORD adds Armed Helo as a primary mission for the MH-60S. The Armed Helo mission includes Combat Search and Rescue (CSAR), Special Warfare Support (SWS), Anti-Surface Warfare (ASUW), and CV Plane Guard/SAR. Annex B to the MH-60S ORD adds Airborne Mine Countermeasures (AMCM) as a primary mission for the MH-60S. The AMCM mission will provide Carrier Battle Groups (CVBGs) and Amphibious Readiness Groups (ARCs) with an Organic AMCM capability. These missions are vital to the Navy's role in power projection in the littoral areas of the world.

**7. Executive Summary:**

The Acquisition Program Baseline (APB) and MH-60S Master Acquisition Plan (which includes the Acquisition Strategy Report), both in support of Milestone III, were approved by ASN(RDA) on November 9, 2002.

In August 2002, an Acquisition Decision Memorandum (ADM) was issued by ASN(RDA) approving Milestone III and authorizing full rate production for 237 aircraft. This full rate production decision provided the authority required for signature of the joint service (Army) Multi-Year VI (MY6) contract which includes the FY02 through FY06 MH-60S procurements for a total of 82 aircraft. Also approved in the ADM was the evolutionary acquisition approach for the MH-60S. The blocks in the evolutionary acquisition approach are; Block 1 Combat Support (also known as Vertical Replenishment (VERTREP)), Block 2 Airborne Mine Countermeasures (AMCM), and Block 3 Armed Helo (formerly known as Combat Search & Rescue (CSAR)). As of March 4, 2003, 45 MH-60S aircraft have been delivered to the fleet under MY5 and MY6.

The MH-60S Operational Requirements Document (ORD) with Annex A Armed Multi-Mission Helicopter and Annex B Airborne Mine Countermeasures (Serial No. 596-78-02) was approved on August 12, 2002. This ORD revision did not add any new mission areas, but only revalidated current requirements in the three mission areas of Combat Support, AMCM, and Armed Helo. Additional requirements in these mission areas are noted in the Performance Characteristics section of

7. Executive Summary (Cont'd):

this SAR (section 10).

Initial Operating Capability for the VERTREP mission was achieved in August 2002 with deployment of two HC-5 MH-60S aircraft on the USNS San Jose. MH-60S aircraft continue to operate at three sites - Guam (HC-5), Norfolk (HC-6 and HC-8), and San Diego (HC-3 and HC-11). Over 17,000 hours have been flown to date on the aircraft, and optempo for the MH-60S continues to increase with seven additional deployments currently underway.

Completion of OPEVAL occurred on March 7, 2002. As noted in the OPEVAL report of May 16, 2002, the MH-60S demonstrated the ability to perform the required primary mission, but was not rated as effective as it did not meet the VERTREP endurance Key Performance Parameter (KPP) of 2.00 hours. VERTREP Endurance as reported in the OPEVAL Report was 1.85 hours. In the revalidated MS-III ORD of August 12, 2002, the revised VERTREP endurance KPP is 1.75 hours. Based on this ORD, a verification of correction of deficiencies (VCD) was issued on October 22, 2002 concluding that MH-60S is operationally effective. The MH-60S is not operationally suitable due to deficiencies in compatibility, availability, and human factors. For compatibility, a VCD request was issued on February 4, 2003. The program office is awaiting the results of the VCD. For availability, the program office and COMOPTEVFOR are still working the issues of the finding. For human factors, a Verification of Correction of Deficiencies (VCD) will be requested once software version 11.5 has been issued. Expected time frame for this VCD is fourth quarter FY03. There were three recommendations in the OPEVAL Report. The first is that a higher authority review the VERTREP endurance KPP. Signature of the ORD on August 12, 2002 satisfies this issue. The second recommendation is a limited Fleet introduction for training and combat support to ship classes for which specific wind envelopes exist. The MH-60S is operating in the Fleet under these conditions. The third recommendation is for correction of major suitability deficiencies prior to full Fleet introduction. This is ongoing as discussed above.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MII/CON	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
MS-II/LRIP	APR 1998	JUL 1998	JUL 1998
Common Cockpit Critical Design Review	JUN 1998	JUL 1998	JUL 1998
LRIP First Flight	JUL 1999	JAN 2000	JAN 2000
Technical Evaluation Complete	MAR 2000	JAN 2001	JAN 2001
Operational Evaluation Complete	JUL 2000	JAN 2002	MAR 2002
MS-III (NAV SAE FRP)	SEP 2000	AUG 2002	AUG 2002 (Ch-1)
IOC	DEC 2001	AUG 2002	AUG 2002
LRIP 3 Contract Award	N/A	JUN 2001	JUN 2001
AMCM Phase I: Static Tow Test and OEL Test	N/A	DEC 1999	DEC 1999
AMCM Phase II Dynamic Tow Test	N/A	JAN 2000	JAN 2000
AMCM Phase III AN/AQS-20 Tow Demonstration	N/A	OCT 2000	OCT 2000
AMCM Interim Process Review I	N/A	MAY 2000	MAY 2000
AMCM Interim Process Review II	N/A	DEC 2001	DEC 2001
AMCM Interim Process Review III	N/A	APR 2005	APR 2005 (Ch-2)
AMCM IOC	N/A	JUN 2005	NOV 2005 (Ch-3)
Armed Helo IOC	N/A	MAR 2006	MAR 2006

9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1)MS-III changed from June 2002 to August 2002 to reflect the actual date.

(Ch-2) AMCM Interim Process Review III changed from March 2004 to April 2005 to reflect updates for the OAMCM DT/OT Schedule.

(Ch-3) AMCM IOC changed from September 2005 to November 2005. IOC was redefined to one Carrier Battle Group outfitted and trained with two AMCM Compatible MH-60S helicopters, two AMCM mission configuration kits, and at least two AMCM mine hunting sensors, which is planned for CY05.

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (AFB) Obj/Threshold	Demonstrated Perf	Current Estimate	
*Airspeed-Vmax (KIAS)	175	175 / 150	154	154	
*Amphibious SAR Mission Radius (nm)	150	150 / 50	50	50	
*VERTREP Endurance (hrs)	3	3 / 1.75	1.85	1.85	(Ch-1)
*VERTREP, External (lbs)	5,500	5,500 / 5,500	6,000	7500	(Ch-2)
*VOD (lbs)	5,500	5,500 / 5,500	5,000	5,500	
MTBF (hrs)	20.3	20.3 / 20.3	34.3	34.3	
MTTR (hrs)	3.6	3.6 / 3.6	2.6	2.6	
*CSAR Mission Radius (nm)	300	300 / 200	TBD	200	
*SWS Mission Radius (nm)	300	300 / 200	TBD	200	
*CV Plane Guard/SAR Mission Radius (nm)	200	200 / 100	TBD	200	
*AMCM Free Flight Endurance (mins)	N/A	150 / 120	TBD	150	
*AMCM Hover Endurance (mins)	N/A	90 / 75	TBD	75	(Ch-2)
*AMCM Tow Endurance (mins)	N/A	75 / 60	TBD	60	
*AMCM Hot Temp Tow Endurance (105 deg F)	N/A	45 / 30	TBD	35	
*AMCM Tow Turns (25 knot wind) (deg/sec)	N/A	1.5 / 1.0	3.0	3.0	
*AMCM Wind Speed (TOW) (KIAS)	N/A	30 / 25	25	25	
*AMCM Block 2 Information Dissemination (%)	N/A	95 / 95	TBD	95	(Ch-3)

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APR) Op./Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
*AMCM Block 2 Information Integrity (%)	N/A	99 / 99	TBD	99	(Ch-3)
*AMCM Block 2 Interoperability (%)	N/A	100 / 100	TBD	100	(Ch-3)
*Armed Helo Airspeed-VMAX (KIAS)	N/A	165 / 140	TBD	140	(Ch-3)
*Armed Helo FMC Rate (%)	N/A	60 / 56	TBD	60	(Ch-3)
*Armed Helo MC Rate (%)	N/A	75 / 69	TBD	75	(Ch-3)
*HC Interoperability (%)	N/A	100 / 100	TBD	100	(Ch-3)
*HC Information Integrity (%)	N/A	99 / 99	TBD	99	(Ch-3)
*HC Information Dissemination (%)	N/A	95 / 95	TBD	95	(Ch-3)
*Armed Helo Quality of Service (%)	N/A	99 / 99	TBD	99	(Ch-3)
*AMCM Operational Availability (%)	N/A	85 / 75	TBD	75	(Ch-3)

(\* Asterisk denotes Key Performance Parameter (KPP).

ACRONYMS:

- SAR - Search and Rescue
- KIAS - Knots Indicated Airspeed
- VERTREP - Vertical Replenishment
- VOD - Vertical On Board Delivery
- MTBF - Mean Time Between Failures
- MTTR - Mean Time to Repair
- CSAR - Combat Search and Rescue
- SWS - Special Warfare Support
- CV - Carrier
- KPPs - Key Performance Parameters

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --

(Ch-1) The VERTREP endurance requirement has changed from 2 hrs to 1.75 hrs due to revised analysis from developmental test. The current estimate has changed from 1.75 hrs to 1.85 hrs as a result of operational test values.

(Ch-2) The following requirements changed based on revised analysis. The VERTREP External requirement has changed from 8,000 to 7,500 lbs. The AMCM Hover Endurance has changed from 90 mins to 75 mins.

(Ch-3) Additional requirements in the currently revalidated mission areas were added as part of Milestone III ORD revalidation process, as stated in the Executive Summary. PM's current estimates for AMCM Block 2 Information Dissemination, AMCM Block 2 Information Integrity, HC Information Dissemination, HC Information Integrity and Armed Helo Quality of Service reflect the AFB objective as the requirement and method to test the requirement are undefined.

Note: A revision to the 15 August ORD is currently in process. A review of the Key Performance Parameters is being conducted to reduce the number to a more manageable level.

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	71.0	390.9	388.9
Procurement	2698.0	4879.2	4970.2
Flyaway	(2188.7)		(3648.3)
Non-Recurring Flyaway	(28.6)		(497.2)
Total Flyaway	(2217.3)		(4145.5)
Other Wpn System Costs	(7.2)		(7.5)
Other Support	(241.9)		(280.1)
Total Other Wpn Sys	(249.1)		(287.6)
Peculiar Support	(97.4)		(381.3)
Initial Spares	(134.2)		(155.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1998 Base-Year \$	<u>2769.0</u>	<u>5270.1</u>	<u>5359.1</u>
Escalation	385.0	823.7	673.1
Development (RDT&E)	(1.0)	(30.5)	(28.7)
Procurement	(384.0)	(793.2)	(644.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3154.0</u>	<u>6093.8</u>	<u>6032.2</u>

The Ancillary costs were mistakenly reported in Recurring Flyaway. These costs were administratively corrected and moved to Non-Recurring.

b. Quantity --

Development (RDT&E)	1	N/A	0
Procurement	<u>165</u>	<u>237</u>	<u>237</u>
Total	166	237	237

The Low Rate Initial Production (LRIP) is 37 aircraft which is 15% of the total procurement.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	JCR Baseline (NOV 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1998 BY\$)	5270.1	5359.1	
(2) Quantity	237	237	
(3) Unit Cost	22.237	22.612	+1.69
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	4879.2	4970.2	
(2) Quantity	237	237	
(3) Unit Cost	20.587	20.971	+1.87

13. Cost Variance Analysis:

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

	ROT&E	PROC	MILCON	TOTAL
Production Estimate	72.0	3082.0	-	3154.0
Previous Changes:				
Economic	+0.6	-74.5	-	-73.9
Quantity	-	+1156.0	-	+1156.0
Schedule	-	+0.9	-	+0.9
Engineering	+115.3	+243.3	-	+358.6
Estimating	+87.7	+553.8	-	+641.5
Other	-	-	-	-
Support	-	+150.4	-	+150.4
Subtotal	+203.6	+2029.9	-	+2233.5
Current Changes:				
Economic	-0.8	-108.2	-	-109.0
Quantity	-	-	-	-
Schedule	-	-1.1	-	-1.1
Engineering	+142.5	+176.7	-	+319.2
Estimating	+0.3	+184.4	-	+184.7
Other	-	-	-	-
Support	-	+250.9	-	+250.9
Subtotal	+142.0	+502.7	-	+644.7
Total Changes	+345.6	+2532.6	-	+2878.2
Current Estimate	417.6	5614.6	-	6032.2

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

Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	71.0	2698.0	-	2769.0
Previous Changes:				
Quantity	-	+927.2	-	+927.2
Schedule	-	-	-	-
Engineering	+106.1	-205.0	-	-94.9
Estimating	+83.9	-487.9	-	-404.0
Other	-	-	-	-
Support	-	+123.6	-	+123.6
Subtotal	+190.0	-1743.7	-	-1553.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+127.6	+151.7	-	+279.3
Estimating	+0.3	+156.4	-	+156.7
Other	-	-	-	-
Support	-	+220.4	-	+220.4
Subtotal	+127.9	+528.5	-	+656.4
Total Changes	+317.9	+2272.2	-	+2590.1
Current Estimate	388.9	4970.2	-	5359.1

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.8
Addition of Link 16 capability for Armed Helo. (Engineering)	+70.3	+78.2
Addition of RAMICS and OASIS integration & Mission Planning, and TCDL Test & Integration for AMCM. (Engineering)	+47.3	+52.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Addition of P3I capability to the AQS-20, OASIS, AMNS, and ALMDS missions for AMCM (Engineering)	+10.0	+11.9
RDT&E Subtotal	+127.9	+142.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-108.5
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Buy profile change resulting in shortening of profile by one year. (Schedule)	0.0	-1.1
Incorporation of Tactical Common Data Link (TCDL) into aircraft. (Engineering)	+35.9	+42.1

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Incorporation of Communication, Navigation, and Surveillance/Air Traffic Management. (Engineering)	+17.9	+20.8
Addition of Armed Helo, Fuel Tanks, and other minor aircraft Modifications. (Engineering)	+97.9	+113.6
Adjustment for Current and Prior Inflation. (Estimating)	+11.9	+12.7
Rephasing of AP due to Multiyear VI Contract and schedule quantity changes. (Estimating)	+3.5	0.0
Increase in Armed Helo Kits as well as rephasing of the AMCM and Armed Helo Kit quantities. (Estimating)	+37.2	-50.2
Change in estimating to reflect updated airframe modification costs for AMCM. (Estimating)	+103.8	+121.5
Adjustment for Current and Prior Inflation. (Support)	+3.5	+3.5
Change in Initial Spares (Support)	+60.0	+67.6
Increase in Peculiar Support for Trainers. (Support)	+140.1	+161.7
Change in Other Wpn System Costs due to shortened production profile. (Support)	-0.7	-0.9
Addition of Engineering and Logistics Support for AMCM and Armed Helo. (Support)	+17.5	+19.0
Procurement Subtotal	<u>+528.5</u>	<u>+502.7</u>

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate									PAUC
PAUC	Changes								PAUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Sp	Total	Cur Est
19.00	-0.772	-0.815	-0.001	+2.86	+3.49	--	+1.69	+6.45	25.45

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

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

Prod Est	PUC Changes							Total	PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt		
18.68	-0.771	-0.786	-0.001	-1.77	-3.11	--	-1.69	+5.01	23.69

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	APR 1998	N/A	JUL 1998
Milestone III	N/A	SEP 2000	N/A	APR 2002
IOC	N/A	DEC 2001	N/A	APR 2002
Total Cost	N/A	3,54.0	N/A	6032.2
Total Quantity	0	166	0	237
Prog Acq Unit Cost	N/A	19.0	N/A	25.5

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

a. Procurement -- MH-60S Prod Lot III:	Initial Contract Price		
	Target	Ceiling	Qty
Sikorsky Aircraft Company, Stratford CT DAAJ09-97-C-0005, FFP Award: June 28, 2001 Definitized: June 28, 2001	\$170.0	N/A	15

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$170.0	N/A	15	\$170.0	\$170.0

Explanation of Change:

None.

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

Contract Comments:

This contract is more than 90% complete and will no longer be reported.

15. Contract Information (Cont'd):

MH-60S Prod MY Contract:  
 Sikorsky Aircraft Company, Stratford CT  
 DAAH23-02-C-0006, FFP  
 Award: September 26, 2002  
 Definitized: September 26, 2002

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$906.4	N/A	82

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$906.4	N/A	82	\$906.4	\$906.4

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>	Prior Years (FY97-03)	Budget Year (FY04)	Budget Year (FY05)	Balance To Complete (FY06-12)	<u>Total</u>
RDT&E	221.7	59.1	81.7	55.1	417.6
Procurement	1488.1	445.4	422.1	3259.0	5614.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
<b>Total</b>	<b>1709.8</b>	<b>504.5</b>	<b>503.8</b>	<b>3314.1</b>	<b>6032.2</b>

b. Annual Summary -- MH-60S

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

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				6.9	6.9
1998				29.5	29.7
1999				36.2	36.8
2000				41.0	42.3
2001				29.4	30.8
2002				48.1	51.3
2003				22.2	23.9
2004				54.0	59.1

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

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

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				73.5	81.7
2006				30.7	34.7
2007				7.4	8.5
2008				5.0	5.9
2009				5.0	6.0
Subtotal				388.9	417.6

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	1	11.1	16.0	29.2	29.7
1999	5		131.0	133.6	137.7
2000	16		333.4	346.5	361.6
2001	15	7.5	202.7	303.0	319.4
2002	13	8.9	190.2	256.5	273.3
2003	15	42.7	245.6	339.2	366.4
2004	13	51.2	239.3	405.9	445.4
2005	15	43.1	258.3	378.5	422.1
2006	26	38.1	454.3	548.8	622.5
2007	30	81.6	463.3	605.6	699.2
2008	30	48.9	536.0	586.9	689.7
2009	40	157.5	442.2	750.8	898.3
2010	18	6.6	136.0	244.3	297.5
2011				23.6	25.5
2012				28.8	26.3
Subtotal	237	497.2	3648.3	4970.2	5614.6

The Ancillary costs were mistakenly reported in Recurring Flyaway. These costs were administratively corrected and moved to Non-Recurring.

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002					
2003					

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

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004					
2005					
2006					
2007					
2008					
2009					
2010					
Subtotal					
Grand Total	237	497.2	3648.3	5359.1	6032.2

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	47	47

Percent Total Program Quantities Delivered: 19.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 888.5

Percent Total Program Expended: 14.2%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --  
Assumptions and Ground Rules --

A life cycle cost estimate for the MH-60S program was required to provide information for the Milestone II acquisition decision to pursue low rate initial production. An update to the MSTI estimate provides the Operating and Support cost to support two hundred thirty seven MH-60S aircraft, with an operational service life period covering 30 years. The estimated costs do not include the AMCM or Armed Helo Missions. The estimate utilizes the Office of the Secretary of Defense Cost Analysis Improvement Group (OSD CAIG) Work Breakdown Structure for Operating and Support of Aircraft Systems. Estimating relationships were established from analogy to operating H-60 aircraft in the U.S. Navy inventory (HH-60H, SH-60B, SH-60F) and/or to the current Legacy aircraft (H-1, H-3, H-46) performing the missions to be assumed by the MH-60S.

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

This estimate is based on average annual cost per squadron for a 10 plane squadron. The life cycle cost estimate is a working estimate and will be updated for MS111.

Additional Notes: The AMCM and Armed Helo missions to the MH-60S will result in increased costs but no comparable growth in aircraft inventory for O&S estimates. Updated O&S estimates for the AMCM mission will be developed in support of AMCM IPR #3 which is currently scheduled for April 2005. Updated O&S estimates for the Armed Helo mission will be developed in support of Armed Helo IPR #2 scheduled for September 2005.

b. Costs -- (FY 1998 Constant (Base-Year) Dollars in Millions)

Cost Element	MH-60S	HH-60H
	Average Annual Cost 10 A/C Per Squadron	Average Annual Cost 10 A/C Per Squadron
Mission Pay & Allowances	12.5	11.7
Unit Level Consumption	5.6	6.3
Intermediate Maintenance	1.6	1.3
Depot Maintenance	1.2	2.6
Contractor Support	0.0	0.0
Sustaining Support	2.6	4.4
Indirect Costs	4.8	4.0
Total	28.3	30.3

Total O&S Cost	MH-60S	HH-60H
BY\$ (In Millions)	20206.0	21579.0
FY\$ (In Millions)	33927.0	36584.0

Report Creation Date: 04/01/2003 10:48:25 AM

# DoD-5 JTRS WAVEFORM

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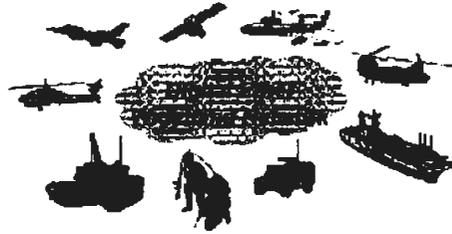
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

**PROGRAM:** JTRS Waveform

**AS OF DATE:** December 31, 2002

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**1. Designation and Nomenclature (Popular Name):** Joint Tactical Radio System (JTRS) Waveform Program

**2. DoD Component:** Army

Joint Participants:  
Navy, Air Force, USMC

**3. Responsible Office and Telephone Number:**

JTRS Joint Program Office (JPO)	Col Steven MacLaird (USAF)
1777 North Kent Street, Suite 2000	Assigned: June 3, 2001
Rosslyn, VA 22209-2110	DSN 425-1334; COMM (703) 588-1334
	steven.maclaird@hqda.army.mil

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

RDT&E:  
PE 0604280A Project D162  
PE 0604805A Project D615 (Shared)

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MAR 17 2003 9

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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JTRS Waveform, December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated June 24, 2002.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 24, 2002.

**6. Mission and Description:**

The mission of the Joint Tactical Radio System (JTRS) Program is to provide software programmable, reconfigurable, digital radio systems to meet Joint Vision 2020 requirements for interoperability, flexibility, adaptability, and information exchange.

JTRS is the Department of Defense family of common software-defined radios, which will form the foundation of wireless communications for JV2010/2020. JTRS will eventually replace all existing tactical radios through the Services' migration plans and introduce new capabilities to the warfighter. The JTRS Program is built around a common, open Software Communications Architecture (SCA), which allows common software waveform applications to be implemented across the family of radios. Individual JTRS set efforts will be based on the convergence or "Clustering" of requirements within the Services' migration plans. Currently, Clusters 1, 2, 3, and 4 have been identified.

Cluster 1 will meet Army ground requirements to continue force digitization efforts, Air Force Tactical Air Control Party (TACP) requirements, and airborne digitization efforts for the Army helicopter fleet. Cluster 1 will also meet Marine Corps requirements for combat operations centers and mobile field users. Cluster 2 will meet handheld requirements. Cluster 3 will cover maritime/fixed site communications requirements. Cluster 4 will provide an airborne capability focused on the demands of the fighter, mobility, special operations, and air surveillance environments. Space communication, backpack, and air defense requirements will be addressed in future Clusters or additions to existing Clusters.

The JTRS Waveform Program will define, develop, validate, and evolve the JTRS SCA; acquire waveform software applications; acquire cryptographic algorithms; and perform architecture compliance testing of both Joint Tactical Radio (JTR) sets, cryptology, and waveform software.

**7. Executive Summary:**

The JTRS MS B Defense Acquisition Board (DAB) review was held June 3, 2002. The DAB issued an Acquisition Decision Memorandum (ADM) dated June 24, 2002, which approved both the JTRS Cluster 1 and JTRS Waveform Programs to proceed into system development and demonstration (SDD) and authorized awarding the Cluster 1 and JPO contracts. The ADM also authorized Service leads for Clusters 2, 3, and 4. The Secretary of Defense added \$37M RDT&E for the WARNET program.

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

Cluster 1 Contract: The Cluster 1 contract was awarded to The Boeing Company as the Prime System Contractor on June 24, 2002. Program Manager Tactical Radio Communications System (PM TRCS) will acquire on the Cluster 1 contract the ground Tactical Operations Center (TOC), the airborne (rotary wing), and the Tactical Air Control Party (TACP) radio sets. The JPO will acquire the first 21 waveforms using the Cluster 1 SDD contract.

The JPO, PM TRCS, TACP, and Boeing successfully completed the Cluster 1 Program Integrated Baseline Review (IBR) on November 7, 2002. The IBR clearly showed the development challenges facing the Government and Boeing team. The Cluster 1 Preliminary Design Review (PDR) program milestone is separated into four reviews: Systems, Software (Legacy Waveforms), Hardware, and Wideband Networking Waveform (WNW). The Systems PDR was successfully held November 11-13, 2002.

The Systems PDR identified a significant remaining waveform documentation effort to be accomplished by Boeing and their subcontractors, Rockwell and BAE, to complete all four PDRs. As a result, PM TRCS and the JPO agreed that the CDR planned for April 2003 will be moved to July 2003. Impacts to the Cluster 1 waveform deliveries are being assessed against the Cluster 1 Early Operational Assessment (EOA) planned for April 2004 to June 2004.

The JTRS Waveform PM predicts that the UHF Demand Assigned Multiple Access Satellite Communications (181/182/183) waveform development will slip by 13 months (from September 2004 to Oct 2005). UHF DAMA SATCOM waveform technical complexity is driving the development schedule.

Single Channel Ground and Airborne Radio System (SINCGARS) Enhanced System Improvement Program (ESIP) Contract: The SINCGARS ESIP waveform development contract was awarded to Assurance Technology Corporation (ATC) on September 27, 2002. The SINCGARS ESIP PDR is planned for March 2003. The SINCGARS ESIP CDR is projected for May 2003. The JTRS Waveform PM believes the SINCGARS ESIP waveform will be delivered 8 months earlier than predicted (from August 2004 to December 2003). This early waveform delivery is a result of earlier JTRS Step 2B prototyping and risk reduction efforts.

Cryptographic Algorithms Contracts: The JTRS Waveform PM is aware of Boeing's concern that cryptographic algorithms are on the Cluster 1 contract's critical path. The AIM contract was awarded on December 12, 2002; and the SIERRA contract was awarded 18 January 2003.

Remaining Waveform Contracts: Contracts were awarded on December 12, 2002 for the Collection of Broadcast from Remote Assets, Mode S, and the APCO 25 Waveforms.

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
MS B	JUN 2002	JUN 2002	JUN 2002
JTeL IOC	AUG 2003	AUG 2003	AUG 2003
SINGARS ESIP*	AUG 2004	AUG 2004	DEC 2003 (Ch-1)
HAVE QUICK II*	AUG 2004	AUG 2004	AUG 2004
UHF DAMA SATCOM (181/182/183)*	SEP 2004	SEP 2004	OCT 2005 (Ch-2)
EPLRS*	MAR 2005	MAR 2005	MAR 2005
WNW*	OCT 2005	OCT 2005	OCT 2005
Link 16	OCT 2005	OCT 2005	OCT 2005
MS C (PDSS)	OCT 2006	OCT 2006	OCT 2006

\* Denotes Key Performance Parameter (KPP) waveforms based on the April 24, 2002 JTRS ORD (Revision 2.3).

JTeL IOC: JTeL IOC is planned for August 2003. The JTRS Technology Laboratory (JTeL) will attain an initial operating capability (IOC) when the JTeL can demonstrate the following evaluation/assessment capabilities for first waveform and radio set: JTRS Software Communication Architecture compliance testing, specification performance testing, Joint Interoperability Test Command (JITC) Interoperability Lab Testing and Security. These JTRS Testing processes are described in the JTRS Joint TEMP.

MS C (PDSS): The JTRS Waveform Program will enter Post Deployment Software

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

Support (PDSS) when JTeL IOC has been met and all the threshold waveforms are developed, assessed, and certified IAW the JTRS Joint Test Evaluation Test Plan (TEMP). Waveforms are delivered when they have been certified and available in the JTRS Waveform Library. Waveform Library requirements are based on the approved JTRS Operational Requirements Document (Version 2.3, dated April 24, 2002). Changes in subsequent waveform development efforts could change the Milestone C PDSS.

Acronyms:

- DAMA - Demand Assigned Multiple Access
- EPLRS - Enhanced Position Location Reporting System
- ESIP - Enhanced System Improvement Program
- JITC - Joint Interoperability Test Command
- JTeL - JTRS Technology Laboratory
- PDSS - Post Deployment Software Support
- SATCOM - Satellite Communications
- SINGARS - Single Channel Ground and Airborne Radio System
- TEMP - Test Evaluation Master Plan
- UHF - Ultra High Frequency
- WNW - Wideband Networking Waveform

b. Current Change Explanations --

(Ch-1) The JTRS Waveform PM believes the SINGARS ESIP waveform will be delivered 8 months earlier than predicted (from August 04 2004 to December 2003). This early waveform delivery is a result of earlier Step 2B prototyping and risk reduction efforts.

(Ch-2) The JTRS Waveform PM predicts that the UHF DAMA SATCOM (181/182/183) waveform development will slip by 13 months (from September 2004 to Oct 2005). UHF DAMA SATCOM waveform technical complexity is driving the development schedule.

**10. Performance Characteristics:**

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
SINGARS ESIP*	30-88MHz 25KHz 16Kbps	30-88MHz / 30-88MHz 25KHz / 25KHz 16Kbps / 16Kbps	TBD	30-88MHz 25KHz 16Kbps
HAVE QUICK II*	225-400 MHz 25KHz 16Kbps	225-400 / 225-400 MHz / MHz 25KHz / 25KHz 16Kbps / 16Kbps	TBD	225-400 MHz 25KHz 16Kbps
UHF DAMA SATCOM (181/182/183)*	225-400 MHz 5 and 25KHz	225-400 / 225-400 MHz / MHz 5 and / 5 and 25KHz / 25KHz	TBD	225-400 MHz 5 and 25KHz

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>
EPLRS*	64Kbps 420-450 MHz 3MHz (57Kbps VHSIC SIP 114Kbps VECP)	64Kbps / 64Kbps 420-450 / 420-450 MHz / MHz 3MHz / 3MHz (57Kbps / (57Kbps VHSIC / VHSIC SIP / SIP 114Kbps / 114Kbps VECP) /	TBD	64Kbps 420-450 MHz 3MHz (57Kbps VHSIC SIP 114Kbps VECP)
WNW*	2M-2GHz Scalable BW, BPS	2M-2GHz / 2M-2GHz Scalable/ Scalable BW, BPS / BW, BPS	TBD	2M-2GHz Scalable BW, BPS
Link 16	(960-121 5MHz) 3MHz 118/236 Kbps w/FEC	(960-121/ (960-121 5MHz) / 5MHz) 3MHz / 3MHz 118/236 / 118/236 Kbps / Kbps w/FEC / w/FEC	TBD	(960-121 5MHz) 3MHz 118/236 Kbps w/FEC

Note: \* Denotes Key Performance Parameter (KPP) waveforms based on the April 24, 2002 JTRS ORD (Revision 2.3).

Acronyms:

- BPS - Bits Per Second
- BW - Bandwidth
- FEC - Forward Error Correction
- SIP - System Improvement Program
- VECP - Value Engineering Change Proposal
- VHSIC - Very High Speed Integrated Circuit

b. Current Change Explanations -- None

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JTRS Waveform, December 31, 2002

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	812.9	812.9	796.3
Procurement	0.0	0.0	0.0
Total Sailaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(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 2002 Base-Year \$	<u>812.9</u>	<u>812.9</u>	<u>796.3</u>
Escalation	101.5	101.5	148.4
Development (RDT&E)	(101.5)	(101.5)	(148.4)
Procurement	(0.0)	(0.0)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>914.4</u>	<u>914.4</u>	<u>944.7</u>

Note: The Secretary of Defense added \$25M RDT&E in FY04 and \$12M RDT&E in FY05 for the WARNET program.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	0	0	0

Note: The JTRS Waveform Program is a Research and Development program only (i.e., no procurement, and operations and support), which will develop and maintain waveform software applications, cryptographic algorithms, and the software communications architecture (SCA).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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JTRS Waveform, December 31, 2002

12. Unit Cost Summary:

	UCR Baseline (JUN 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	812.9	796.3	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

Note: The JTRS Waveform Program is a Research and Development program only (i.e., no procurement, and operations and support), which will develop and maintain waveform software applications, cryptographic algorithms, and the software communications architecture (SCA).

The Secretary of Defense added \$25M RDT&E in FY04 and \$12M RDT&E in FY05 for the WARNET program.

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JTRS Waveform, December 31, 2002

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	914.4	-	-	914.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	+64.4	-	-	+64.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+37.0	-	-	+37.0
Estimating	-71.1	-	-	-71.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+30.3	-	-	+30.3
Total Changes	+30.3	-	-	+30.3
Current Estimate	944.7	-	-	944.7

Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	812.9	-	-	812.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+34.1	-	-	+34.1
Estimating	-50.7	-	-	-50.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-16.6	-	-	-16.6
Total Changes	-16.6	-	-	-16.6
Current Estimate	796.3	-	-	796.3

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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>
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+80.7
	Economic adjustment for negative program change. (Economic)	N/A	-16.3
	Add \$37M WARNET (Engineering)	+34.1	+37.0
	Adjustment for Current and Prior Inflation. (Estimating)	+8.1	+5.9
	Align JCP to CAIG (Estimating)	-58.8	-77.0
	RDT&E Subtotal	<u>-16.6</u>	<u>+30.3</u>

Note: The JTRS Waveform Program budget was realigned after the Service Joint Cost Position (JCP) was approved. This realignment primarily changed budget estimates in FY02 and FY03 changing the total Base Year (BY) program cost from \$812.9M to \$796.3M (BY 2002) producing a -\$16.6M difference.

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	
N/A	--	--	--	--	--	--	--	--	N/A

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	N/A

The JTRS Waveform Program is a Research and Development program only (i.e., no procurement, or operations and support), which will develop and maintain waveform software applications, cryptographic algorithms, and the software communications architecture (SCA). Each individual Cluster program will field JTRS sets to meet a Cluster IOC.

MS C is the MS C (PDSS) described in Section 9. Post Deployment Software

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

Support (PDSS) is the phase of the JTRS Waveform Program when the JTeL IOC has been met and all the threshold waveforms are developed, assessed, and certified IAW the JTRS Joint TEMP.

**c. Schedule, Cost, and Quantity History**

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	JUN 2002	N/A	JUN 2002
Milestone C	N/A	OCT 2006	N/A	OCT 2006
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	914.4	N/A	944.7
Total Quantity	N/A	0	0	0
Prog Acq Unit Cost	N/A	0.0	N/A	0.0

The JTRS Waveform Program is a Research and Development program only (i.e., no procurement, or operations and support), which will develop and maintain waveform software applications, cryptographic algorithms, and the software communications architecture (SCA). Each individual Cluster program will field JTRS sets to meet a Cluster IOC.

MS C is the MS C (PDSS) described in Section 9. Post Deployment Software Support (PDSS) is the phase of the JTRS Waveform Program when the JTeL IOC has been met and all the threshold waveforms are developed, assessed, and certified IAW the JTRS Joint TEMP.

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

The JTRS Waveform Program manages multiple System Demonstration Development (SDD) contracts. All of these SDD contracts are under \$40 million, with exception of the PM TRCS Cluster 1 contract which develops the first 21 waveforms.

a. RDT&E -- JTRS Cluster 1: The Boeing Company, Anaheim, CA DAAB07-02-C-C403, CPAF Award: June 24, 2002 Definitized: June 24, 2002	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$152.1	\$152.1	0

Current Contract Price	Estimated Price At Completion		
<u>Target</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$155.7	\$138.9	\$148.2	<u>Qty</u> 0
<u>Ceiling</u>			
\$164.9			

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/26/02)	\$-1.4	\$-3.1
Net Change	\$-1.4	\$-3.1

Explanation of Change:

The reported cost and schedule variances are only for the waveform development portion of the Cluster 1 SDD contract. These variances are due to slow contractor ramp-up and delays in generating waveform requirements and specification documentation to support the waveform software design process. JTRS JPO and contractor management attention is focused on this development process.

Contract Comments:

The Initial Contract Ceiling Price for the JTRS Waveform Program reported in the September 2002 SAR was estimated to be \$156.8M. After a further analysis by the JTRS JPO and PM TRCS of the allocation of work breakdown structure and management costs, the JTRS Waveform Program portion of the Cluster 1 Contract Ceiling Price established to be \$152.1M. The Ceiling Price of \$152.1M is based on a Negotiated Contract Price of \$135.5M with a \$4.1M Base Fee, and a \$12.6M Award Fee. This price represents the development cost of the first 21 waveforms being acquired under the Cluster 1 system development and demonstration (SDD) contract with Boeing.

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

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

<u>Appropriation</u>	<u>Prior Years (FY98-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-26)</u>	<u>Total</u>
RDT&E	273.3	134.7	91.6	445.1	944.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	273.3	134.7	91.6	445.1	944.7

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JTRS Waveform, December 31, 2002

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

b. Annual Summary -- Waveforms

Appropriation: 0001 - Research & Development, Army, Other

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				12.9	11.0
1999				15.3	13.4
2000				38.9	35.5
2001				63.4	59.8
2002				90.7	90.7
2003				60.7	62.9
2004				125.5	134.7
2005				82.6	91.6
2006				54.8	62.8
2007				47.2	55.9
2008				23.6	28.8
2009				21.6	27.3
2010				10.4	13.6
2011				10.3	13.9
2012				10.1	14.1
2013				10.0	14.4
2014				9.9	14.7
2015				9.8	15.0
2016				9.6	15.2
2017				9.4	15.5
2018				9.3	15.8
2019				9.2	16.1
2020				9.1	16.4
2021				9.0	16.8
2022				8.8	17.1
2023				8.7	17.4
2024				8.6	17.7
2025				8.5	18.1
2026				8.4	18.5
Subtotal				796.3	944.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				796.3	944.7

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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: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 139.4

Percent Total Program Expended: 14.8%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The JTRS Waveform Program is a Research and Development program only (i.e., no procurement, or operations and support), which will develop and maintain waveform software applications, cryptographic algorithms, and the software communications architecture (SCA). Each individual Cluster program will field JTRS sets to meet a Cluster IOC.

b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Thousands)

Cost Element	Waveforms	Antecedent System
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

Total O&S Cost	Waveforms	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 3/14/2003 8:23:43 AM

DoD-2 CHEM DEMIL

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

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Chemical Demilitarization Program

2. DoD Component: Army

3. Responsible Office and Telephone Number:

AMSCM-D	Mr. Michael A. Parker
APG, MD 21010-4005	Assigned: February 18, 2003
	DSN 584-4364; COMM 410-436-4364
	maparker@sbccom-bihd.apgea.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 778117000

PROCUREMENT:  
APPN 0390 ICN APPN (DoD)

MILCON:  
PE 0708007A  
PE 0708007D

O&M:  
PE 778137000

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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03-C-0573

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Chem Demil, December 31, 2002

**5. References:**

Chem Demil Program

SAR Baseline (Production Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 31, 1998.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated April 2, 2003.

Assembled Chem Wpns Asses

SAR Baseline (Production Estimate):

DAE Approved APR dated March 31, 1998.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated April 2, 2003.

**6. Mission and Description:**

CHEMICAL DEMILITARIZATION PROGRAM (CDP):

The CDP consists of the Chemical Stockpile Disposal Project (CSDP), the Alternative Technologies and Approaches Project (ATAP), and the Non-Stockpile Chemical Materiel Product (NSCMP). The CDP also includes funding for the Chemical Stockpile Emergency Preparedness Program (CSEPP). The current APB dated April 2, 2003, contains two end items that reflect the effort to eliminate all declared U.S. lethal chemical weapons materiel: Chemical Demilitarization Program (CDP) and Assembled Chemical Weapons Assessment (ACWA). Under this structure, the CSDP, the ATAP, the NSCMP and CSEPP funding are reported as elements of the Program's CDP end item.

Chemical Stockpile Disposal Project (CSDP)

The CSDP mission is to demilitarize the unitary stockpile of lethal chemical agents and munitions stored in the continental United States (CONUS) and, formerly, at Johnston Island (JI) in the Pacific (all accountable quantities of chemical agent at JI have been destroyed). The CSDP uses a reverse assembly process to separate the components of the chemical munitions and storage containers, followed by incineration of each component.

Alternative Technologies and Approaches Project (ATAP)

ATAP, established in 1994, is responsible for identifying viable alternatives to incineration, planning for implementation of the requirements, and managing the activities of the various organizations involved in accomplishing this

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

mission. On January 17, 1997, the DAE authorized the U.S. Army to prepare an environmental impact analysis (National Environmental Policy Act [NEPA] documentation) of the proposal to construct pilot plants to demonstrate the neutralization (hydrolysis) process alternative technologies, followed by either on site or off site post-treatment. Subsequently, the DAE issued Acquisition Decision Memoranda (ADM) on February 1, 2002, and May 11, 2002, mandating accelerated neutralization of bulk mustard agent (HD) at Aberdeen Proving Ground (APG), MD, and bulk nerve agent VX at Newport Chemical Depot (NCCD), IN, respectively.

**Non-Stockpile Chemical Materiel Product (NSCMP)**

The NSCMP was established as a result of House Appropriations Report 101-822, which accompanied the fiscal year (FY) 1991 Department of Defense Appropriations Act. NSCMP activities are divided into five categories: binary chemical warfare materiel (CWM) disposal, destruction of former U.S. chemical weapons production facilities, miscellaneous CWM disposal, recovered CWM disposal, and research, development, and acquisition of disposal systems. NSCMP also provides storage and transportation, planning, and disposal support to remediation activities being conducted at active Department of Defense (DoD) installations and at formerly used defense sites (FUDS).

**Chemical Stockpile Emergency Preparedness Program (CSEPP)**

The CDP includes funding for CSEPP. CSEPP is an effort that is complementary to the CSDP, the ATAP, and Program Manager for ACWA (PMACWA) 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 unitary stockpile. The U.S. Army and the Federal Emergency Management Agency are assisting the eight CONUS chemical stockpile storage locations and adjacent communities in 10 states to enhance their chemical agent emergency response capabilities.

**ASSEMBLED CHEMICAL WEAPONS ASSESSMENT (ACWA):**

The PMACWA is performing a portion of the chemical weapons materiel elimination mission. In 1996, the Congress and the President, responding to public concerns about the safe destruction of chemical weapons, established and later expanded the ACWA Program (Public Laws 104-208, 105-261, and 106-79). Through ACWA, the U.S. Department of Defense was charged with identifying and demonstrating two or more alternative technologies to incineration for the destruction of assembled chemical weapons. The DAE has signed ADMs assigning PMACWA the responsibility for developing neutralization technologies to eliminate the chemical weapons stockpiles located at Pueblo, CO and Blue Grass, KY (July 16, 2002, and February 3, 2003, respectively). The portion of the chemical weapons materiel elimination mission that PMACWA performs is being reported under the ACWA end item.

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Chem Demil, December 31, 2002

## 7. Executive Summary:

This SAR details impacts to cost, schedule, and performance since last reported in the December 2001 SAR. This report provides the status of the CDP and ACWA as of the submission date of the report, December 31, 2002, and reflects the FY 2004 President's Budget. Where possible, significant events that have occurred since December 31, 2002, are included in order to provide the most current and timely information available.

On February 18, 2003, the Secretary of the Army transferred Headquarters, Department of the Army-level responsibility for the Chemical Demilitarization Program from the Assistant Secretary of the Army (Installations and Environment) to the Assistant Secretary of the Army (Acquisition, Logistics and Technology). In conjunction with this transfer, a provisional organization, the U.S. Chemical Materials Agency (CMA), was established under the U.S. Army Materiel Command. The CMA's mission is to execute chemical demilitarization plant construction, operation, and closure, as well as chemical weapons storage. Additionally, actions were initiated to formally realign the Program Manager for Chemical Demilitarization (PMCD) under the CMA (Provisional), and to redesignate PMCD as Program Manager, Elimination of Chemical Weapons (PM ECW).

This report incorporates a revised APB that was approved by the DAB on April 2, 2003. The new APB divides the program into two end items, Chemical Demilitarization Program and Assembled Chemical Weapons Assessment, which reflects the current management structure of the program. Also, the unit of measure for the revised APB will be measured for each end item by tons of chemical agent destroyed, versus the number of sites and mobile systems that was used in prior SARs.

PM ECW (formerly, PMCD) continues to progress toward the elimination of U.S. chemical weapons and materiel, while complying with Chemical Weapons Convention (CWC) requirements.

A draft APB was prepared for the September 6, 2001 Defense Acquisition Board (DAB); however, the events of September 11, 2001, placed emphasis on accelerated destruction of the stockpile. On February 1, 2002, an ADM was signed that replaced the Milestone III Decision that had been required for the disposal facility located at APG, MD, and a tailored "Operations Readiness Review" process has been developed and is being used to ensure that the facility and operators are ready to begin agent destruction operations. On May 2, 2002, the DAE submitted a Nunn-McCurdy breach certification to Congress for the Chemical Demilitarization Program as required by Section 2433 of Title 10 United States Code. The DAE also issued an ADM that directed implementation of several actions designed to enhance program oversight and ensure that costs and management are more closely monitored. On May 11, 2002, the DAE issued an ADM that replaced the Milestone III Decision previously required for the Newport, IN, site. The DAE authorized the Army to proceed immediately with the construction of an accelerated chemical agent neutralization facility employing a caustic neutralization process at NECD. Construction and operation of this facility must comply with all existing regulatory requirements and those yet to be negotiated with environmental regulators. As a result of the acceleration

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

efforts, a revised APB was initially drafted reflecting current estimates of cost and schedule that were updated to reflect Cost Analysis Improvement Group (CAIG) estimates for all sites. This results in a total Life Cycle Cost Estimate (LCC) for the new APB of approximately \$24 billion. After all reviews were completed, the document was forwarded through Headquarters, Department of the Army (HQDA), to the DAE, who approved and signed it on April 2, 2003.

Currently, the program is being managed against the April 2, 2003, APB. The program is also taking advantage of opportunities to reduce costs and accelerate schedules whenever the resulting changes do not compromise protection to the public, workers, and the environment. Program improvements that enhance safety and help to control costs are routinely incorporated.

**CHEMICAL STOCKPILE DISPOSAL PROJECT (CSDP)**

The CSDP received a national Toxic Substances Control Act permit in June 2002. This is a significant achievement, as this permit is required to begin destruction of M55 rockets in the Anniston, AL; Umatilla, OR; and Pine Bluff, AR, stockpiles as well as to complete the destruction of the VX M55 rockets at Desert Chemical Depot (DCD), UT.

As of March 30, 2003, Johnston Atoll Chemical Agent Disposal System and Tooele Chemical Agent Disposal Facility have destroyed 8,083 (6,501) tons of chemical agent and 1,341,890 (1,116,265) munitions, representing 25.6 (21.7) percent of the U.S. chemical agent stockpile (measured in tons of chemical agent). These destruction data reflect statistics for both the CSDP original stockpile and the CSDP stockpile declared at entry-into-force (EIF) of the CWC (April 1997). EIF data are shown in parentheses.

**Johnston Atoll Chemical Agent Disposal System (JACADS)**

All accountable quantities of chemical agent at JACADS have been destroyed. Decontamination and dismantling of systems, structures, and components of the demilitarization plant continue.

On May 2, 2002, JACADS completed the contaminated charcoal campaign, utilizing the Continuous Monitoring System (CMS), 2 weeks ahead of the program schedule goal. This successful approach will be used for the disposal of agent-contaminated charcoal at all baseline CSDP facilities, subject to approval by state environmental regulators. JACADS also completed processing of the Chemical Agent Identification Sets (CAIS) in July 2002.

JACADS experienced an Automatic Continuous Air Monitoring System (ACAMS) alarm in the Metal Parts Furnace (MPF) Discharge Airlock on August 12, 2002. The waste feed stream, consisting of sludge, was loaded into the Waste Incineration Container improperly, resulting in some of the waste not meeting specified decontamination requirements. The alarm was triggered by the presence of agent in secondary waste that had been processed through the MPF. Depot Area Air Monitoring System (DAAMS) tube analysis provided analytical evidence that the substance was chemical agent VX. Following Environmental Protection Agency

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

(EPA), Region IX, and Project Manager for Chemical Stockpile Disposal (PMCS) approval, processing of certain types of secondary waste resumed on August 31, 2002. Approval to resume processing of all types of secondary waste was granted on January 21, 2003.

The EPA, Region IX, granted approval for the closure modification to the JACADS Resource Conservation and Recovery Act (RCRA) permit on September 4, 2002. This is a significant milestone, as it establishes the final major permit agreement between the Army and the EPA for JACADS closure.

On September 18, 2002, JACADS achieved 1 million man-hours without sustaining a lost-day-away-from-work incident.

### Tooele Chemical Agent Disposal Facility (TOCDF)

On March 15, 2002, GB agent destruction was completed at TOCDF, when the last previously-drained GB bulk container exited the MPF. At that time, the complete destruction of the GB stockpile at DCD, UT, represented destruction of 44 percent of the DCD stockpile.

At 0824 hours (Mountain Daylight Time) on July 15, 2002, the TOCDF ACAMS in the Liquid Incinerator (LIC)-2 primary room alarmed for GB. The DAAMS confirmed the presence of agent. At the time of the alarm, two personnel wearing industrial-type respirators were in the room. The workers were replacing a valve on the LIC-2 air purge line. There were also two personnel in the LIC-2 secondary room, and the door between the rooms was open. The ventilation system was working as designed. The two personnel that were in the LIC-2 secondary room were immediately evacuated to the medical clinic. The two personnel in the primary room evacuated to the secondary room and donned their M40 masks. After replacing their coveralls and undergoing monitoring, the two individuals were taken to the medical clinic. After confirming that the two workers from the LIC-2 secondary room were not contaminated, the workers were evaluated for nerve agent symptoms and monitored for several hours. When the two workers who were replacing the air valve arrived at the medical clinic, the decontamination vestibule monitoring system alarmed for GB. The two workers in the airlock underwent decontamination and were moved into the clinic for observation. Monitoring along the egress route (from the LIC-2 to the medical clinic) found no contamination. Three of the workers exhibited no symptoms of exposure. One of the workers who had been working on the air valve (in the LIC-2 primary room) had pinpoint pupils and depressed cholinesterase activity (greater than 25 percent), both symptoms of nerve agent exposure. After being observed for several hours, and in accordance with procedures contained in Department of the Army Pamphlet 40-8, Occupational Health Guidelines for the Evaluation and Control of Occupational Exposure to Nerve Agents GA, GB, GD, and VX, the workers were released. The exposed worker was placed on restricted duty (not allowed in a potential agent environment) until he had been asymptomatic for 1 week and his cholinesterase levels were determined to be in the normal range.

The DCD Emergency Operations Center was promptly notified of the event. The

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

BCD Commander classified it as a Category II limited area chemical event. Further testing has verified that the release was limited to the LIC-2 work place, although trace quantities of agent may have been released to the atmosphere during the period when workers were transferred to the medical facility.

TOCDF agent destruction operations resumed on March 28, 2003 (operations had been on hold since the July 15, 2002 exposure incident). Prior to resumption of processing, TOCDF Systems Contractor (SC) personnel implemented safety enhancements while onsite teams from the Office of the Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health) (DASA (ESOH)), and EG&G, reviewed progress in verifying and validating corrective action implementation and site readiness. Before resuming processing, EG&G completed an Operational Readiness Review (ORR), and closed out all Category I findings. Final corrective actions were, validated, and verified by PM ECW, CMA (Provisional), and the DASA (ESOH). All required notifications and briefings were provided, necessary approvals were received, and a memorandum granting authority to begin VX processing was issued by the Director, CMA (Provisional).

### Anniston Chemical Agent Disposal Facility (ANCDF)

Construction of ANCDF was officially completed on June 8, 2001. On June 12, 2002, ANCDF began the final phase of systemization in preparation for the start of operations. On July 8, 2002, ANCDF achieved 3 million man-hours without sustaining a lost-time-away-from-work incident. On July 17, 2002, attorneys for the Governor of Alabama withdrew a temporary restraining order to stop start up operations at ANCDF. A lawsuit (originally filed by the Governor on February 14, 2002) was also withdrawn. The MPF Surrogate Trial Burn (STB) was conducted at ANCDF on November 19, 2002, and approval of the Deactivation Furnace System (DFS) STB report was received from the Alabama Department of Environmental Management (ADEM) on October 31, 2002. ADEM approval of the LIC STB low-temperature retest addendum report was received on December 24, 2002.

Two Operational In-Process Reviews (OIPRs) were held. The first OIPR was completed in December 2001. The first part of OIPR 2, the ANCDF Integrated Operations Demonstration (IOD), was completed in January 2003. The second part of OIPR 2 was a decision briefing held on January 30, 2003, that addressed the results of the IOD, closed out issues remaining from a December 2002 update briefing, and gained Test Integrated Product Team concurrence to begin processing M55 GB rockets at ANCDF.

Multiple factors affect the Army's determination of the start date for ANCDF chemical agent operations. Information to Members of Congress (IMC) will be submitted 30 days prior to start of operations, informing Congress of the start date for agent operations. The Office of the Secretary of Defense (OSD) notified the Organisation for the Prohibition of Chemical Weapons (OPCW) that the start of operations would be delayed.

Although work continues at the ANCDF, unresolved community concerns about

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

emergency preparedness continue to delay agent destruction with costs accruing at a rate of \$300 thousand per day. Continued work force training and other preparations mitigate this to some degree, but negative financial and schedule impacts remain significant.

The Chemical Weapons Working Group and associated groups filed a lawsuit on November 19, 2002, that, if successful, could result in an injunction to stop work and/or a revocation of the RCRA permit for ANCDF.

### Umatilla Chemical Agent Disposal Facility (UMCDF)

The State of Oregon's CSEPP governing board voted unanimously on May 14, 2002, to certify that the UMCDF CSEPP is ready and forwarded its report to the Governor of Oregon. On June 12, 2002, the Governor signed a letter to the Oregon Environmental Quality Commission (OEQC) giving final approval to the CSEPP plan and certifying that the communities surrounding the Umatilla Chemical Depot (UMCD) are prepared to respond to any mishap that might occur there.

On May 21, 2002, the Oregon Department of Environmental Quality (ODEQ) approved the STB plan for the LIC. This is a significant achievement, as it is the first STB plan that is required to comply with the Maximum Achievable Control Technology rule in Oregon as well as the RCRA requirements. The DFS STB test plan was approved on August 30, 2002.

On July 29, 2002, UMCDF began LIC surrogate (designated hazardous waste by ODEQ) testing; however, surrogate shakedown was suspended by the ODEQ due to exceedence of the metals emission limit during the LIC metals test burn. Metals emission exceedences were due to equipment problems, which were corrected. On December 6, 2002, the ODEQ approved the restart of hazardous waste feed for LIC-1. The approval was granted after the conduct of a successful metals test burn showing that the metals emissions would not exceed permitted levels. The UMCDF LIC-1 STB began on January 28, 2003, and was completed on February 8, 2003. DFS STB shakedown activities began on February 11, 2003. The DFS STB is scheduled to begin in April 2003. The "agent-free" language regarding shipping secondary waste off site has been approved by PM ECW, Washington Demilitarization Company (the SC), UMCD, and ODEQ.

On August 23, 2002, a vial of dilute chemical agent was inadvertently carried off site by a subcontractor employee. This led to stoppage of all non-permit activities in the laboratory. Corrective actions were implemented, and the site received approval to restart normal laboratory operations.

The trial phase of a lawsuit filed by three anti-incineration groups, CASP, (not an acronym), Oregon Wildlife Federation, and the Sierra Club, (along with 23 Umatilla and Morrow County, OR, residents), against the ODEQ (with the Army and Washington Demilitarization Company intervening) that recessed on November 26, 2002, resumed on March 10, 2003, again recessed on March 27, 2003, and is not expected to resume until August 2003. The petitioners are seeking to have the UMCDF incineration permit revoked. During this trial, a Multnomah County,

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

OR, Circuit Court Judge will hear testimony about whether "state regulators followed Oregon law and regulations in issuing the permit to burn the chemicals."

On January 22, 2003, WMCDF achieved 2 million man-hours without sustaining a lost-day-away-from-work incident.

#### Pine Bluff Chemical Agent Disposal Facility (PBCDF)

The PBCDF Environmental Management System (EMS) was reviewed by a U.S. Army Center for Health Promotion and Preventive Medicine Registrar Accreditation Board-certified EMS lead auditor on September 27, 2002, and was determined to be in full conformance with Executive Order 13148 and International Organization for Standardization (ISO) standards (ISO 14000 Family of International Standards) EMS requirements. The PBCDF is the first of the chemical stockpile disposal facilities to meet this mandatory requirement for certain DoD sites to develop and implement an EMS no later than December 2003 (all of PM ECW's chemical demilitarization facilities/systems are on track to meet this requirement by the required date).

The Jefferson County Circuit Court Clerk filed a judge's order on April 24, 2002, concerning the appeals of the PBCDF environmental permits. This order affirms the PBCDF environmental permits in all respects. On May 24, 2002, opponents filed an appeal of this decision to the Arkansas Supreme Court. The case is not expected to come before the Court for at least 1 year, most likely in the fall of 2003.

PBCDF construction was completed on November 21, 2002, 22 days ahead of schedule, and on November 30, 2002, PBCDF achieved 2 million man-hours without sustaining a lost-day-away-from-work incident. Systemization activities are ongoing. The first furnace, the LIC, was lit on February 7, 2003, one week earlier than planned.

#### ALTERNATIVE TECHNOLOGIES AND APPROACHES PROJECT (ATAP)

The ATAP is proceeding with implementation of neutralization-based chemical demilitarization facilities at the two bulk-only agent storage locations: APG-Edgewood Area (APG-EA), MD, and NECD, IN.

#### Accelerated Aberdeen Chemical Agent Destruction Facility (Accelerated ABCDF)

As a result of the events of September 11, 2001, the Project Manager for Alternative Technologies and Approaches (PMATA) implemented an accelerated destruction approach for the ABCDF. As with the Baseline ABCDF, this approach involves neutralization followed by bio treatment. The bio treatment will be performed at an off site commercial disposal facility. The Chemical Agent Transfer System (CATS) will be used to drain the HD (mustard) agent from the ton containers (TCs) and triple-rinse them. The TCs will then be returned to storage. After all agent neutralization operations are complete, the TC line will be used to further decontaminate the TCs and cut them in half. They will

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

then be shipped to Rock Island Arsenal for final decontamination and recycling.

An independent professional engineering contractor hired by the SC issued a Facility Construction Certificate for the Aberdeen facility on October 23, 2002, and it was subsequently provided to the Maryland Department of the Environment (MDE). The Accelerated ABCDF contract was definitized on October 31, 2002. That action established the schedule, target costs, and fee pools for the life of the project. Issuance of the modified Maryland RCRA permit occurred on December 3, 2002, achieving all environmental permitting necessary for agent operation. An Air permit was issued by the MDE on December 20, 2002. Neutralization facility construction was completed ahead of schedule. Site activities are focusing on operational readiness and completion of the TC cleanout facility construction. Local, State, and Congressional Offices have been notified, as required, prior to the start of operations. IMC was forwarded on January 21, 2003. The ORR Plan was approved and implementation is proceeding. Agent operations are expected to commence no later than April 2003.

The Accelerated ABCDF Test Concept Plan was approved by the Deputy Under Secretary of the Army for Operations Research (DUSA[OR]) on February 4, 2003, and was forwarded to the office of the Director of Operational Test and Evaluation for final approval.

### Accelerated Newport Chemical Agent Disposal Facility (Accelerated NECDF)

As a result of the events of September 11, 2001, EMATA implemented an accelerated destruction approach for the NECDF. The CHATS will be used to drain the nerve agent (VX) from the TCs and triple-rinse them. The TCs will then be returned to storage. After all agent neutralization operations are complete, the TC line will be used to further decontaminate the TCs and cut them in half. They will then be shipped to Rock Island Arsenal for final decontamination and recycling. Hydrolysate post-treatment will be performed at an off site commercial disposal facility.

Site activities are focusing on construction completion and operational readiness preparations. An Environmental Assessment was prepared for off site shipment of hydrolysate, and a Finding of No Significant Impact was signed on October 29, 2002. The Accelerated NECDF contract modification that definitizes schedule, target costs, and fee pools for the life of the accelerated project, was executed on November 8, 2002. Bids from commercial treatment, storage, and disposal facilities (TSDFs) were received in response to a request for proposal for disposal of hydrolysate. Based on review and evaluation of these bids, the SC awarded a limited notice to proceed to one of the bidders on December 21, 2002, to demonstrate the pre-treatment process, confirm the proposed processing rate, and conduct local public outreach. The TSDF contractor, Permatix, has supported numerous activities to educate the public on hydrolysate disposal. A Citizens' Advisory Commission meeting was held in Newport, IN, on February 19, 2003, to discuss off site disposal of hydrolysate, and the first meeting of the Citizens' Advisory Panel was held on March 18, 2003. Additionally,

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

responses to a number of questions asked by representatives of citizen groups were provided in March 2003.

Construction of the Accelerated NECDF neutralization facility and supporting structures was 65 percent complete as of the end of February 2003. The laboratory systemization is complete, and the laboratory received dilute solutions of nerve agent VX from the Government on February 7, 2003. The facility Developmental Test Readiness Review is tentatively scheduled for April 2003.

### NON-STOCKPILE CHEMICAL MATERIEL PRODUCT (NSCMP)

The NSCMP continues to plan, prepare, and execute the disposal of U.S. CWM that is not part of the unitary chemical stockpile, in compliance with the CWC and other assigned missions. The NSCMP continues to meet all of its performance requirements, and the test and evaluation program is on track.

### Programmatic Environmental Impact Statement (PEIS)

Final approval of the Record of Decision (ROD) that specifies the further development and fielding of the Rapid Response System (RRS) and the Explosive Destruction System (EDS) was given by the Secretary of the Army on September 10, 2001. Final approval of the ROD for the NSCMP PEIS for Transportable Treatment Systems was published in the Federal Register on June 26, 2002.

### Mobile Munitions Assessment System (MMAS)

Three MMAS units are available (at APG, MD; Pine Bluff Arsenal [PBA], AR; and Dugway Proving Ground [DPG], UT) to assess suspect CWM. The DPG MMAS assessed an M125 bomblet that was recovered at the former Lowry Air Force Base, CO, and it was determined that the bomblet contained ethylene glycol. Since the bomblet contains no chemical agent, the responsibility for storage and destruction will fall under the U.S. Army Corps of Engineers (USACE) in accordance with existing State of Colorado agreements.

### Rapid Response System (RRS)

The task for modification of the RRS by the Non-Stockpile Systems Contractor (NSSC) was awarded in March 2002. Teledyne Brown Engineering, under the NSSC II, completed planned improvements and modifications to the RRS at their Huntsville, AL, facilities in March 2003. The RRS will be available to conduct CATS treatment operations, if necessary, during the modification period. Environmental documentation updates required for RRS operations at Fort Richardson, AK, are ongoing and are being coordinated among installation, State, and Federal environmental agencies. Operations for Fort Richardson are scheduled to begin in 4Q FY 2003 (July-September 2003).

### Explosive Destruction System (EDS)

Three EDS units are approved to conduct CWM destruction operations (Phase 1

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

Units 1, 2, and 3). EDS Phase 1 Unit 2 (EDS P1/U2) began follow-on operational test and evaluation on February 5, 2003, at APG, MD. EDS Phase 2 Unit 1 (EDS P2/U1) is in the United Kingdom for Developmental Testing that began on March 31, 2003.

### Munitions Assessment and Processing System (MAPS)

MAPS construction that began in September 2001 at APG, MD, continues. On November 6, 2002, the Final Safety Submission package was submitted to the U.S. Army Soldier and Biological Chemical Command by APG. Overall, construction was 51 percent complete as of February 2003, and is scheduled to be finished in 1Q FY 2004 (October-December 2003). Testing will be completed 1Q FY 2005 (October-December 2004), and operations are scheduled to commence 2Q FY 2005 (January-March 2005).

### Pine Bluff Non-Stockpile Facility (PBNSF)

Design of the PBNSF and preparation of environmental documentation continue. A draft Environmental Assessment was reviewed in December 2002, and sent out for public comment. The public meeting for the RCRA permit was held at PBA, AR, on December 19, 2002. The RCRA Part B permit application is scheduled to be submitted to the State for review in April 2003.

### Binary Munitions

Consideration was given to accomplishing part of the binary disposal in the PBNSF. However, due to schedule considerations, the original plan to use a portion of the Integrated Binary Facility (IBF) for binary disposal is being pursued. The request to temporarily convert a portion of the IBF for use in the disposal of the binary chemical components in storage at PBA, AR, has been submitted to the OPCW. Process and facility design was 15 percent complete in January 2003. Destruction of the binary materiel is scheduled for completion in 2006.

### Former Production Facilities (FPFs)

As of January 28, 2003, approximately 70 percent of Initially Declared Schedule 1 Production Facilities were destroyed.

Demolition of the FPF Steps 0, I, and II at NECD continues. During routine intrusive sampling of a pipe in Steps 0, I, and II, liquid was discovered and sampled. The NECD Commander released a Chemical Event Report detailing the occurrence. Further, more sophisticated analysis of a sample of the liquid at APG-EA, MD determined the presence of a complex mix of VX precursor chemicals, but no VX. The residual liquid and process piping was neutralized and destroyed by approved procedures.

In accordance with OPCW milestones, demolition of the NECD Step III Process Area and Equipment began with a pre-operational survey for Step III Operations that was conducted during the first week of November 2002. The survey findings

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

are currently being resolved. Destruction operations for the Step III Process Area and Equipment began in August 2002. Since the NECD Step III Detailed Destruction Plan, submitted by the United States, has not yet been approved by the OPCW, inspectors were on site at NECD to witness the start up of demolition of the Step III Process Area and Equipment.

The Draft Environmental Assessment for the destruction of the TBF was prepared in December 2002 and was sent out for comment in January 2003. A final document is expected in 4Q FY 2003 (July-September 2003).

#### Miscellaneous Chemical Warfare Material

Field screening of empty TCs in the recycling staging area was completed in August 2002. Additional acceptance testing to resolve ventilation acceptance test deficiencies is ongoing, as are preparations for decontamination operations.

Disposal of chemical samples at APG, MD, that were scheduled for FYs 2001 and 2002, have been completed. Quantities of chemical samples are scheduled for destruction at APG each year through FY 2006. Pending issuance and/or modification of applicable environmental permits, selected chemical samples stored at other sites where chemical stockpile disposal facilities are located will be disposed of in those facilities.

#### Single CAIS Access and Neutralization System (SCANS)

SCANS is a small, transportable, chemical treatment container that treats CAIS ampules or bottles containing chemical agents. Resultant waste products (in particular, the spent SCANS reactor) will be shipped to a TSDF for final disposal. Engineering Design Testing Phase I and II were completed in July and October 2002, respectively. Developmental Testing/Operational Testing (DT/OT) was completed on March 7, 2003. An Operational Decision is scheduled for 4Q FY 2003 (July-September 2003).

#### Technology Test Program

The technology test program for waste disposal was revised based on the decision to not process binary CWM in the PBNSF, to not include a waste disposal capability in the PBNSF, and the decision to team with private industry to obtain an acceptable waste disposal capability. Eight "path forward" technologies for waste treatment are being evaluated as potential alternatives to incineration for treatment of EDS and RRS neutralized wastes, as well as binary munitions components, DF and QL. Technologies tested included: persulfate oxidation, solidification, wet air oxidation, plasma arc, batch supercritical water oxidation (SCWO), Cerex, ultraviolet oxidation, and gas-phase chemical reduction. A Technology Evaluation Panel, including technical experts and members of the general public, met on October 16, 2002. The Product Manager for Non-Stockpile Chemical Material (PMNSCM) is currently reviewing the Technology Evaluation Panel's recommendations on technologies for waste treatment.

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7. Executive Summary (Cont'd):

Remediation Coordination and Support

NSCMP is responsible for coordinating storage and transportation, and executing disposal of CWM recovered at military installations, Base Realignment and Closure facilities, and formerly used defense sites.

A mortar shell suspected of being a chemical munition was found in an empty lot in Vista, CA, on March 14, 2002. Assessment results indicate that it was filled with phosgene. The item was moved from storage at Naval Air Station, North Island, San Diego, CA, to SET Environmental, Houston, TX, on October 3, 2002. CWC notifications were coordinated and the munition was disposed of on February 28, 2003. The mortar shell fill was sampled, and it was determined to be CNS, a tear agent that is a mixture of chloroacetophenone, chloropicrin, and chloroform.

Suspect CAIS materiel was found on a former bombing and gunnery range at Lowery Air Force Base, CO, on March 20, 2002. A team from the U.S. Army Technical Escort Unit (TEU) dispatched with NSCMP munitions assessment equipment, evaluated the items and determined them to be CAIS. The items were transported to Pueblo Chemical Depot (PCD), CO, for storage.

Eleven intact E61 bomblets were recovered from New O Field at APG-EA, MD, on April 18, 2002. They were located with a number of bomblet bodies, which had been perforated and drained. The intact bomblets were determined to contain no CWM.

The USACE NSCMP-supported remediation continues at additional locations at the former Camp American University, Spring Valley, Washington, DC (FUDS). So far, 148 items were determined to be scrap, 118 were returned to USACE for disposal as non-CWM, and 18 are confirmed or suspect CWM. Excavation continues at two properties located on the site of the former Sedgewich Trenches. Planning for a possible EDS deployment to Spring Valley in FY 2003 to destroy 15 of the confirmed and suspect CWM has begun. The remaining three items from Spring Valley were destroyed in acid digestion technology testing at Battelle Laboratories, since they were believed to contain the arsenical fill, diphenylcyanoarsine. Processing of the first item revealed that it contained arsine gas. The filtration system, where processing occurred successfully, captured the vapors. Destruction of the remaining two items was completed on March 7, 2003.

NSCMP was called to respond to the recovery of a 4.2-inch mortar round at former Camp Sibert, AL. The MMAS responded and determined the item to be filled with phosgene (CG), fired, armed, and fused. PMNSCM deployed the EDS and other support equipment to conduct emergency destruction of the item. On September 1, 2002, the mortar round was successfully destroyed using the EDS. The EDS also successfully destroyed a suspect mustard-filled mortar projectile at APG, MD, on December 10, 2002.

Drainage and analysis (using Portable Isotopic Neutron Spectroscopy) of 30 ICs

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

previously used for handling tests at Defense Ammunition Center, McAlester, OK, began on October 2, 2002, and is complete. No chemical agent was detected.

On October 18, 2002, archaeologists working for the Presidio Trust near Inspiration Point, CA, recovered four bottles containing a black residue. The items were brought into the archaeologists' laboratory and were being washed in a sink, where a strong sulfur odor was detected. The bottles were subsequently identified as K941 CAIS bottles. A TEU deployed to the site on October 23, 2002, to conduct a site investigation, perform hand-held magnetometer sweeps, package the bottles in a multiple round container, and transport them back to the Redwood Chemical Biological Center for chemical analysis. FMNSCM personnel are working with the Trust to evaluate the situation.

Seven German Traktor rockets (World War II munitions) were transported from PBA, AR, to APG, MD, on December 11, 2002, in order to analyze the rocket fills. This analysis continues. The OSD signed the Congressional Notification letters authorizing this transport on November 29, 2002.

Recovery operations continue at the Lauderick Creek area of APG, MD. To date, no chemical agent-filled munitions have been recovered.

NSCMP is currently supporting development of plans and activities at the following sites: Lowry Air Force Base, CO; Ft. Segarra, U.S. Virgin Islands (RUDS); and Ft. Richardson, AK (Active) (CAIS disposal).

**ASSEMBLED CHEMICAL WEAPONS ASSESSMENT (ACWA)**

**Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP)**

On July 16, 2002, the DAE signed an ADM that approved neutralization followed by bio treatment as the technology to safely dispose of the chemical weapons stockpile at PCD, assigned PMACWA the responsibility to execute the Pueblo project, and directed acceleration of the destruction of the Pueblo chemical weapons stockpile. On September 27, 2002, PMACWA awarded the systems contract for the initial phase of the PCAPP to Bechtel National, Inc. Shortly thereafter, a competitor filed a protest with the General Accounting Office (GAO) and as a result, a stop-work order was issued. On December 17, 2002, the GAO upheld the contract award to Bechtel National, thus allowing Bechtel to proceed.

**Blue Grass Chemical Agent-Destruction Pilot Plant (BCAPP)**

On February 3, 2003, the DAE issued an ADM approving neutralization (hydrolysis) followed by SCWO at Blue Grass Army Depot (BGAD) and directing PMACWA to accelerate destruction of the Blue Grass chemical weapons stockpile. Consequently, PMACWA will be responsible for life cycle management of the Blue Grass stockpile destruction. The National Environmental Policy Act Record of Decision (ROD) was signed on February 27, 2003, and was published in the Federal Register on March 6, 2003.

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**8. Threshold Breaches:**

Chem Demil Program

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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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:

Chem Demil Program

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
CWC Compliance (Entry into Force 29 APR 97)			
15 U.S. Category 1 Chemical Weapons Destroyed	JAN 1994	SEP 98	SEP 1997 (Ch-1)
20% U.S. Category 1 Chemical Weapons Destroyed	MAY 2002	JUL 2001	JUL 2001
45% U.S. Category 1 Chemical Weapons Destroyed	MAY 2004	APR 2004	TBD (Ch-2)
100% U.S. Category 1 Chemical Weapons Destroyed	MAY 2007	APR 2012	TBD
Initially Declared Category 3 Chemical Weapons			
100% Destroyed (EIF + 5 Yrs)	N/A	MAR 02	MAR 2002
Initially Declared Schedule 1 Chemical Weapon Production Facilities			
40% Destroyed (EIF + 5 Yrs)	N/A	MAR 00	MAR 2000
80% Destroyed (EIF + 8 Yrs)	N/A	APR 05	APR 2005
100% Destroyed (EIF + 10 Yrs)	N/A	APR 07	APR 2007
Initially Declared Schedule 2 Chemical Weapon Production Facilities			
100% Destroyed (EIF + 5 Yrs)	N/A	AUG 99	AUG 1999
Disposal of CWM (non CWC)	N/A	SEP 09	SEP 2009
Storage, Transportation, Disposal of CWM in Support of Remediation/ Emergency Operations	N/A	SEP 09	SEP 2009
CHEMICAL STOCKPILE DISPOSAL PROJECT			
CAMDS Testing	SEP 1979	SEP 79	SEP 1979
DAB Program Review	MAR 1995	SEP 01	SEP 2001 (Ch-3)
JOHNSTON ATOLL (JACADS)			
JACADS Construction	SEP 1985	SEP 85	SEP 1985
Begin Operations	JUL 1990	JUL 90	JUL 1990
Complete Operations	N/A	NOV 00	NOV 2000 (Ch-4)
Begin Closure	SEP 2000	JAN 01	JAN 2001
Complete Closure	N/A	JAN 04	JAN 2004 (Ch-4)
TOOELE (TOCDF)			
Submit RCRA/CAA Permit Applications	OCT 1988	OCT 88	OCT 1988
Begin Construction	OCT 1989	OCT 89	OCT 1989
Begin Systemization	SEP 1993	SEP 93	SEP 1993
Begin Operations	AUG 1996	AUG 96	AUG 1996
Complete Operations	N/A	FEB 08	FEB 2008 (Ch-4)
Begin Closure	OCT 2003	FEB 08	FEB 2008
Complete Closure	N/A	SEP 10	SEP 2010 (Ch-4)

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9a. Schedule (Cont'd):

Chem Demil Program

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APR)</u>	<u>Current</u> <u>Estimate</u>
<b>ANNISTON (ANCDF)</b>			
Submit RCRA/CAA Permit Applications	FEB 1995	FEB 95	FEB 1995
Begin Construction	FEB 1996	FEB 96	FEB 1996
Begin Operations	JAN 2002	JAN 2003	JUN 2003 (Ch-5)
Complete Operations	N/A	MAY 11	MAY 2011 (Ch-5)
Begin Closure	NOV 2005	MAY 11	MAY 2011
Complete Closure	N/A	DEC 13	DEC 2013 (Ch-5)
<b>UMATILLA (UMCDF)</b>			
Submit RCRA/CAA Permit Applications	SEP 1995	SEP 95	SEP 1995
Begin Construction	FEB 1997	FEB 97	FEB 1997
Begin Operations	FEB 2002	AUG 03	AUG 2003
Complete Operations	N/A	JAN 11	JAN 2011 (Ch-4)
Begin Closure	JUN 2005	JAN 11	JAN 2011
Complete Closure	N/A	JUN 14	JUN 2014 (Ch-4)
<b>PINE BLUFF (PBCDF)</b>			
Submit RCRA/CAA Permit Applications	JUL 1995	JUL 95	JUN 1995
Begin Construction	TBD	FEB 99	FEB 1999
Begin Operations	TBD	APR 04	APR 2004 (Ch-6)
Complete Operations	N/A	NOV 09	NOV 2009 (Ch-4)
Begin Closure	TBD	NOV 09	NOV 2009
Complete Closure	N/A	DEC 11	DEC 2011 (Ch-4)
<b>ALTERNATIVE TECHNOLOGIES &amp; APPROACHES</b>			
<b>ABERDEEN (Accelerated ABCDF)</b>			
Milestone 0	AUG 1994	AUG 94	AUG 1994
Milestone I/II	DEC 1996	DEC 96	DEC 1996
Milestone III	JAN 2004	FEB 02	FEB 2002
Submit RCRA/CAA Permit Applications	N/A	MAY 97	MAY 1997 (Ch-7)
Begin Construction	N/A	JUL 00	JUL 2000 (Ch-7)
Begin Operations	N/A	JUN 03	JUN 2003 (Ch-7)
100% Chemical Agent Destroyed	N/A	MAR 04	MAR 2004 (Ch-7)
Complete Operations	N/A	JUL 05	JUL 2005 (Ch-7)
Begin Closure	N/A	JUL 05	JUL 2005 (Ch-7)
Complete Closure	N/A	DEC 06	DEC 2006 (Ch-7)
<b>NEWPORT (Accelerated NECDF)</b>			
Milestone 0	AUG 1994	AUG 94	AUG 1994
Milestone I/II	DEC 1996	DEC 96	DEC 1996
Milestone III	MAY 2004	MAY 02	MAY 2002 (Ch-8)
Submit RCRA/CAA Permit Applications	N/A	APR 98	APR 1998 (Ch-8)
Begin Construction	N/A	NOV 00	NOV 2000 (Ch-8)
Begin Operations	N/A	FEB 05	FEB 2005 (Ch-8)
100% Chemical Agent Destroyed	N/A	JAN 06	JAN 2006 (Ch-8)
Complete Operations	N/A	NOV 07	NOV 2007 (Ch-8)
Begin Closure	N/A	NOV 07	NOV 2007 (Ch-8)
Complete Closure	N/A	APR 09	APR 2009 (Ch-8)

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9a. Schedule (Cont'd):

Chem Demil Program

NON-STOCKPILE CHEMICAL MATERIEL PRODUCT	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
PBNSP (Pine Bluff, AR)			
Submit RCRA Permit Applications	N/A	DEC 02	MAR 2003 (Ch-4)
Begin Construction	N/A	JAN 04	JAN 2004 (Ch-4)
Begin Operations	N/A	MAY 06	MAY 2006 (Ch-4)
Complete Operations	N/A	APR 07	APR 2007 (Ch-4)
Complete Closure	N/A	SEP 08	SEP 2008 (Ch-4)
MAPS (Aberdeen, MD)			
Submit RCRA Permit Applications	N/A	MAY 00	MAY 2000 (Ch-4)
Begin Construction	N/A	JUL 01	JUL 2001 (Ch-4)
Begin Operations	N/A	DEC 04	DEC 2004 (Ch-4)

b. Current Change Explanations --

(Ch-1) Some quantities of chemical agent were destroyed prior to EIF. Previous SARs erroneously reported the date (Jan 1994) that 1 percent of the original stockpile was destroyed. This requirement was completed in September 1997 when 1 percent of U.S. Category 1 chemical weapons existing at EIF had been destroyed.

MILESTONE	FROM	TO
1% U.S. Category 1 Chemical Weapons Destroyed	JAN 94	SEP 97

(Ch-2) Without mitigation, the CWC international treaty milestones "45% U.S. Category 1 Chemical Weapons Destroyed" (April 29, 2004) and "100% U.S. Category 1 Chemical Weapons Destroyed" (April 29, 2007) are at risk.

MILESTONE	FROM	TO
45% U.S. Category 1 Chemical Weapons Destroyed	APR 04	TBD

(Ch-3) The current estimate has been changed to reflect the September 6, 2001 DAB program review.

MILESTONE	FROM	TO
DAB Program Review	MAR 95	SEP 01

(Ch-4) This is a new milestone included in the revised APB approved April 2, 2003, in order to provide enhanced visibility.

(Ch-5) The PM's current estimates (PXCEs) for the "Begin Operations" milestone for the ANCDF has been revised. In order to begin operations, the OPCW needs to be informed of the intent to begin operations. In addition, Information to Members of Congress must be provided no later than 30 days prior to start of operations. The "Complete Operations" and "Complete Closure" milestones are new and are included in the revised APB

9b. Schedule (Cont'd):

Chem Demil Program

approved April 2, 2003 in order to provide enhanced visibility.

MILESTONE	FROM	TO
Anniston (ANCDF) Begin Operations	OCT 02	JUN 03
Complete Operations	(N/A - this is a new milestone)	MAY 11
Complete Closure	(N/A - this is a new milestone)	DEC 13

(Ch-6) The PMCR for Begin Operations for the PBCDF was revised from February 2004 to April 2004, due to funding cuts to the FY 2002 (October 2001-September 2002) budget sustained by the site to support other requirements.

MILESTONE	FROM	TO
Pine Bluff (PBCDF) Begin Operations	FEB 04	APR 04

(Ch-7) On February 1, 2002, the DAE issued an ADM that replaced the Milestone III Decision previously required for the Aberdeen Proving Ground - Edgewood Area, MD, site. The DAE authorized the Army to proceed immediately with the construction of an accelerated chemical agent neutralization facility. Consequently, the "Milestone III (Operations)" milestone has been adjusted and new milestones have been added in this report to reflect the accelerated destruction program. (Note: The "Submit RCRA/CAA Permit Applications" and "Begin Construction" dates reflect the original program and represent actions that occurred prior to the direction to implement accelerated destruction.)

MILESTONE	FROM	TO
ABERDEEN (Accelerated ABCDF) Milestone III (Operations) Submit RCRA/CAA Permit Applications	MAY 08	FEB 02
Begin Construction	(N/A - this is a new milestone)	MAY 97
Begin Operations	(N/A - this is a new milestone)	JUL 00
100% Chemical Agent Destroyed	(N/A - this is a new milestone)	JUN 03
Complete Operations	(N/A - this is a new milestone)	MAR 04
Begin Closure	(N/A - this is a new milestone)	JUL 05
Complete Closure	(N/A - this is a new milestone)	JUL 05
Complete Closure	(N/A - this is a new milestone)	DEC 06

(Ch-8) On May 11, 2002, the DAE issued an ADM that replaced the Milestone III Decision previously required for the Newport, IN, site. The DAE authorized the Army to proceed immediately with the construction of an accelerated chemical agent neutralization facility. Consequently, the "Milestone III (Operations)" milestone has been adjusted and new milestones have been added in this report to reflect the accelerated destruction program. (Note: The "Submit RCRA/CAA Permit Applications" and "Begin Construction" dates reflect the original program and represent actions that occurred prior to the direction to implement accelerated destruction.)

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9b. Schedule (Cont'd):

Chem Demil Program

MILESTONE	FROM	TO
Newport (NECDF)		
Milestone III (Operations)	MAY 08	MAY 02
Submit RCRA/CAA Permit Applications	(N/A - this is a new milestone)	APR 98
Begin Construction	(N/A - this is a new milestone)	NOV 00
Begin Operations	(N/A - this is a new milestone)	FEB 05
100% Chemical Agent Destroyed	(N/A - this is a new milestone)	JAN 06
Complete Operations	(N/A - this is a new milestone)	NOV 07
Begin Closure	(N/A - this is a new milestone)	NOV 07
Complete Closure	(N/A - this is a new milestone)	APR 09

Assembled Chem Wpns Asses

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate	
CWC Compliance (Entry into Force 29 APR 97)				
100% U.S. Category 1 Chemical Weapons Destroyed	MAY 2007	APR 2012	TBD	(Ch-1)

ASSEMBLED CHEMICAL WEAPONS ASSESSMENT PROGRAM

PUEBLO (PCAPP)

Submit RCRA/CAA Permit Applications	OCT 1995	MAR 03	JAN 2004 (Ch-2)
Begin Construction	TBD	AUG 03	JUL 2004 (Ch-2)
Begin Pilot Testing	N/A	MAR 08	MAR 2008 (Ch-2)
Begin Operations	TBD	APR 09	APR 2009 (Ch-2)
Complete Operations	N/A	APR 10	APR 2010 (Ch-2)
Begin Closure	TBD	APR 10	APR 2010 (Ch-2)
Complete Closure	N/A	DEC 13	DEC 2013 (Ch-2)

BLUE GRASS (BCAPP)

Submit RCRA/CAA Permit Applications	DEC 1995	DEC 03	JUN 2004 (Ch-3)
Begin Construction	TBD	SEP 04	JAN 2005 (Ch-3)
Begin Operations	TBD	TBD	TBD
Complete Operations	N/A	TBD	TBD (Ch-3)
Begin Closure	TBD	TBD	TBD
Complete Closure	N/A	TBD	TBD (Ch-3)

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

Assembled Chem Wpns Asses

b. Current Change Explanations --

(Ch-1) Without mitigation, the CWC international treaty milestone "100 U.S. Category 1 Chemical Weapons Destroyed" (April 29, 2007) is at risk.

(Ch-2) On July 16, 2002, the DAE signed an ADM that approved neutralization followed by bio treatment as the technology to safely dispose of the chemical weapons stockpile at Pueblo Chemical Depot, CO, assigned PMACWA the responsibility to execute the Pueblo project, and directed acceleration of the destruction of the Pueblo chemical weapons stockpile. Milestones reflected in the revised APB approved April 2, 2003 depict the ACWA program:

MILESTONE	FROM	TO
Pueblo (PCAPP)		
Submit RCRA/CAA Permit Applications	OCT 95	JAN 04
Begin Construction	TBD	JUL 04
Begin Pilot Testing	(N/A - this is a new milestone)	MAR 08
Begin Operations	TBD	APR 09
Complete Operations	(N/A - this is a new milestone)	APR 10
Begin Closure	TBD	APR 10
Complete Closure	(N/A - this is a new milestone)	DEC 13

(Ch-3) The DAE issued an ADM on February 3, 2003, approving neutralization (hydrolysis) followed by supercritical water oxidation at Blue Grass Army Depot, KY, and directing PMACWA to accelerate destruction of the Blue Grass chemical weapons stockpile. Milestones reflected in the revised APB approved April 2, 2003 depict the ACWA program:

MILESTONE	FROM	TO
Blue Grass (BCAPP)		
Submit RCRA/CAA Permit Applications	OCT 95	JUN 04
Begin Construction	TBD	JAN 05
Complete Operations	(N/A - this is a new milestone)	
Complete Closure	(N/A - this is a new milestone)	

10. Performance Characteristics:

Chem Demil Program

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (AFB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Environmental Laws and Regulations	Meets Army, State, and/or Federal Rqmts	Meets / Army, State, and/or Federal Rqmts	Meets / Army, State, and/or Federal Rqmts	TBD	Meets Army, State, and/or Federal Rqmts (Note 1)
Safety and Occupational Health Laws and Regulations	Meets Army, State, and/or Federal Rqmts	Meets / Army, State, and/or Federal Rqmts	Meets / Army, State, and/or Federal Rqmts	TBD	Meets Army, State, and/or Federal Rqmts (Note 2)
International Obligations	N/A	is Compli- ant w/ Inter- national/ Obliga- tions	/ Is Compli- ant w/ Inter- national/ Obliga- tions	TBD	is Complian- t with Internat- ional Obligati- ons (Note 3)
Chemical Agent Release	0	0	/ 0	TBD	0 (Notes 4&6)
Chemical Agent Exposure	0	0	/ 0	TBD	0

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 Army, 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 Army, the State, the Occupational Safety and Health Administration, or if the Department of

10a. Performance Characteristics (Cont'd):

Chem. Demil Program

Defense (DoD) Explosives Safety Board determines there is an unacceptable explosives safety risk.

3. "Is Compliant with International Obligations" means the Program is in compliance with the conditions specified in international agreements related to chemical weapons to which the United States is a party. These include meeting destruction dates for chemical weapons and former production facilities as specified in the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, commonly known as the Chemical Weapons Convention (CWC), complying with on-site inspection and destruction verification regimes at declared facilities, and submitting all required CWC compliance documentation.

4. The term "chemical agent release" is defined as an event involving:

Fixed Disposal Facilities (Chemical Stockpile Disposal Facilities, Non-Stockpile Fixed Disposal Facilities)

a. Confirmed agent release above the 72-hour general population limit (GPL) time-weighted average (TWA) measured in accordance with the approved monitoring plan with the disposal facility as the identified source. The 72-hour GPL TWA values are:

GB - 0.000003 mg/m<sup>3</sup>  
VX - 0.000003 mg/m<sup>3</sup>  
H/HD/HT - 0.0001 mg/m<sup>3</sup>

b. Confirmed point source stack release for incineration facilities above the allowable threshold limit. Allowable threshold limits for incineration are calculated as allowable stack concentrations (ASC). Allowable threshold limits are:

GB - 0.0003 mg/m<sup>3</sup>  
VX - 0.0003 mg/m<sup>3</sup>  
H/HD/HT - 0.03 mg/m<sup>3</sup>

c. Confirmed point source filter stack release for (incineration and neutralization) facilities above the allowable threshold limit. Allowable threshold limits are calculated as 8-hour time weighted averages (TWAs). Allowable threshold limits are:

GB - 0.0001 mg/m<sup>3</sup>  
VX - 0.0001 mg/m<sup>3</sup>  
H/HD/HT - 0.003 mg/m<sup>3</sup>

Non-Stockpile Mobile Treatment Systems

10a. Performance Characteristics (Cont'd):

Chem Demil Program

A chemical release above the applicable federal, state, or local restriction, with the processing system as the confirmed source of the chemical release.

5. A "chemical agent exposure", as defined by Department of the Army Pamphlet (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.

6. Number of events.

b. Current Change Explanations -- None

Assembled Chem Wpns Asses

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Environmental Laws and Regulations	Meets DoD, State, and/or Federal Reqmts	Meets / Meets DoD, State, and/or Federal Reqmts	TBD	Meets DoD, State, and/or Federal Reqmts (Note 1)
Safety and Occupational Health Laws and Regulations	Meets DoD, State, and/or Federal Reqmts	Meets / Meets DoD, State, and/or Federal Reqmts	TBD	Meets DoD, State, and/or Federal Reqmts (Note 2)
International Obligations	N/A	Is / Is Compliant with International Obligations	TBD	Is Compliant with International Obligations (Note 3)
Chemical Agent Release	0	0 / 0	TBD	0 (Notes 4&6)

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

Assembled Chem Wpn Assess

	<u>Production Estimate (SAR)</u>	<u>Approved Program (AFB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Chemical Agent Exposure	0	0 / 0	TBD	0 (Notes 5&6)

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 DoD, 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 DoD, the State, the Occupational Safety and Health Administration, or if the Department of Defense Explosives Safety Board determines there is an unacceptable explosives safety risk.

3. "Is Compliant with International Obligations" means the Program is in compliance with the conditions specified in international agreements related to chemical weapons to which the United States is a party. These include meeting destruction dates for chemical weapons as specified in the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, commonly known as the Chemical Weapons Convention (CWC), complying with on-site inspection and destruction verification regimes at declared facilities, and submitting all required CWC compliance documentation.

4. The term "chemical agent release" is defined as an event involving Chemical Agent-Destruction Pilot Plant Facilities where the following occurs:

a. Confirmed agent release above the 72-hour general population limit (GPL) time-weighted average (TWA) measured in accordance with the approved monitoring plan with the disposal facility as the identified source. The 72-hour GPL TWA values are:

- GB - 0.000003 mg/m3
- VX - 0.000003 mg/m3
- H/D/HT - 0.0001 mg/m3

b. Confirmed point source filter stack release for facilities above the allowable threshold limit. Allowable threshold limits are calculated as 8-hour time weighted averages (TWAs). Allowable threshold limits are:

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

Assembled Chem Wpn Sys Asses

GB - 0.0001 mg/m3  
 VX - 0.00001 mg/m3  
 H/HD/HT - 0.003 mg/m3

5. A "chemical agent exposure", as defined by Department of the Army Pamphlet (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.

6. Number of events.

b. Current Change Explanations -- None

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

Chem Demil Program

a. Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	961.2	1227.9	1227.9
Procurement	1933.4	2366.6	2366.6
Flyaway	(1933.4)		(2366.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	1165.7	1333.1	1333.1
Acquisition O&M	7453.4	12342.6	12427.1
Total FY 1994 Base-Year \$	<u>11513.7</u>	<u>17270.2</u>	<u>17354.7</u>
Escalation	1366.2	2363.4	2278.6
Development (RDT&E)	(129.6)	(133.6)	(133.3)
Procurement	(84.5)	(133.3)	(133.3)
Construction (MILCON)	(81.7)	(94.8)	(94.7)
Acquisition O&M	(1070.4)	(2001.7)	(1917.3)
Total Then Year \$	<u>12879.9</u>	<u>19633.6</u>	<u>19632.3</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	29060	29060	29060
Total	29060	29060	29060

The procurement quantity has been revised to total tons of chemical agent to be disposed. This number is currently 29,060 U.S. tons and is composed of 28,364 U.S. tons in the chemical stockpile at JACADE, TOCDF, ANCDF, UMCDF, PECDF, Accelerated ABCDF and Accelerated NECDF; plus 696 U.S. tons of non-stockpile chemical materiel. The procurement quantity is subject to change and will be updated if necessary, based on future non-stockpile chemical materiel recoveries and assessments of non-stockpile chemical materiel in storage.

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Chem Demil, December 31, 2002

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

Chem Demil Program:

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

Assembled Chem Wpns Asses

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0.0	3027.6	3027.9
Procurement	579.1	0.0	0.0
Flyaway	(579.1)		(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	355.7	302.8	302.7
Acquisition O&M	1022.6	0.0	0.0
Total FY 1994 Base-Year \$	1957.4	3330.6	3330.6
Escalation	473.0	856.4	856.7
Development (RDT&E)	(0.0)	(795.4)	(795.6)
Procurement	(102.2)	(0.0)	(0.0)
Construction (MILCON)	(62.9)	(61.0)	(61.1)
Acquisition O&M	(307.9)	(0.0)	(0.0)
Total Then Year \$	2430.4	4187.0	4187.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	3134	3134	3134
Total	3134	3134	3134

The procurement quantity reflects tons of chemical agent to be disposed by ACWA. This number is 3,134 U.S. tons and is composed of 2,611 U.S. tons in the Pueblo stockpile and 523 U.S. tons in the Blue Grass stockpile.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Chem Demil, December 31, 2002

12. Unit Cost Summary:

Chem Demil Program

	UCR Baseline (APR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	17270.2	17354.7	
(2) Quantity	29060	29060	
(3) Unit Cost	0.594	0.597	+0.51
b. Avg. Prog. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	2366.6	2366.6	
(2) Quantity	29060	29060	
(3) Unit Cost	0.081	0.081	0.00

Assembled Chem Wpns Asses

	UCR Baseline (APR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	3330.6	3330.6	
(2) Quantity	3134	3134	
(3) Unit Cost	1.063	1.063	0.00
b. Avg. Prog. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	0.0	0.0	
(2) Quantity	3134	3134	
(3) Unit Cost	0.000	0.000	N/A

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Chem Demil, December 31, 2002

**13. Cost Variance Analysis:**

Chem Demil Program

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	1090.8	2017.9	1247.4	8523.8	12879.9
Previous Changes:					
Economic	-30.4	-18.0	-14.8	-229.9	-293.1
Quantity	-	-	-	-	-
Schedule	+454.4	+250.6	+92.5	+3078.1	+3875.6
Engineering	-	-	-	-	-
Estimating	+424.0	+139.8	+105.2	+2589.9	+3258.9
Other	-	-	-	+8.7	+8.7
Support	-	-	-	-	-
Subtotal	+848.0	+372.4	+182.9	+5446.8	+6850.1
Current Changes:					
Economic	-23.2	-4.9	-11.3	-98.0	-137.4
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-554.4	+114.5	+8.8	+471.8	-40.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-577.6	+109.6	-2.5	-373.8	-96.7
Total Changes	+270.4	+482.0	+180.4	+5820.6	+6753.4
Current Estimate	1361.2	2499.9	1427.8	14344.4	19633.3

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	961.2	1933.4	1165.7	7453.4	11513.7
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	+388.3	+205.0	+78.1	+2443.5	+3114.9
Engineering	-	-	-	-	-
Estimating	+352.3	+116.7	+76.2	+1979.8	+2525.0
Other	-	-	-	+7.6	+7.6
Support	-	-	-	-	-
Subtotal	+740.6	+321.7	+154.3	+4430.9	+5647.5
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-473.9	+111.5	+13.1	+542.8	+193.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-473.9	+111.5	+13.1	+542.8	+193.5
Total Changes	+266.7	+433.2	+167.4	+4973.7	+5841.0
Current Estimate	1227.9	2366.6	1333.1	12427.1	17354.7

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

Chem Demil Program

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&amp;E</u>		
	Revised Escalation Indices (Economic)	N/A	-23.2
	Adjustment for Current and Prior Inflation (Estimating)	+8.8	+9.3
	Adjustment for Prior Years Actuals (Estimating)	-5.5	-6.0
	Reduction Resulting from "Speedy Neutralization" Acceleration of ATAP (Estimating)	-220.1	-312.4
	Reprogramming of Funds to O&M for Speedy Neutralization (Estimating)	-240.8	-272.5
	Additional Testing of Transportable Detonation Chamber Requirements (Estimating)	+6.3	+7.3
	Realignment of Funds to Account for Inflation Rate Changes (Estimating)	-22.6	+19.4
	RDT&E Subtotal	<u>-473.9</u>	<u>-577.6</u>
(2)	<u>Procurement</u>		
	Revised Escalation Indices (Economic)	N/A	-26.7
	Economic Adjustment for Negative Program Changes (Economic)	N/A	+21.3
	Adjustment for Current and Prior Inflation (Estimating)	+6.9	+8.0
	Adjustment for Prior Years Actuals (Estimating)	-52.8	-44.1
	Funds for Equipment Deferred into FY 04 to pay for Items Identified by the Community Located Near the Anniston, AL, Facility as "Must-Fund" Items (Estimating)	-27.1	-32.4
	Increase in Off-post Requirements (CSEPP) (Communication, Collective Protection, Alert Notification) (Estimating)	+16.3	+19.3
	Realignment of Funds to Account for Inflation Rate Changes (Estimating)	+8.4	+10.2
	Procurement Subtotal	<u>-111.5</u>	<u>+109.6</u>
(3)	<u>MILCON</u>		
	Revised Escalation Indices (Economic)	N/A	-17.7
	Economic Adjustment for Negative Program Changes (Economic)	N/A	-6.4
	Adjustment for Current and Prior Inflation (Estimating)	+8.1	+9.4
	Adjustment for Prior Years Actuals (Estimating)	+46.6	-55.5
	Reprogramming of Funds for ATAP (Estimating)	-59.5	-74.4

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
	Realignment of Funds to Account for Inflation Rate Changes (Estimating)	-17.9	-18.3
	MILCON Subtotal:	<u>+13.1</u>	<u>-2.5</u>
(4)	<u>O&amp;M</u>		
	Revised Escalation Indices (Economic)	N/A	-186.1
	Economic Adjustment for Negative Program Change (Economic)	N/A	-88.1
	Adjustment for Current and Prior Inflation (Estimating)	-63.3	-91.8
	CACADS - 4 Months Added to Closure and Increase for Budget Cuts in FY 02 (Estimating)	+36.8	+44.2
	Realignment of Funds to Account for Inflation Rate Changes (Estimating)	+124.6	+163.3
	Reprogramming of Funds for Speedy Neutralization from R&D (Estimating)	+240.8	+272.5
	Increase in Off-post Requirements (CSEPP) (Communication, Collective Protection, Alert Notification) (Estimating)	+9.1	+10.3
	Adjustment for Prior year actuals (Estimating)	+194.8	+73.3
	C&M Subtotal:	<u>+542.8</u>	<u>+373.8</u>

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13. Cost Variance Analysis (Cont'd):

Assembled Chem Wpns Asses

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

	ROD&E	PROC	MILCON	O&M	TOTAL
Production Estimate	-	681.3	418.6	1330.5	2430.4
Previous Changes:					
Economic	-	-6.0	-5.0	-35.9	-46.9
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	+66.9	-141.1	+1380.5	+1588.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	+60.9	-136.1	+1344.6	+1541.6
Current Changes:					
Economic	-	-1.7	-3.8	-15.3	-20.8
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+3823.5	-740.5	-187.1	-2659.8	+236.1
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+3823.5	-742.2	-190.9	-2675.1	+215.3
Total Changes	+3823.5	-681.3	-54.8	-1330.5	+1756.9
Current Estimate	3823.5	-	363.8	0.0	4187.3

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

Assembled Chem Weps Asses

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	-	579.1	355.7	1022.6	1957.4
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-35.9	+104.6	+1035.7	+1176.2
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	+35.9	+104.6	+1035.7	+1176.2
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+3027.9	-615.0	-157.6	-2058.3	+197.0
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+3027.9	-615.0	-157.6	-2058.3	+197.0
Total Changes	+3027.9	-579.1	-53.0	-1022.6	+1373.2
Current Estimate	3027.9	-	302.7	0.0	3330.6

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Increase to Include Total ACWA Program Cost not Previously Reported (Prior to Acquisition Reporting Requirements) (Estimating)	+258.8	+287.2
Realignment of PROC and O&M Funds From CDP to ACWA for PUCDF and BGCDF (Estimating)	+2406.7	+3169.5
Realignment of Funds to Account for Inflation Rate Changes (Estimating)	+362.4	+366.8
RDT&E Subtotal	+3027.9	+3823.5
(2) <u>Procurement</u>		
Revised Escalation Indices (Economic)	N/A	-1.7
Realignment of Funds From CDP to ACWA for PUCDF and BGCDF (Estimating)	-563.0	-697.2
Realignment of Funds to Account for Inflation Rate Changes (Estimating)	-52.0	-43.3
Procurement Subtotal	-615.0	-742.2
(3) <u>MILCON</u>		
Revised Escalation Indices (Economic)	N/A	-3.9

**13b. Cost Variance Analysis (Cont'd):**  
Assembled Chem Wpns Asses

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
	Realignment of Funds to CATG-approved Levels (Estimating)	-157.6	-187.1
	MILCON Subtotal	<u>-157.6</u>	<u>-190.9</u>
(4)	O&M		
	Revised Escalation Indices (Economic)	N/A	-15.3
	Realignment of Funds From CDP to ACWA for PUCDF and BGCDF (Estimating)	-1843.7	-2472.3
	Realignment of Funds to Account for Inflation Rate Changes (Estimating)	-214.6	-187.9
	O&M Subtotal	<u>-2058.3</u>	<u>-2675.1</u>

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate									
PAUC	Changes								PAUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
0.443	-0.015	--	-0.135	--	-0.114	--	--	-0.232	0.676

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									
PUC	Changes								PUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
0.069	-0.001	--	+0.009	--	-0.009	--	--	+0.017	0.086

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

Chem Demil Program

c. Schedule, Cost, and Quantity History

Item/Event	SAR		SAR		SAR	
	Planning	Development	Production	Current	Estimate	
	Estimate (PE)	Estimate (DE)	Estimate (PdE)	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		
IOC	N/A	SEP 1995	JAN 2004	FEB 2002		
Total Cost	N/A	11903.0	MAR 1999	DEC 1999		
Total Quantity	N/A	9	29060	29060		
Prog Acq Unit Cost	N/A	1322.6	0.4	0.7		

Assembled Chem Wprns Asses

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes							Total	PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt		
0.775	-0.022	+0.001	--	--	+0.582	--	--	-0.561	1.34

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes							Total	PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt		
0.217	-0.002	--	--	--	-0.215	--	--	-0.217	--

c. Schedule, Cost, and Quantity History

Item/Event	SAR		SAR		SAR	
	Planning	Development	Production	Current	Estimate	
	Estimate (PE)	Estimate (DE)	Estimate (PdE)	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		
IOC	N/A	N/A	N/A	N/A		
Total Cost	N/A	N/A	2430.4	4187.3		
Total Quantity	N/A	N/A	3134	3134		
Prog Acq Unit Cost	N/A	N/A	0.8	1.3		

Chem Demil, December 31, 2002

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

a. RDT&E --				Initial Contract Price		
<u>NECDF System Contract:</u>				<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Parsons Infra & Tech Grp, Pasadena CA						
DAAA09-99-C-0016, CPAF				\$296.5	N/A	1
Award: February 19, 1999						
Definitized: February 18, 1999						
Current Contract Price				Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>		
\$676.7	N/A	1	\$715.0	\$844.7		
Previous Cumulative Variances				<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/07/02)				\$-2.2	\$-7.3	
Net Change				\$-10.6	\$-11.8	
				\$-8.4	\$-4.5	

Explanation of Change:

The unfavorable cost variance is primarily due to increased construction scope resulting from the accelerated neutralization approach, increased shifts to maintain schedule, and lower craft labor productivity. The schedule variance is primarily due to delays in process equipment fabrication and testing that have negative impacts on construction schedules.

Contract Comments:

The target price is the current contract value through MOD P00048.

Limited stop work orders were issued on January 24, 2002, to minimize project cost and to allow time to assess a proposed accelerated agent destruction project. The DAE issued an ADM on May 11, 2002, authorizing the Army to proceed immediately with construction of a chemical agent neutralization facility employing a caustic neutralization process. An interim baseline was approved for performance measurement purposes on August 6, 2002. Contract negotiations were completed, and a contract modification was executed on November 8, 2002.

b. Procurement --				Initial Contract Price		
<u>TOCDM Sys Contractor:</u>				<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
EG&G Defense Mat'l's, Tooele, UT						
DACA87-89-C-0076, CPAF				\$211.0	N/A	1
Award: July 21, 1989						
Definitized: July 21, 1989						
Current Contract Price				Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>		
\$1114.5	N/A	1	\$1371.6	\$1208.2		

15b. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-11.1	\$-7.9
Cumulative Variances To Date (12/30/02)	\$-17.2	\$-5.3
Net Change	\$-6.1	\$1.7

Explanation of Change:

The schedule variance remains unfavorable due to the impact from the exposure event of July 15, 2002, and follow-on investigations. The contract milestone date for the end of operations is now forecasted to be December 31, 2006. The unfavorable cost variance has grown due primarily to costs incurred from the retention of the labor force while agent processing was on hold.

Contract Comments:

The target price is the current contract negotiated cost through MOD P00227 including fee.

The PM's and Contractor's estimated price at completion will be revised to match the operational schedules outlined in Section 9 of this report. The Government is in the process of negotiating these schedules with the SC.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>ANCDF Systems Contract:</u> Westinghouse, Anniston, AL DAA-09-96-C-0018, FFP/CPAF Award: February 29, 1996 Definitized: February 29, 1996	\$575.8	N/A	1

<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>
\$768.8	N/A	1	\$1412.6	\$1356.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.5	\$-2.2
Cumulative Variances To Date (12/31/02)	\$2.4	\$-1.8
Net Change	\$2.9	\$0.4

Explanation of Change:

Problems with Fiberglass Reinforced Piping have resulted in processing delays. Community emergency response issues may impact the next major milestone, start of agent operations. These factors have been somewhat mitigated by improvement in the receipt of spare parts (previously behind schedule). Favorable cost variances are attributable to under-staffing, work force attrition, and the aforementioned delays in processing.

Contract Comments:

This is a Cost Plus Award Fee (CPAF) contract with a Firm Fixed Price (FFP)

15. Contract Information (Cont'd):

element for construction. The target price is the current contract value through FFP MOD A00380 and CPAF MOD P0070.

The PM's and Contractor's estimated price at completion matches the operational schedules explained in Section 9 of this report. The revised schedule for the ANCDF presented at the September 6, 2001, DAB and approved in the September 26, 2001, ADM, is currently reflected in the SC's Performance Measurement Baseline (PMB). Upon completion of negotiations, the SC will revise the estimated cost.

Note: Westinghouse, Anniston, AL is part of the Washington Group International.

<u>UMCDF Systems Contract:</u>			Initial Contract Price		
Washington Demil Co., Umatilla, OR			Target	Ceiling	Qty
DAAA09-97-C-0025, FFP/CPAF			\$920.5	N/A	1
Award: February 10, 1997					
Definitized: February 10, 1997					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$1001.9	N/A	1	\$1001.9	\$980.3	
Previous Cumulative Variances			Cost Variance Schedule Variance		
Cumulative Variances To Date (12/28/02)			\$1.8	\$1.2	
Net Change			\$-4.0	\$-4.5	
			\$-5.8	\$-5.7	

Explanation of Change:

The SC's small unfavorable cost and schedule variances remain below program variance thresholds. The SC has maintained the schedule without slip for the last six monthly reporting periods. Difficulties completing the Deactivation Furnace System demonstration test and re-starting the Liquid Incinerator-1 surrogate testing may impact the planned August 2003 date for start of operations.

Contract Comments:

This is a CPAF contract with a FFP element for construction. The target price is the current contract value through FFP MOD A00205 and CPAF MOD P0088.

The PMB at this site was revised to reflect a project extension and the SC's replanned approach to completion of the Systemization Phase. A Proposal Change Case authorizing the SC to revise the PMB to reflect approval to extend the completion of Systemization until August 2003, is pending final negotiations between the government and the SC.

15. Contract Information (Cont'd):

<u>PBCDF Systems Contract:</u>			Initial Contract Price		
Washington Demil Co., Pine Bluff AR			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAA09-97-00098, FFP/CPAF			\$511.6	N/A	1
Award: July 25, 1997					
Definitized: July 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>	
\$775.3	N/A	1	\$853.0	\$765.4	
Previous Cumulative Variances			Cost Variance Schedule Variance		
Cumulative Variances To Date (01/03/03)			\$8.8	\$-1.3	
Net Change			\$-3.0	\$-2.7	
				\$-1.4	

Explanation of Change:

Schedule performance has decreased slightly due to the support organizations having difficulties in staffing and the plant organization's performance of systemization, laboratory, maintenance, training, and materials. The cost variance remains positive due to slower than anticipated staffing "ramp up".

Contract Comments:

This is a CPAF contract with an FFP element for construction and equipment installation, currently in the Systemization Phase. The target price is the current contract value through FFP MOD A00256 and CPAF MOD P0116. The FFP final contract value was negotiated at \$194.5 million. Final construction completion was achieved on November 21, 2002, approximately 3 weeks before the contract date of December 13, 2002.

The PM's and contractor's estimated price at completion will be revised to match the operational schedules contained in Section 9 of this report. The Government is in the process of negotiating these schedules with the SC.

<u>Accelerated ABCDEF Sys Co:</u>			Initial Contract Price		
Bechtel National Inc., San Francisco, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAA09-02-0-0005, CPAF			\$225.0	N/A	1
Award: February 1, 2002					
Definitized: October 31, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$278.6	N/A	1	\$281.1	\$301.0	

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$-1.2
Cumulative Variances To Date (12/02/02)	\$1.1	\$-1.3
Net Change	\$0.7	\$-0.1

Explanation of Change:

This contract was definitized on October 31, 2002. This action established the schedule and target costs for the balance of the project. The SC began reporting contract information via a Cost/Schedule Status Report (C/SSR) in March 2002. The cost and schedule variances are not significant. The December 2002 C/SSR data indicates an unfavorable schedule variance attributable to delays in the start of Ton Container Cleanout. The favorable Cost Variance is the result of delayed staffing ramp-ups and lower than planned salaries.

Contract Comments:

The target price is the current contract value.

An ADM was signed by the Under Secretary of Defense for Acquisition, Technology and Logistics on February 1, 2002. This ADM replaced the Milestone III Decision that had been required for the Aberdeen Chemical Agent Disposal Facility (ABCDF). Following the issuance of the ADM, the Contracting Officer awarded an unpriced order to Bechtel for the Accelerated Aberdeen facility. In conjunction with this award, the Contracting Officer also issued a letter to Bechtel partially terminating for convenience portions of the ABCDF contract (DAAA09-98-C-0080).

The Accelerated ABCDF contract was definitized on October 31, 2002. This contract established the schedule, target costs, and fee pools for the life of the project. The SC has established an interim PMB of \$244.6 million, which is based on the definitized contract cost.

c. O&M -- <u>JACADS Operator &amp; Maint.:</u> Washington Demil Co., Johnston Island	<u>Initial Contract Price</u>			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
DAAA09-96-C-0081, CBAF Award: September 28, 1996 Definitized: September 28, 1996	\$9.3	N/A	1	
	<u>Current Contract Price</u>		<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$743.7	N/A	\$730.3	\$742.0

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15c. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.0	\$-3.6
Cumulative Variances To Date (01/03/03)	\$10.6	\$-0.9
Net Change	\$9.6	\$2.7

Explanation of Change:

Johnston Atoll Chemical Agent Destruction System (JACADS) is in the closure phase. The remaining work is focused on three primary Contractor Work Breakdown Structure (CWBS) Elements: System Engineering/Program Management, Facility/Equipment Decontamination, and Facility Maintenance/Material Support. Cumulatively, these three CWBS elements are well under the variance threshold. Thermal treatment of miscellaneous secondary waste remains the major schedule constraint. Easing of earlier constraints involving Waste Incinerator Container monitoring from the Discharge Airlock have improved throughput. Monthly data for December was affected by an approximate \$800 thousand adjustment to cost, for settlement of workman compensation claims in prior years.

Contract Comments:

This contract is negotiated yearly with the SO. It was initially funded (\$9.3 million) to reflect efforts required only in FY 1996. The previous report (December 31, 2001) reported a current contract price target of \$451.2 million, reflecting the cumulative value of FY 1996 through FY 2001, plus the estimated cost of FY 2002. The increase in this report from \$742.0 million in the target and ceiling price to \$743.7 million reflects the cumulative value of FY 1996 through FY 2002, plus the estimated cost of authorized unpriced work for FY 2003 and FY 2004. The target price is the current contract value through MOD F0087.

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Chem Demil, December 31, 2002

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 (FY88-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-20)</u>	<u>Total</u>
RDT&E	1574.4	251.9	311.6	3046.8	5184.7
Procurement	2144.0	79.2	31.2	245.5	2499.9
MILCON	1450.6	119.8	81.9	139.3	1791.6
O&M	6237.3	1199.2	1032.3	5875.6	14344.4
Total	11496.3	1650.1	1457.0	9307.2	23820.6

Chem Demil Program

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

<u>Appropriation</u>	<u>Prior Years (FY88-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-19)</u>	<u>Total</u>
RDT&E	1138.4	82.0	39.3	51.5	1361.2
Procurement	2144.0	79.2	31.2	245.5	2499.9
MILCON	1412.6	15.2	-	-	1427.8
O&M	6237.3	1199.2	1032.3	5875.6	14344.4
Total	10982.3	1375.6	1102.8	6172.6	19633.3

Assembled Chem Wps Asses

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

<u>Appropriation</u>	<u>Prior Years (FY97-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-20)</u>	<u>Total</u>
RDT&E	386.0	169.9	272.3	2995.3	3823.5
Procurement	-	-	-	-	-
MILCON	38.0	104.6	81.9	139.3	363.8
O&M	-	-	-	-	-
Total	424.0	274.5	354.2	3134.6	4187.3

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Chem Demil, December 31, 2002

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

b. Annual Summary -- Chem Demil Program

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 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				14.0	13.7
1993				6.5	6.5
1994				30.1	30.6
1995				19.7	20.4
1996				49.6	52.0
1997				51.8	55.5
1998				56.6	62.0
1999				124.8	138.0
2000				164.9	183.2
2001				173.7	194.9
2002				158.7	179.8
2003				190.1	216.3
2004				71.1	82.5
2005				33.6	39.3
2006				20.2	24.1
2007				9.8	11.9
2008				8.0	9.9
2009				4.5	5.6
Subtotal				1227.9	1361.2

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988			117.3	117.3	96.4
1989			49.5	49.5	44.1
1990	30		78.3	78.3	72.1
1991	37		120.8	120.8	114.9
1992	121		154.3	154.3	150.9
1993	84		237.9	237.9	237.8
1994	124		49.7	49.7	50.6
1995	539		191.1	191.1	198.1
1996	359		226.6	226.6	237.4
1997	1248		157.2	157.2	168.5
1998	1509		65.9	65.9	72.2
1999	1871		103.6	103.6	114.9

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Chem Demil, December 31, 2002

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

Chem Demil Program

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	1512		170.5	170.5	189.4
2001	760		94.1	94.1	105.5
2002	394		144.9	144.9	164.2
2003	3193		111.8	111.8	127.0
2004	2416		68.7	68.7	79.2
2005	2872		26.6	26.6	31.2
2006	2742		44.6	44.6	53.1
2007	2872		45.2	45.2	54.8
2008	1896		35.8	35.8	44.1
2009	2410		25.2	25.2	31.6
2010	1924		11.7	11.7	14.9
2011	147		12.0	12.0	15.6
2012			9.9	9.9	13.1
2013			11.0	11.0	14.8
2014			0.4	0.4	0.6
2015			0.7	0.7	1.0
2016			1.3	1.3	1.9
Subtotal	29060		2366.6	2366.6	2499.9

No quantities applicable for FYs 1988 and 1989. Expenditures in these years were for testing and systemization at JACADS prior to start of agent destruction operations.

No Quantities applicable for FYs 2012-2016. Expenditures in these years are for closure and remediation after completion of agent destruction operations.

Appropriation: 0500 - Military Construction, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				31.2	32.9
1996				12.2	13.0
1997				112.4	121.0
1998				79.5	86.5
1999				68.0	74.8
2000				154.6	173.0
2001				137.5	155.0
2002				155.3	177.5
2003				106.1	119.6

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

Chem Demil Program

Appropriation: 0500 - Military Construction, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				12.9	15.2
Subtotal				866.7	968.5

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				3.3	2.9
1989				76.7	69.6
1990				6.8	6.4
1991				85.2	82.9
1992				153.7	152.9
1993				21.1	21.2
1994				119.6	123.4
Subtotal				466.4	459.3

Appropriation: 0100 - Operation & Maintenance, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				118.2	97.0
1989				131.5	117.3
1990				188.0	173.1
1991				183.0	174.0
1992				213.9	214.1
1993				256.2	256.0
1994				279.9	280.0
1995				337.2	349.6
1996				321.7	337.0
1997				419.3	449.5
1998				370.8	406.4
1999				437.6	483.9
2000				480.5	540.4
2001				533.7	598.7
2002				660.2	748.1
2003				886.4	1007.3
2004				1039.7	1199.2
2005				881.5	1032.3
2006				857.9	1014.3

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

Chem Demil Program

Appropriation: 0100 - Operation & Maintenance, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				525.7	1000.7
2008				736.1	907.7
2009				666.1	836.1
2010				492.3	629.1
2011				343.7	447.1
2012				250.8	332.2
2013				215.2	290.2
2014				92.2	126.5
2015				70.3	98.9
2016				52.6	74.8
2017				25.9	37.5
2018				25.0	36.9
2019				29.4	44.1
Subtotal				12427.1	14344.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	29060		2366.6	16889.3	19174.0
Army				466.4	459.3
Grand Total	29060		2366.6	17354.7	19633.3

b. Annual Summary -- Assembled Chem Wpns Asses

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				37.2	39.9
1998				3.6	4.0
1999				29.7	32.8
2000				98.1	109.0
2001				70.3	78.9
2002				19.9	22.6
2003				86.9	98.8
2004				147.3	169.9
2005				232.5	272.3
2006				215.0	256.0
2007				224.5	271.3
2008				247.5	305.2

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

Assembled Chem Wpns Asses

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2009				254.9	320.0
2010				259.0	331.0
2011				196.4	255.5
2012				194.1	257.1
2013				177.2	238.9
2014				139.2	186.5
2015				112.7	157.5
2016				94.1	133.2
2017				77.2	111.8
2018				53.1	78.2
2019				36.5	54.7
2020				25.0	38.2
Subtotal	3134			3027.9	3823.5

The quantity, 3134, reflects total tons of agent to be destroyed by the ACWA Program. The ACWA program is funded with RDT&E funds in the years destruction occurs: 2009, 2010, and 2012 through 2014.

Appropriation: 0500 - Military Construction, Defense Wide

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				32.7	38.0
2004				88.7	104.6
2005				63.3	81.9
2006				56.5	68.9
2007				45.3	56.3
2008				10.4	13.1
2009				0.8	1.0
Subtotal				302.7	363.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3134			3330.6	4187.3

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17. Delivery/Expenditure Information:

Chem Demil Program

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): \$ 8150

Percent Total Program Expended: 41.5%

The Chemical Demilitarization Program delivery quantity reflects "0" since the program effort is based on destruction of chemical agent versus delivery of end items in quantity.

Assembled Chem Wpns Asses

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): \$ 301

Percent Total Program Expended: 7.2%

The ACWA Program delivery quantity reflects "0" since the program effort is based on destruction of chemical agent versus delivery of end items in quantity.

18. Operating and Support Costs:

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

Chem Demil Program

a. Assumptions and Ground Rules --

Operating and Support costs are an integral part of the CDP and as such are reported in sections 11, 12, 13, and 16 of this report.

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Chem Demil Program	Antecedent System
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
<hr/>		
Total O&S Cost	Chem Demil Program	Antecedent System
BYS (In Millions)	N/A	N/A
TYS (In Millions)	N/A	N/A

Assembled Chem Wpns Asses

a. Assumptions and Ground Rules --

Operating and Support costs are an integral part of the CDP and as such are reported in sections 11, 12, 13, and 16 of this report.

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Assembled Chem Wpns Asses	Antecedent System
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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**18b. Operating and Support Costs (Cont'd):**

Assembled Chem Wpns Asses

Total O&S Cost:	Assembled Chem Wpns Asses	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 04/03/2003 10:07:13 AM

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# A-16 LAND WARRIOR

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

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Land Warrior

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Project Manager-Soldier Warrior	COL Ted Johnson
ATTN: SFAE-SDR-SWAR	Assigned: June 21, 2001
10125 Kingman Road	DSN 654-3819; COMM (703) 704-3819
Fort Belvoir, VA 22060-5820	Ted.Johnson@PEOSoldier.Army.Mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604713A (Shared) Project D667 (Shared)

PROCUREMENT:

APPN 2035 ICN M80500 (Army) (Shared)

APPN 2035 ICN MS3610 (Army) (Shared)

5. References:

SAR Baseline (Development Estimate):

FY 2004 President's Budget, February 3, 2003

Approved Program:

None.

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**6. Mission and Description:**

The Land Warrior (LW) is a first generation holistic, modular, integrated system of systems focused on the needs of the individual infantry soldier and soldiers in support of the close fight. It will achieve the Army's Vision of enhancing the individual soldier's close combat, lethality, survivability, command & control, and tactical awareness by combining state of the art commercial-off-the-shelf (COTS)/ government-off-the-shelf (GOTS) technologies with newly developed components and technologies to create a lethal, survivable soldier system linked into the digitized battlefield. The integration of these capabilities, without adding to the soldier's combat load will provide the soldier with an improved level of functionality, connectivity, and situational awareness that is shared by all soldiers in the unit.

LW development and funding follows three supporting paths that leverage the same baseline technology employing evolutionary acquisition. LW-Initial Capability (LW-IC) represents the baseline LW ensemble configuration. LW-IC fielding to the 75th Ranger Regiment is planned for September 2004. LW-Stryker Interoperable (LW-SI) upgrades the LW-IC ensemble to meet specific Stryker Brigade requirements, such as on-board power recharging from the Stryker vehicle and expanded Situational Awareness. LW-SI fielding is scheduled for 4th Quarter of FY05. LW-Advanced Capability (LW-AC) will leverage LW-SI and Objective Force Warrior Advanced Technology Demonstration technologies for weight reduction and extended mission duration. LW-AC is planned to be fielded to the Objective Force in FY10.

The LW system will be fielded to Army Airborne, Air Assault, Light, Ranger, Long Range Surveillance, and Stryker Brigade Combat Teams (SBCT), Infantry elements and those Soldiers in direct support of the rifle squad soldier in maneuver battalions (i.e., Combat Engineers, Forward Observers, Fire Support Teams, and Combat Medics). This system will be interoperable with other Army systems and platforms as well as other U. S. Forces and allied military systems and supports the Legacy to Objective transition path of the Transformation Campaign Plan.

**7. Executive Summary:**

The LW Program evolved from the Soldier Integrated Protective Ensemble Advanced Technology Demonstration held during the fall of 1992, ending a three-year research effort. The LW Mission Needs Statement, prepared by the U.S. Army Infantry School, was approved by Headquarters, Department of the Army (HQDA) on September 8, 1993. The LW Program achieved Milestone 0 on January 19, 1994 and the LW Operational Requirements Document (ORD) was approved on April 13, 1994. The program was approved to proceed into Engineering and Manufacturing Development (EMD) at the Milestone I/II Decision Review on August 26, 1994.

The LW EMD contract was competitively awarded to Hughes Aircraft Company (now Raytheon Systems Corp.) on July 11, 1995. Due to protest and Congressional language, the LW EMD program was restructured to accommodate the contract implementation delays and the consolidation effort.

The Fiscal Year 1997 President's Budget provided funding to increase LW

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

procurement from 4,800 to 34,000 systems to field LW to high priority Army units. This funding increase caused LW to be designated an ACAT II program on January 13, 1997.

Schedule delays, technical challenges and information technology advancements outpaced program development and integration efforts resulting in program delays. In November 1998, based on input from the Army Science Board, the PM realigned the program to a more commercial, consumer-based approach, leveraging technology and using COTS/GOTS components and subsystems. The PM began an innovative approach to move specific subsystems and components of LW from a proprietary development approach into one that maximized the use of COTS components and technologies and more extensively incorporated government furnished equipment. Additionally, the PM developed a restructured acquisition concept, grounded in a strategy of evolutionary acquisition (Block improvements) based on time-phased user requirements as outlined in the ORD. The PM's contracting strategy used Firm Fixed Price Other Transactions Agreements (OTA) as the primary acquisition vehicle to capitalize on commercial practices and ensure the use of innovative technology firms.

Using advanced LW prototype systems based on COTS/GOTS components, an Army platoon successfully demonstrated improved soldier operational capabilities at the Joint Contingency Force Advanced Warfighting Experiment at Ft. Polk, Louisiana in September 2000. As a result, the Army increased the ORD requirements for the LW system from 34,000 to 48,801 systems.

The Chief of Staff, Army approved the LW ORD on November 2, 2002. LW was designated an ACAT IC program on December 17, 2002, and is in System Development and Demonstration. LW is currently transitioning to a new contractor from the OTA contract. On January 30, 2003, General Dynamics Decision Systems was awarded a competitive contract for LW that will bring the program under an experienced Prime system integrator that will be responsible for total program cost, schedule and performance. Following Stryker, LW will provide the soldier component of the Objective Force to assist the Army in achieving Transformation.

Results of LW Initial Capability Reliability Growth I (Nov 02), Early Functional Assessment with 1-75th Ranger Regiment (Jan 03) and Reliability Growth II (Feb-Mar 03) [truncated] indicate that the LW Initial Capability (LW-IC) system is not reliable enough to meet Operational Testing (OT) entrance criteria. As a result, the LW program is being restructured. The LW-Stryker Interoperable (LW-SI) system will meet schedule and ORD Block I and II requirements.

PEO Soldier directed close out of the Other Transaction Agreement (OTA), because the LW-IC system developed for testing under this agreement is not ready for OT.

This is the Initial SAR for Land Warrior.

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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 I/II	AUG 1994	N/A	AUG 1994
Milestone C (LW-SI)	DEC 2003	N/A	DEC 2003
Full Rate Production Decision (LW-IC)	DEC 2003	N/A	DEC 2003
First Unit Equipped (LW-IC)	SEP 2004	N/A	SEP 2004
Initial Operational Capability (LW-IC)	SEP 2005	N/A	SEP 2005
First Unit Equipped (LW-SI)	SEP 2005	N/A	SEP 2005
Initial Operational Capability (LW-SI)	SEP 2006	N/A	SEP 2006

Acronyms:

LW-IC Land Warrior - Initial Capability  
 LW-SI Land Warrior - Stryker Interoperable

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
LW-IC					
Interoperability (Common Picture)	Provide ABCS inter-operability w/ABCS equipped (e.g., FBCB2) systems	N/A	/ N/A	TBD	Provide ABCS inter-operability w/ABCS equipped (e.g., FBCB2) systems
Mobility - Combat Load	<= 77 lbs	N/A	/ N/A	TBD	<= 77lbs
Sustainability Power - Runtime	72 msn hrs (wt independent)	N/A	/ N/A	TBD	72 msn hrs (wt independent)
Reliability - Probability of 12 operating hrs w/o a msn affecting failure:					
Leader System	>=.93	N/A	/ N/A	TBD	>=.93
Soldier System	>=.94	N/A	/ N/A	TBD	>=.94
LW-SI Capability Improvement					
Interoperability (Common Picture)	ABCS inter-operable	N/A	/ N/A	TBD	ABCS inter-operable
Situational Awareness Intravehicle Communication	Provide data exchange (situational awareness, orders, & overlay info) from the interim force vehicles to	N/A	/ N/A	TBD	Provide data exchange (situational awareness, orders, & overlay info) from the interim force vehicles to the

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR) the LW system</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate LW system ICV system to communicate w/LW systems on other vehicles</u>
Situational Awareness Intervehicle Communication	Provide the capability for the LW system on one ICV system to communicate w/LW systems on other vehicles	N/A	/ N/A	TBD	Provide the capability for the LW system on one ICV system to communicate w/LW systems on other vehicles
Mobility - Combat Load	<= 72 lbs	N/A	/ N/A	TBD	<= 72 lbs
Sustainability - Runtime	72 msn hrs	N/A	/ N/A	TBD	72 msn hrs
On-board recharging	Provide on-board power recharging capability in the interim force vehicle for the LW equipped	N/A	/ N/A	TBD	Provide on-board power recharging capability in the interim force vehicle for the LW equipped soldier

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Reliability - Probability of 12 operating hrs w/o a msn affecting failure:	soldier CFE shall have a prob of .93 for a leader system & .94 for the soldier system operating 12 hrs w/o a msn affecting failure	N/A	/ N/A	TBD	CFE shall have a prob of .93 for a leader system & .94 for the soldier system operating 12 hrs w/o a msn affecting failure
Leader System	>=.93	N/A	/ N/A	TBD	>=.93
Soldier System	>=.94	N/A	/ N/A	TBD	>=.94

Acronyms:

ABCS Army Battle Command System  
CFE Contractor Furnished Equipment  
FBCB2 Future Battle Command Brigade & Below  
GFE Government Furnished Equipment  
hrs Hours  
ICV Infantry Combat Vehicle  
lbs Pounds  
LW-IC Land Warrior - Initial Capability  
LW-SI Land Warrior - Stryker Interoperable  
msn Mission  
wt Weight  
w/ With  
w/o Without

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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)	734.4		734.4
Procurement	1717.1		1717.1
Recurring Walkaway Cost	(623.4)		(623.4)
Component Replacement	(950.0)		(950.0)
			(0.0)
Total Flyaway	(1573.4)		(1573.4)
Training	(49.2)		(49.2)
Data	(0.4)		(0.4)
Total Other Wpn Sys	(49.6)		(49.6)
Peculiar Support	(69.6)		(69.6)
Initial Spares	(24.5)		(24.5)
Construction (MILCON)	0.0		0.0
Acquisition O&M	0.0		0.0
Total FY 2003 Base-Year \$	2451.5	-----	2451.5
Escalation	392.9		392.9
Development (RDT&E)	(32.3)		(32.3)
Procurement	(360.6)		(360.6)
Construction (MILCON)	(0.0)		(0.0)
Acquisition O&M	(0.0)		(0.0)
Total Then Year \$	2844.4	-----	2844.4
b. Quantity --			
Development (RDT&E)	372	N/A	372
Procurement	15613	N/A	15613
Total	15985	N/A	15985

Note: Unit of Measure - The Land Warrior is a modular, integrated fighting system for the individual dismounted soldier incorporating available commercial-off-the-shelf components, as well as government-off-the-shelf components and technologies into a lethal, survivable soldier system.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (N/A)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	0.0	2541.5	
(2) Quantity	N/A	15985	
(3) Unit Cost	N/A	0.159	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	0.0	1717.1	
(2) Quantity	N/A	15613	
(3) Unit Cost	N/A	0.110	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	766.7	2077.7	-	2844.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	766.7	2077.7	-	2844.4

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

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	734.4	1717.1	-	2451.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	734.4	1717.1	-	2451.5

b. Current Change Explanations -- None

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	
0.178	--	--	--	--	--	--	--	--	0.178

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	
0.133	--	--	--	--	--	--	--	--	0.133

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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	AUG 1994
Milestone II	N/A	N/A	N/A	AUG 1994
Milestone C	N/A	N/A	N/A	DEC 2003
IOC	N/A	N/A	N/A	SEP 2005
Total Cost	N/A	0.0	N/A	2844.4
Total Quantity	N/A	0	N/A	15985
Prog Acq Unit Cost	N/A	0.0	N/A	0.2

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

a. RDT&E --  
Land Warrior - SI:  
 General Dynamics DS, Scottsdale AZ  
 DAAB07-03-C-N001, CPFF  
 Award: January 30, 2003  
 Definitized: January 30, 2003

Initial Contract Price	Target		Qty
	Target	Ceiling	
	\$59.9	\$7.0	0

Current Contract Price		
Target	Ceiling	Qty
\$59.9	\$7.0	0

Estimated Price At Completion	
Contractor	Program Manager
\$59.9	\$70.8

Previous Cumulative Variances  
 Cumulative Variances To Date  
 Net Change

Cost Variance	Schedule Variance
N/A	N/A
\$0.0	\$0.0
\$0.0	\$0.0

Explanation of Change:

None.

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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 (FY97-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-30)</u>	<u>Total</u>
RDT&E	346.8	49.2	48.3	322.4	766.7
Procurement	-	95.5	112.9	1869.3	2077.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	346.8	144.7	161.2	2191.7	2844.4

b. Annual Summary -- Land Warrior

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2003 Dollars Nonrec</u>	<u>Flyaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997				53.5	50.6
1998				40.9	39.0
1999				45.0	43.4
2000				40.3	39.4
2001				60.1	59.5
2002				59.6	59.6
2003				54.6	55.3
2004				47.9	49.2
2005				46.3	48.3
2006				38.5	40.9
2007				64.8	70.0
2008				72.6	79.8
2009				78.4	87.8
2010				1.5	1.7
2011				1.6	1.8
2012				1.5	1.8
2013				1.5	1.8
2014				1.6	1.9
2015				1.5	1.9
2016				1.5	1.9
2017				1.5	2.0
2018				1.5	2.0
2019				1.5	2.0
2020				1.5	2.1
2021				1.5	2.1
2022				1.6	2.2
2023				1.5	2.2
2024				1.5	2.2
2025				1.5	2.3

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

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

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2026				1.5	2.3
2027				1.6	2.4
2028				1.5	2.4
2029				1.5	2.4
2030				1.5	2.5
Subtotal	372			734.4	766.7

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	1975		77.6	92.5	95.5
2005	1775		70.4	107.7	112.9
2006	3200		98.9	129.1	137.6
2007	4373		127.3	169.0	183.4
2008	2431		84.5	97.0	107.2
2009	1859		104.6	111.8	125.7
2010			42.4	42.2	48.3
2011			68.3	68.3	79.6
2012			88.8	88.8	105.4
2013			58.2	58.2	70.3
2014			84.1	84.1	103.4
2015			44.5	44.5	55.7
2016			74.5	74.5	94.9
2017			95.4	95.4	123.7
2018			64.4	64.4	85.0
2019			82.9	82.9	111.4
2020			38.9	38.9	53.2
2021			64.3	64.3	89.5
2022			84.5	84.5	119.8
2023			55.6	55.6	80.2
2024			41.0	41.0	60.3
2025			3.8	3.8	5.6
2026			3.8	3.7	5.6
2027			3.8	3.7	5.7
2028			3.7	3.8	5.9
2029			3.7	3.7	5.9
2030			3.7	3.7	6.0
Subtotal	15613		1573.6	1717.1	2077.7

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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	15985		1573.6	2451.5	2844.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	46	46
Procurement	0	0

Percent Total Program Quantities Delivered: 0.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 303.9

Percent Total Program Expended: 10.7%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The Army Cost Position will be completed in August 2003 in support of the Land Warrior Acquisition Program Baseline and the September 2003 Land Warrior Army Systems Acquisition Review Council In Progress Review to the Army Acquisition Executive.

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	Land Warrior	Antecedent System
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

Total O&S Cost	Land Warrior	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

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AF-4 B-1B CMUP

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: B-1B CMUP

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): B-1B Conventional Mission Upgrade Program (Computer Upgrade/Defensive System Upgrade Program (DSUP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  

ASC/YD	Col Michael M. Miller
B-1 System Program Office	Assigned: May 25, 2001
2690 Loop Road West, Room 104	DSN 785-3281; COMM (937) 255-3281
WPAFB, OH 45433-7148	MichaelM.Miller@wpafb.af.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0604226F Project  
PROCUREMENT:  
(U) APPN 3010 ICN 0101126F (Air Force)  
O&M:  
(U) PE 0101126F

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

SAF/PAS

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**5. (U) References:**

Computer Upgrade

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated January 25, 1995.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated March 7, 2002.

DSUP

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated April 14, 1997.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated March 7, 2002.

**6. (U) Mission and Description:**

(U) In the January, 1992 publication of The Bomber Roadmap, the Secretary of the Air Force designated the B-1B as the backbone of the bomber force. In the August, 1992 Mission Need Statement and the April, 1997 Operational Requirements Document, HQ Air Combat Command (ACC) specified the need for an improved conventional mission capability on the B-1B. This will primarily be accomplished via the Conventional Mission Upgrade Program (CMUP)-- three major upgrades to the aircraft.

The first upgrade enhances 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 electrical interconnect system, communication upgrades and the Global Positioning System (GPS) is included. The upgrade is a modification program integrating predominantly non-developmental items to enhance aircraft conventional mission capabilities. This upgrade is complete and is no longer addressed in the B-1B CMUP SAR.

The Computer Upgrade is the major element of the next step of the CMUP, and is critical to long term viability of the B-1B. This portion will upgrade B-1B offensive avionics hardware and software to provide improved conventional weapons carriage and employment capabilities. Six existing computers (Controls and Displays, Guidance and Navigation, Weapon Delivery, Critical Resources Function, and two Terrain Following) will be replaced with four new computers and the avionics flight software will be converted/rehosted from JOVIAL to Ada. The objective is to increase memory capacity, throughput, input/output

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

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 current Data Transfer System (DTS) will be replaced with a new DTS.

The existing ALQ-161 defensive system, designed and optimized for the strategic nuclear mission (i.e., low altitude penetration against specific air defense threats) was deemed to have limited effectiveness in the B-1B's conventional mission with very high Operational and Support (O&S) cost. Therefore, the last phase of CMUP, Defensive System Upgrade Program (DSUP) would have removed most of the ALQ-161 system and replaced it with an upgraded AN/ALR-56M radar warning receiver and the Radio Frequency Countermeasures (RFCM) portion of the Navy's Integrated Defensive Electronic Counter Measures (IDECM) program, which included a techniques generator and a fiber optic towed decoy (FOTD) and a low band transmitter for on-board jamming. These new systems would have significantly improved situational awareness and the survivability of the B-1B in the medium and high altitude regimes where most conventional missions will be conducted, with the added benefit of a reduced annual Operational and Support cost of approximately \$50M per year (exclusive of the costs to address parts obsolescence on the 120 ALQ-161 Line Replaceable Units). DSUP was terminated on December 17, 2002, and will not be included in future SAR submissions.

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 Operation & Maintenance funds are included to capture the dependency of the development upgrades upon the sustainment activities.

**7. (U) Executive Summary:**

(U) Computer Upgrade - Completed Developmental Test and Evaluation in June 2002 and successfully completed Operational Test and Evaluation certification August 10, 2002. Dedicated Operational Test and Evaluation (OT&E) began September 17, 2002 and was successfully completed in December, 2002. Documentation in support of the Milestone III decision is in work. Milestone III is on-track for March, 2003.

DSUP - DSUP conducted aeromechanical, integration and effectiveness testing of the FO-50 Fibre Optic Towed Decoy as a risk reduction effort. The effort was initiated in June and had shown considerable progress in a short period of time. The FO-50 Fibre Optic Towed Decoy mass models on aircraft checkout was completed on November 15, 2002--a week ahead of schedule. The decoy, with associated software, performed well after 29 blocks of testing with no decoy

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

related faults. The first FO-50 aero sorties flew December 9 and 12, 2002--over a month ahead of schedule--successfully deploying a total of six mass models across a broad and stressing envelope. In addition, the on-board systems (ALQ-214 technique generator, ALQ-56M radar warning receiver (RWR), and lowband transmitter) were tested at Echo Range at China Lake. Initial indications are the ALR-56M identified the appropriate threats and IDECM ALQ-214 properly commanded the correct jamming response through the low band transmitter. Also, during the week of November 4 2002, an FO-50 electrical decoy evaluation survey was performed. The FO-50 met all test objectives to demonstrate communication with the on-board techniques generator.

Additionally, since June 25, 2002, the current ALE-55 design has demonstrated the ability to safely deploy and maintain full continuity for an extended period of time for the majority of the deployments. However, four of the deployments warrant further discourse. Two deployments in a severe regime lasted for just a little over 10 minutes. A third deployed short--failure analysis indicated it deployed short due to workmanship issues on a repair of an apparently dropped canister. Finally, there was an FOTD deployment that did not successfully maintain fiber-optic continuity for any appreciable time. Overall, results of the ALE-55 deployments since June 25, 2002, have been encouraging, but by no means conclusive. More testing will be required to affirm ALE-55 ability to meet the warfighter's needs.

Air Force FY04 Program Objective Memorandum submittal terminated DSUP. DSUP termination plan was approved by SAF/AQ on December 2, 2002. Termination approach was briefed to USD/AT&L on December 3, 2002 and was approved via memorandum dated December 17, 2002. A termination Program Management Directive was issued on December 17, 2002. Stop work order issued to Boeing on December 18, 2002 for contract F33657-97-C-0002. Contract termination issued on January 13, 2003. The Air Force will continue to explore future requirements for the B-1B defensive system in the post-2010 environment. This is the final SAR for B-1B CMUP Defensive System Upgrade Program.

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8. (U) Threshold Breaches:

Computer Upgrade

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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

DSUP

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 Defensive System Upgrade Program (DSUP) projected a breach of five schedule

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

parameters of the March 7, 2002 Acquisition Program Baseline. A Program Deviation Report (PDR) was submitted to SAF/AQ on April 18, 2002. These breaches would have occurred due to lack of maturity of the Navy Integrated Defensive Electronic Counter Measures (IDECM) Fiber Optic Towed Decoy (FOTD) and resulting late delivery of Government Furnished Equipment. DSUP was terminated by the Air Force on December 17, 2002. Contract termination was issued January 13, 2003.

9. (U) Schedule:

Computer Upgrade

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I	APR 1993	APR 1993	APR 1993
Milestone II	JAN 1995	JAN 1995	JAN 1995
Development Contract Award	JAN 1996	MAY 1996	MAY 1996
Critical Design Review	JUN 1998	MAY 1998	JUN 1998
Service Final DT&E			
Start	JAN 2000	FEB 2001	DEC 2000
Complete	SEP 2000	MAR 2002	JUN 2002
Low Rate Production Contract Award	JAN 2000	JUL 1999	NOV 1999
Low Rate Initial Production 1st Delivery	JUL 2001	NOV 2001	MAY 2001
IOT&E			
Start	SEP 2000	FEB 2001	DEC 2000
Complete	JAN 2001	OCT 2002	DEC 2002
Milestone III	JAN 2001	JAN 2003	MAR 2003
Full Rate Production Contract Award	JAN 2001	JAN 2003	MAR 2003
Initial Operational Capability (IOC)	JAN 2003	N/A	N/A
Required Assets Available	N/A	JAN 2003	MAR 2003

(U) Acronyms:

DT&E - Development Test and Evaluation  
IOT&E - Initial Operational Test and Evaluation

Notes:

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. Required Assets Available (RAA) is defined as the date assets consisting of three modified aircraft, a total of three modified module/launchers, associated Organization-level support equipment,

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

Computer Upgrade

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. In lieu of Initial Operational Capability, HQ Air Combat Command has agreed to use the Required Assets Available (RAA) date.

b. Current Change Explanations -- None

DSUP

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I	APR 1993	APR 1993	APR 1993
Milestone II	APR 1997	APR 1997	APR 1997
Development Contract Award	JUN 1997	JUN 1997	JUN 1997
Critical Design Review Complete	JUL 1998	JUL 1998	SEP 1998
Development Flight Test			
Start	MAR 2000	AUG 2001	AUG 2001
Complete	APR 2001	JUL 2002	N/A (Ch-1)
IOT&E			
Start	JUN 2001	AUG 2001	AUG 2001
Complete	DEC 2001	MAY 2003	N/A (Ch-1)
Milestone III	MAR 2002	OCT 2003	N/A (Ch-1)
Full Rate Production Contract Award	APR 2002	DEC 2003	N/A (Ch-1)
Required Assets Available	FEB 2002	OCT 2005	N/A (Ch-1)

(U) Acronyms:

IOT&E - Initial Operational Test and Evaluation  
RAA - Required Assets Available  
HQ ACC - Headquarters, Air Combat Command

Notes:

IOT&E Start date reflects start of Combined DT&E/OT&E in Aug 2001, not the start of dedicated IOT&E in Nov 02.

RAA is substituted for Initial Operational Capability in the schedule. HQ ACC has agreed that 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 is available (does not include training system devices).

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

b. Current Change Explanations --

(U) (Ch-1) The following milestones cannot be completed (N/A) due to program termination. The previous Current Estimates were:

- Development Test & Evaluation Complete - Jul 04.
- Initial Operational Test & Evaluation Complete - May 05.
- Milestone III - Jul 05.
- Required Assets Available - Oct 07.
- Full Rate Production Contract Award - Aug 05.

10. (U) Performance Characteristics:

Computer Upgrade

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Weapons Flexibility	N/A	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.	Capabil- / ity to safely monitor, ferry, carry, arm, release and jettison/ up to 3 differ- ent conven- tional weapon types (1 types per bay) with a single software load.	Capabil- / ity to safely monitor, ferry, carry, arm, release and jettison/ up to 3 differ- ent conven- tional weapon types (1 types per bay) with a single software load.
Mission Capable (MC) Rate (%)	75	75 / 65	TBD	67%

(U) Mission Capable Rate as expressed applies to the overall fleet aircraft

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

wartime mission capable rate. The integration of the weapons upgrade modification will not cause the fleet Mission Capable rate to degrade below the threshold value. For information only - the following reliability and maintainability parameters are specified in the weapons upgrade contract specifications: mean time between critical failure, mean time between unscheduled maintenance, maintenance manhours per flight hours, and max/mean repair time on equipment. These parameters will be used to support Mission Capable rate calculations

b. Current Change Explanations -- None

DSUP

a. Performance --

Development Estimate (SAP)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
-------------------------------	--	---------------------------	---------------------

(b)(1)



(U) MTBCF - Mean Time Between Critical Failure  
(U) KPP - Key Performance Parameter

(U) KPPs are as stated in the Operational Requirements Document.

(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 --

(U) (Ch-1) The Defensive System Upgrade Program was terminated December 17, 2002. Operational Requirements Document need for a defensive improvement program has not changed. Current Estimates reflected above were the Program Manager's previous Current Estimates.

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

Computer Upgrade

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	159.9	234.6	231.4
Procurement	174.5	105.4	108.0
Recurring	(152.4)		(102.8)
Nonrecurring	(14.8)		(0.0)
Total Flyaway	(167.2)		(102.8)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.8)		(1.7)
Initial Spares	(6.5)		(3.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	285.5	274.5
Total FY 1995 Base-Year \$	334.4	625.5	613.9
Escalation	80.5	52.8	49.7
Development (RDT&E)	(23.2)	(15.8)	(15.7)
Procurement	(57.3)	(16.7)	(14.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(20.3)	(19.5)
Total Then Year \$	414.9	678.3	663.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	103	60	60
Total	103	60	60

(U) Low Rate Initial Production First Delivery is defined as the delivery of the first kitproof upgrade kit. LRIP quantity of 3 kits was approved at Milestone II (January 25, 1995).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

DSUP

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	303.0	376.6	350.2
Procurement	291.4	412.6	0.0
Recurring Flyaway	(262.8)		(0.0)
Nonrecurring Flyaway	(0.7)		(0.0)
Total Flyaway	(263.5)		(0.0)
Other Weapon System Cost	(0.0)		(0.0)
Peculiar Support	(6.3)		(0.0)
Initial Spares	(21.6)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	<u>594.4</u>	<u>789.2</u>	<u>350.2</u>
Escalation	105.9	110.3	21.2
Development (RDT&E)	(30.0)	(23.0)	(21.2)
Procurement	(75.9)	(87.3)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>700.3</u>	<u>899.5</u>	<u>371.4</u>

(U) Defensive System Upgrade Program was terminated December 17, 2002.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	95	60	0
Total	<u>95</u>	<u>60</u>	<u>0</u>

(U) No Low Rate Initial Production quantities were approved for DSUP.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

Computer Upgrade

	UCR Baseline (MAR 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	625.5	613.9	
(2) Quantity	60	60	
(3) Unit Cost	10.425	10.232	-1.85
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	105.4	108.0	
(2) Quantity	60	60	
(3) Unit Cost	1.757	1.800	+2.45

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	UCR Baseline (MAR 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	789.2	350.2	
(2) Quantity	60	0	
(3) Unit Cost	13.153	N/A	-100.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	412.6	0.0	
(2) Quantity	60	0	
(3) Unit Cost	6.877	N/A	-100.00

(U) The Defensive System Upgrade Program was terminated December 17, 2002.

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13. (U) Cost Variance Analysis:  
Computer Upgrade

a. (U) 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	-13.5	-24.3	-	-6.9	-44.7
Quantity	-	-42.9	-	-	-42.9
Schedule	-16.0	+1.7	-	+30.1	+15.8
Engineering	+24.7	-35.8	-	-	-11.1
Estimating	+64.9	-9.2	-	+268.8	+324.5
Other	+10.8	-	-	+4.9	+15.7
Support	-	-2.0	-	-	-2.0
Subtotal	+70.9	-112.5	-	+296.9	+255.3
Current Changes:					
Economic	+0.1	-1.6	-	-0.3	-1.8
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-7.0	+5.9	-	-2.6	-3.7
Other	-	-	-	-	-
Support	-	-1.1	-	-	-1.1
Subtotal	-6.9	+3.2	-	-2.9	-6.6
Total Changes	+64.0	-109.3	-	+294.0	+248.7
Current Estimate	247.1	122.5	-	294.0	663.6

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

(U) 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	-	-35.3	-	-	-35.3
Schedule	-14.8	-	-	+27.3	+12.5
Engineering	+21.7	-32.6	-	-	-10.9
Estimating	+60.7	-1.7	-	+245.0	+304.0
Other	+9.8	-	-	+4.4	+14.2
Support	-	-1.6	-	-	-1.6
Subtotal	+77.4	-71.2	-	+276.7	+282.9
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-5.9	+5.2	-	-2.2	-2.9
Other	-	-	-	-	-
Support	-	-0.5	-	-	-0.5
Subtotal	-5.9	+4.7	-	-2.2	-3.4
Total Changes	+71.5	-66.5	-	+274.5	+279.5
Current Estimate	231.4	108.0	-	274.5	613.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
 Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
FY02 recession and payback on FY03 estimating change (Estimating)	-6.3	-7.4
RDT&E Subtotal	<u>-5.9</u>	<u>-6.9</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2.0
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.9
Miscellaneous changes to the current estimate (Estimating)	+4.4	+5.0
Change in Initial Spares (Support)	-1.7	-3.1

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in Peculiar Support (Support)	+1.2	+2.0
Procurement Subtotal	+4.7	+3.2
(3) <u>O&amp;M</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Reduced requirements (Estimating)	-2.6	-3.0
O&M Subtotal	-2.2	-2.9

DSUP

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	333.0	367.3	-	700.3
Previous Changes:				
Economic	-12.1	-31.1	-	-43.2
Quantity	-	-172.9	-	-172.9
Schedule	+100.8	+15.3	-	+116.1
Engineering	-	-	-	-
Estimating	-15.4	+312.3	-	+296.9
Other	+5.0	-	-	+5.0
Support	-	+9.0	-	+9.0
Subtotal	+78.3	+132.6	-	+210.9
Current Changes:				
Economic	-13.0	+31.5	-	+18.5
Quantity	-	-215.3	-	-215.3
Schedule	-	-9.3	-	-9.3
Engineering	-	-	-	-
Estimating	-26.9	-262.5	-	-289.4
Other	-	-	-	-
Support	-	-44.3	-	-44.3
Subtotal	-39.9	-499.9	-	-539.8
Total Changes	+38.4	-367.3	-	-328.9
Current Estimate	371.4	-	-	371.4

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

(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	-	-137.2	-	-137.2
Schedule	+92.5	-	-	+92.5
Engineering	-	-	-	-
Estimating	-15.2	+251.5	-	+236.3
Other	+4.5	-	-	+4.5
Support	-	+6.9	-	+6.9
Subtotal	+81.8	+121.2	-	+203.0
Current Changes:				
Quantity	-	-155.6	-	-155.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-34.6	-222.2	-	-256.8
Other	-	-	-	-
Support	-	-34.8	-	-34.8
Subtotal	-34.6	-412.6	-	-447.2
Total Changes	+47.2	-291.4	-	-244.2
Current Estimate	350.2	-	-	350.2

(U) Defensive System Upgrade Program was terminated on December 17, 2002.

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-13.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+2.0
Decreased requirements due to program termination (Estimating)	-36.4	-28.9
RDT&E Subtotal	<u>-34.6</u>	<u>-39.9</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-12.6
Economic adjustment for negative program change. (Economic)	N/A	+44.1
Total Quantity Variance associated with decrease of 60 units to zero.	-326.1	-414.8
Quantity decrease of 60 units to zero. (Quantity)	-155.6	-215.3

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	0.0	-9.3
Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	-170.5	-190.2
Decreased requirements due to program termination (Estimating)	-51.7	-72.3
Change in Initial Spares due to program termination. (Support)	-27.2	-35.0
Change in Peculiar Support due to program termination. (Support)	-7.6	-9.3
Procurement Subtotal	-412.6	-499.9

(U) Defensive System Upgrade Program was terminated December 17, 2002.

QR = Quantity related changes.

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.03	-0.775	+2.17	+0.263	-0.185	+5.35	+0.262	-0.052	+7.03	11.06

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.25	-0.432	+0.899	+0.028	-0.597	-0.055	--	-0.052	-0.209	2.04

(U) Date shown as Initial Operational Capability (IOC) is the Required Assets Available (RAA) date. HQ Air Combat Command has agreed to use the RAA date in

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

Computer Upgrade

lieu of IOC.

**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	APR 1993	N/A	APR 1993
Milestone II	N/A	JAN 1995	N/A	JAN 1995
Milestone III	N/A	JAN 2001	N/A	MAR 2003
IOC	N/A	JAN 2003	N/A	MAR 2003
Total Cost	N/A	414.9	N/A	663.6
Total Quantity	N/A	103	N/A	60
Prog Acq Unit Cost	N/A	4.0	N/A	11.1

(U) Date shown as Initial Operational Capability (IOC) is the Required Assets Available (RAA) date. HQ Air Combat Command has agreed to use the RAA date in lieu of IOC.

DSUP

**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	--	--	--	--	--	--	--	--	N/A

**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	--	--	--	--	--	--	--	--	N/A

(U) Defensive System Upgrade Program was terminated December 17, 2002.

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14c. (U) Unit Cost and Other History (Cont'd):  
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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	APR 1993	N/A	APR 1993
Milestone II	N/A	APR 1997	N/A	APR 1997
Milestone III	N/A	MAR 2002	N/A	N/A
IOC	N/A	FEB 2002	N/A	N/A
Total Cost	N/A	700.3	N/A	371.4
Total Quantity	N/A	95	N/A	0
Prog Acq Unit Cost	N/A	7.4	N/A	0.0

(U) Defensive System Upgrade Program was terminated December 17, 2002.

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

a. RDT&E --  
(U) Computer/WCMD:  
McDonnell Douglas/TBC, Long Beach CA  
F33657-96-C-2075, CPAF  
Award: January 30, 1997  
Definitized: January 30, 1997

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$413.9	N/A	0	\$445.1	\$445.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$2.7	\$0.4
Cumulative Variances To Date (12/19/02)	\$2.0	\$-0.2
Net Change	\$-0.7	\$-0.6

Explanation of Change:

(U) The increase from initial contract price to current contract price is due to the addition of the computer upgrade sustainment effort.

The slight unfavorable net cost and net schedule variance is contributed to a change in methodology for calculating performance.

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

(U) DSUP EMD: McDonnell Douglas/TBC, Long Beach CA F33657-97-C-0002, CPAF Award: June 20, 1997 Definitized: June 20, 1997	<u>Initial Contract Price</u> <u>Target</u> <u>Ceiling</u> <u>Qty</u>
	\$216.5      N/A      0
<u>Current Contract Price</u> <u>Target</u> <u>Ceiling</u> <u>Qty</u>	<u>Estimated Price At Completion</u> <u>Contractor</u> <u>Program Manager</u>
\$284.1      N/A      0	\$370.2      \$378.6
Previous Cumulative Variances	<u>Cost Variance</u> <u>Schedule Variance</u>
Cumulative Variances To Date (12/19/02)	\$6.1      \$-5.4
Net Change	\$2.9      \$-3.5
	\$-3.2      \$1.9

Explanation of Change:

(U) The increase from initial target price to the current contract price is due to the restructure necessitated by late Government Furnished Equipment (Navy Integrated Defensive Electronic Countermeasures (IDECM)), support equipment and the alternate decoy effort.

Flight test delays and late Government Furnished Equipment caused a slowdown in contractor expenditures resulting in an unfavorable net cost variance and favorable net schedule variance. The Defensive System Upgrade Program was terminated on December 17, 2002. Contract data based on program status prior to termination.

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> (FY93-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	618.5	-	-	-	618.5
Procurement	71.9	34.8	15.8	-	122.5
MILCON	-	-	-	-	-
O&M	294.0	-	-	-	294.0
Total	984.4	34.8	15.8	-	1035.0

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

Computer Upgrade

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

<u>Appropriation</u>	<u>Prior Years (FY93-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	247.1	-	-	-	247.1
Procurement	71.9	34.8	15.8	-	122.5
MILCON	-	-	-	-	-
O&M	294.0	-	-	-	294.0
<b>Total</b>	<b>613.0</b>	<b>34.8</b>	<b>15.8</b>	<b>-</b>	<b>663.6</b>

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

<u>Appropriation</u>	<u>Prior Years (FY97-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	371.4	-	-	-	371.4
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
<b>Total</b>	<b>371.4</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>371.4</b>

b. Annual Summary -- Computer Upgrade

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				4.1	4.0
1994					
1995				1.3	1.3
1996				12.9	13.3
1997				31.3	32.8
1998				42.3	44.6
1999				48.7	51.9
2000				37.7	40.7
2001				31.6	34.6
2002				12.6	13.9
2003				8.9	10.0
2004					
<b>Subtotal</b>				<b>231.4</b>	<b>247.1</b>

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

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	6		7.3	7.4	8.1
2001			1.1	1.1	1.2
2002	10		19.4	20.6	23.0
2003	28		33.6	35.0	39.6
2004	16		28.7	30.3	34.8
2005			12.7	13.6	15.8
Subtotal	60		102.8	108.0	122.5

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				5.2	5.4
1997				27.7	29.0
1998				58.1	61.2
1999				67.9	72.3
2000				51.6	55.7
2001				44.6	49.0
2002				18.2	20.1
2003				1.2	1.3
Subtotal				274.5	294.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	60		102.8	613.9	663.6

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

b. Annual Summary -- DSUP

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				27.1	27.8
1998				59.4	61.4
1999				64.7	67.5
2000				52.1	55.2
2001				58.8	63.2
2002				21.2	23.0
2003				66.9	73.3
2004					
Subtotal				350.2	371.4

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004					
2005					
2006					
2007					
2008					
2009					
2010					
2011					
Subtotal					

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				350.2	371.4

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17. (U) Delivery/Expenditure Information:

Computer Upgrade

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	3	3

(U) Percent Total Program Quantities Delivered: 5.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 460.4

(U) Percent Total Program Expended: 69.4%

DSUP

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): \$ 287

(U) Percent Total Program Expended: 77.3%

(U) The Defensive System Upgrade Program was terminated on December 17, 2002.

18. (U) Operating and Support Costs:

Computer Upgrade

a. (U) Assumptions and Ground Rules --

This estimate, dated January 14, 2002, was prepared by the B-1B System Program Office as part of the Program Office Estimate for the Acquisition Program Baseline approved March 7, 2002.

The B-1 CMUP-Computer Upgrade Cost Analysis Requirements Description and Service Cost Position estimate, which reflect a revised system architecture, were used as the basis for this estimate. The HQ Air Combat Command 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 60 aircraft at 319/Flying Hour (FH)/Acft/Yr for Air Combat Command.

Changes to the Computer Upgrade program include conversion to Ada software. It is estimated the Ada software environment will significantly reduce

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

**Computer Upgrade**

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.

Total Operational & Support costs reflect aircraft life 2002 through 2026.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Computer Upgrade 60 B-1B Aircraft Avg Annual Costs	B-1B AP101F Computer B-1B Aircraft Avg Annual Costs
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	2.1	5.8
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	6.6	70.3
Indirect Costs	N/A	N/A
Total	8.7	76.1

Total O&S Cost	Computer Upgrade	B-1B AP101F Computer
BY\$ (In Millions)	218.8	1902.5
TY\$ (In Millions)	304.5	2747.3

**DSUP**

a. (U) Assumptions and Ground Rules --

This estimate was prepared by the B-1B System Program Office as part of the updated Program Office Estimate, dated January 18, 2002, for the Acquisition Program Baseline approved March 7, 2002.

The B-1B CMUP - Defensive System Upgrade Cost Analysis Requirements Description and Service Cost Position estimate, which reflect a revised system architecture, were used as the basis for this estimate. The HQ Air Combat Command Manpower Estimate Report was reviewed and found to have a 33 person manpower reduction for the Defensive System Upgrade. The Operation and Support has a phase-in of FY06-FY11 and steady state FY12-FY26. A 1.48 utilization factor (Equipment Operation Hours per Flying Hour) was used for 60 aircraft at 319/Flying Hour/Aircraft/Year for HQ Air Combat Command.

Changes with the Defensive System Upgrade include replacing 118 ALQ-161 Line Replaceable Units (LRUs) with 35 ALR-56M and Integrated Defensive Electronic

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

DSUP

Counter Measure Line Replaceable Units; 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 Program will reduce annual Operating and Support costs approximately \$50M per year.

The antecedent system is the B-1B ALQ-161 Defensive System.

Total Operational & Support costs reflect aircraft life 2002 through 2026.

Costs are shown in Fiscal Year 1996 Constant (Base-Year) Dollars in Millions). (Conversion factor from Base Year 96 to Base Year 96 is .98.)

**b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)**

Cost Element	DSUP 60 B-1B Aircraft Avg Annual Cost	B-1B ALQ-161 60 B-1B Aircraft Avg Annual Cost
Mission Pay & Allowances	1.4	2.5
Unit Level Consumption	3.6	58.2
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	3.9	24.9
Indirect Costs	0.1	0.2
	N/A	N/A
<b>Total</b>	<b>9.0</b>	<b>85.8</b>

Total O&S Cost	DSUP	B-1B ALQ-161
BY\$ (In Millions)	171.5	2145.0
TYS (In Millions)	233.4	4435.6

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5. (U) References:

SAR Baseline (Development Estimate):

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

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated June 8, 2002.

6. (U) Mission and Description:

(U) The Tomahawk Land Attack Missile counters threats against U. S. Forces by destroying targets ashore including command, control and logistics systems; industrial and other high value targets; and ground and air defense systems. Tactical Tomahawk provides major modernization to the existing Tomahawk technology, increased responsiveness and flexibility, at a more affordable production unit cost.

Key elements of the Block IV Tactical Tomahawk design are an improved navigation and guidance computer; improved anti-jam Global Positioning System (GPS) capability; improved responsiveness and flexibility through two-way satellite communications for in-flight retargeting; a loiter capability; and the ability to send a single-frame, Battle Damage Indication Image (BDII) of overflown areas prior to impact. Modern manufacturing techniques and Commercial Off-the-Shelf/Government Off-the-Shelf (COTS/GOTS) hardware will provide this improved capability at an affordable production cost and allow lower post-production support costs by extending the recertification interval from eight years for the currently-fielded Block III to 15 years for Block IV Tactical Tomahawk. Block IV will maximize the use of existing Tomahawk Weapon System program and logistic support. There will be no change to the system's overall support concept.

7. (U) Executive Summary:

(U) On December 18, 1997, Assistant Secretary of the Navy, Research, Development and Acquisition (ASN RD&A) approved the termination of the Tomahawk Baseline Improvement Program (TBIP) and initiated the Tactical Tomahawk program. A Cost Plus Fixed Fee contract was awarded to Raytheon for the Engineering and Manufacturing Development (E&MD) phase of the Tactical Tomahawk program.

The Tactical Tomahawk All Up Round (AUR) program is currently in the final efforts of a five-year Engineering & Manufacturing Development (E&MD) phase which is 98% complete. During this SAR reporting period, significant component level testing, AUR level qualification testing, system level qualification testing, Functional Ground Testing (FGT) and two highly successful Contractor Development Flight Tests (DT-0 and DT-1) of the AUR were conducted. The DT-0 test flight was successfully executed in Aug 02. The missile was launched from a surface launched configuration and successfully flew a fully guided 550 mile flight using Global Positioning System (GPS) and Digital Scene Matching Area Correlation (DSMAC) navigation updates. The missile successfully demonstrated

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

in-flight retargeting and satellite communication capabilities, and impacted the target well within its target impact accuracy requirement. The DT-1 test flight was equally successful and executed in Nov 02. The missile was launched from an underwater launcher in the submarine configuration, and flew a fully guided 780 mile profile demonstrating its anti-jam protection capabilities and impacted the target well within its target impact accuracy requirement. Both flight tests successfully achieved all required test objectives and resulted in COMOPTEVFOR providing a favorable Operational Assessment finding the Tactical Tomahawk Weapon System "Potentially Operationally Effective and Potentially Operationally Suitable". Procurement of Block IV Tactical Tomahawk missiles began following the successful DT-0 test with a Low Rate Initial Production (LRIP-1) award to Raytheon in Oct 02 for 25 missiles, and an LRIP II option award in Jan 03 for 167 missiles.

The Tactical Tomahawk AUR program will commence Government Technical Evaluation (TECHEVAL) in March 03 followed by Operational evaluation (OPEVAL) testing in early FY04. The Tactical Tomahawk AUR is meeting and in most cases exceeding its design performance requirements and the program is executing within all APBA thresholds. Initial Operational Capability (IOC) is planned for May 04. MS-III decision and FRP Award are on track for June 04.

The FY 2004 President's Budget reflects a sponsor supported weapons procurement increase to more closely match Naval forces missile requirements and accelerate the production of LRIP and FRP missiles to a new mandated missile quantity increase of 671 (Total 2386) missiles over the previous program of record quantity of 1715 (June 02 APB). The increase precipitated an associated procurement cost and total acquisition cost APB breach. The revised APB, to reflect increased quantities, will be submitted for approval to the MDA. The FY 2004 President's Budget also reflects the request for a multiyear procurement for a quantity of 1784 missiles over the first five full rate production years (FY04-FY08). This multi year procurement is estimated to realize \$135M in cost avoidance over annual procurements.

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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	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:

A breach of the APB thresholds for Base Year Procurement occurred with the addition of missile quantities in the Fiscal Year 2004 President's Budget. The driver for the increase was additional missile procurement (671 Baseline IV Tactical Tomahawk missiles) over the previous program of record quantity (1715 missiles, June 02 APB).

9. (U) Schedule:

a. Milestones --

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Milestone II Development Contract Award	JUN 1998	JUN 1998	JUN 1998
Operational Assessment	OCT 2001	OCT 2002	JAN 2003 (Ch-1)
TECHEVAL			
Start	JAN 2002	OCT 2002	MAR 2003 (Ch-2)
Complete	SEP 2002	JUL 2003	OCT 2003 (Ch-3)
OPEVAL			
Start	OCT 2002	AUG 2003	NOV 2003 (Ch-4)
Complete	MAR 2003	MAR 2004	MAR 2004
LRIP Authorization	DEC 2001	JUN 2002	SEP 2002 (Ch-5)
Milestone III	JUN 2003	MAY 2004	JUN 2004 (Ch-6)
FRP Contract Award	JUL 2003	MAY 2004	JUN 2004 (Ch-7)
Initial Operational Capability	APR 2003	MAR 2004	MAY 2004 (Ch-8)
LRIP 2	N/A	JAN 2003	JAN 2003

(U) Acronyms:

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

TECHEVAL-Technical Evaluation  
OPEVAL-Operational Evaluation  
LRIP-Low Rate Initial Production  
FRP-Full Rate Production  
FGT-Functional Ground Test  
OA-Operational Assessment

b. Current Change Explanations --

(U) (Ch-1). From Oct 02 to Jan 03. FGT tests and corrective actions delayed DT-0 and DT-1 flight tests by 60 days from previous estimate, thereby delaying preparation of OA Report. COMOPTEVFOR issued their OA Report 3 Jan 03. Report stated Tactical Tomahawk was "Potentially Operationally Effective and Potentially Operationally Suitable".

(Ch-2). TECHEVAL Start changed from Oct 02 to Mar 03 as a result of delay in DT-0 flight tests, completion of AUR Qual testing, and delays in the Tactical Tomahawk Weapons Control System (TTWCS) readiness.

(Ch-3). TECHEVAL Complete changed from Jul 03 to Oct 03 as a result of delay in start of TECHEVAL.

(Ch-4). OPEVAL Start changed from Aug 03 to Nov 03 as a result of delay in TECHEVAL start.

(Ch-5). LRIP Authorization changed from Jun 02 to Sep 02 as a result of delay in DT-0 flight test from May 02 to Aug 02.

(Ch-6). MS-III changed from May 04 to June 04 to ensure receipt of OPEVAL final report.

(Ch-7). FRP Award changed from May 04 to Jun 04 as a result of delay in LRIP award and receipt of first LRIP deliveries.

(Ch-8). IOC Changed from March 04 to May 04 as a result in delay in first LRIP deliveries caused by the delay in LRIP authorization (#5 above).

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10. (U) Performance Characteristics:

a. Performance --

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

(U) Acronyms:

CEP-Circular Error Probable  
ECCM-Electronic Counter Counter Measure  
GPS-Global Positioning System  
dBW-decible watts  
km-kilometer

DEMONSTRATED PERFORMANCE:

Demonstrated performance characteristics were accomplished during Contractor development test flights DT-0 (Aug 02) and DT-1 (Nov 02).

b. Current Change Explanations -- None

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TOMAHAWK (R/UGM-109), December 31, 2002

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

a. (U) Cost --	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	525.3	525.3	565.0
Procurement	1158.4	1448.4	2098.6
	(860.0)		(1602.1)
Non-Recurring Tooling			(35.9)
Total Flyaway	(860.0)		(1638.0)
Other Weapon System Costs	(237.6)		(427.6)
Peculiar Support	(60.8)		(33.0)
Initial Spares	(0.0)		(0.0)
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 1999 Base-Year \$	1683.7	1973.7	2663.6
Escalation	179.7	168.2	295.3
Development (RDT&E)	(6.3)	(6.3)	(16.0)
Procurement	(173.4)	(161.9)	(279.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	1863.4	2141.9	2958.9

(U) (U) Current plans call for 10 Development and 192 LRIP missiles. Milestone Decision Authority (MDA) modified Acquisition Program Baseline on October 12, 1999 to provide for 2 LRIPs: LRIP 1 in FY 2002-30 missiles and LRIP 2 in FY 2003-162 missiles.

b. (U) Quantity --

Development (RDT&E)	12	10	10
Procurement	<u>1353</u>	<u>1715</u>	<u>2386</u>
Total	1365	1725	2396

(U) Current plans call for 10 Development and 192 LRIP missiles. Milestone Decision Authority (MDA) modified Acquisition Baseline on October 12, 1999 to provide for 2 LRIPs: LRIP 1- OCT 2002 (25 missiles), and LRIP 2- JAN 2003 (167 missiles).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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TOMAHAWK (R/UGM-109), December 31, 2002

12. (U) Unit Cost Summary:

	UCR Baseline (JUN 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1999 BY\$)	1973.7	2663.6	
(2) Quantity	1725	2396	
(3) Unit Cost	1.144	1.112	-2.80
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1999 BY\$)	1448.4	2098.6	
(2) Quantity	1715	2386	
(3) Unit Cost	0.845	0.880	+4.14

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	531.6	1331.8	-	1863.4
Previous Changes:				
Economic	-4.9	-40.6	-	-45.5
Quantity	-	+236.3	-	+236.3
Schedule	+33.7	+32.9	-	+66.6
Engineering	-	-	-	-
Estimating	-0.8	-41.8	-	-42.6
Other	-	-	-	-
Support	-	+91.7	-	+91.7
Subtotal	+28.0	+278.5	-	+306.5
Current Changes:				
Economic	+3.3	+1.3	-	+4.6
Quantity	-	+450.4	-	+450.4
Schedule	+21.4	+264.3	-	+285.7
Engineering	-	-	-	-
Estimating	-3.3	+43.0	-	+39.7
Other	-	-	-	-
Support	-	+8.6	-	+8.6
Subtotal	+21.4	+767.6	-	+789.0
Total Changes	+49.4	+1046.1	-	+1095.5
Current Estimate	581.0	2377.9	-	2958.9

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TOMAHAWK (R/UGM-109), December 31, 2002

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

(U) Summary (FY 1999 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	525.3	1158.4	-	1683.7
Previous Changes:				
Quantity	-	+205.9	-	+205.9
Schedule	+30.3	+28.6	-	+58.9
Engineering	-	-	-	-
Estimating	-7.2	-22.2	-	-29.4
Other	-	-	-	-
Support	-	+77.7	-	+77.7
Subtotal	+23.1	+290.0	-	+313.1
Current Changes:				
Quantity	-	+381.8	-	+381.8
Schedule	+20.0	+132.7	-	+152.7
Engineering	-	-	-	-
Estimating	-3.4	+241.2	-	+237.8
Other	-	-	-	-
Support	-	-105.5	-	-105.5
Subtotal	+16.6	+650.2	-	+666.8
Total Changes	+39.7	+940.2	-	+979.9
Current Estimate	565.0	2098.6	-	2663.6

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+3.3
FGT testing and corrective actions delayed conduct of DT-0 and DT-1 free flights and stretched out E&MD Program in order to complete AUR qualifications. (Schedule)	+20.0	+21.4
Adjustment for Current and Prior Inflation. (Estimating)	-3.4	-3.4
Revised Estimate. (Estimating)	0.0	+0.1
RDT&E Subtotal	+16.6	+21.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+1.3
Total Quantity Variance associated with increase of 671 missiles.	+337.9	+398.6
Quantity increase of 671 missiles. (Quantity)	+381.8	+450.4
Allocation to Schedule variance resulting from Quantity Change and addition of two years of procurement. (Schedule)	-65.8	+25.9
Stretchout of annual procurement buy profile by two years including additional missiles. (Schedule)	0.0	+4.7

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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>
Schedule Variance as a result of additional outyear procurements of missiles. (Schedule)	+198.5	+233.7
Allocation to Estimating variance resulting from Quantity Change, and addition of two years of procurement. (Estimating)	+21.9	-77.7
Adjustment for Current and Prior Inflation. (Estimating)	-1.3	-1.3
Revised Estimate based upon price increase of recurring missile hardware. (Estimating)	+108.1	+122.0
Adjustment for Current and Prior Inflation. (Support)	-0.2	-0.2
Revised Estimate in Peculiar Support (Support)	+7.2	+8.8
	0.0	0.0
Realignment of Fly-away and Support Costs (Support)	-112.5	0.0
Realignment of Fly-away and Support Costs (Estimating)	+112.5	0.0
Procurement Subtotal	<u>+650.2</u>	<u>+767.6</u>

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.37	-0.017	-0.301	+0.147	--	-0.001	--	+0.042	-0.130	1.23

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	
0.984	-0.016	-0.140	+0.125	--	+0.001	--	+0.042	+0.012	0.997

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TOMAHAWK (R/UGM-109), December 31, 2002

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	JUN 1998	N/A	JUN 1998
Milestone III	N/A	JUN 2003	N/A	JUN 2004
IOC	N/A	APR 2003	N/A	MAY 2004
Total Cost	N/A	1863.4	N/A	2958.9
Total Quantity	N/A	1365	N/A	2396
Prog Acq Unit Cost	N/A	1.4	N/A	1.2

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

a. RDT&E --  
 (U) E&MD: Initial Contract Price  
Target Ceiling Qty  
 RAYTHEON MISSILE SYSTEMS, TUCSON AZ \$247.6 N/A 0  
 N00019-98-C-0177, CPFF  
 Award: June 3, 1998  
 Definitized: June 3, 1998

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$307.1	N/A	0	\$381.0	\$381.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

(U) Additional Functional Ground Tests (FGT) to correct AUR deficiencies, delayed Contractor Development flights DT-0 and DT-1 by 2 months.

(U) Contract Comments:

An over target Baseline was approved in October 2000. As of this report, contract execution is over 98% complete, and in accordance with SAR guidance, this will be the last contract cost information submitted for this E&MD contract.

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TOMAHAWK (R/UGM-109), December 31, 2002

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

b. Procurement --  
(U) LRIP 1 & 2:  
RAYTHEON MISSILE SYSTEMS, TUCSON AZ  
N00019-02-C-3205, FPI  
Award: October 3, 2002  
Definitized: October 3, 2002

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$35.3	\$47.4	25	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$244.0	\$255.0	192	\$244.0	\$244.0

Explanation of Change:

(U) Earned Value Data data will start to be reported in July 2003 on a monthly basis and will be provided in the next SAR.

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

(U) Contract Comments:

LRIP-1 contract was awarded on 3 Oct 02 for 25 AUR Tactical Tomahawk missiles (AUR only) as a result of a successful DT 0 flight. LRIP-1 contained an option to purchase 167 additional AURs (LRIP-2). LRIP-2 was awarded on 14 Jan 03 based upon favorable Operational Assessment report from COMOPTEVFOR.

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> (FY98-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-09)	<u>Total</u>
RDT&E	561.2	19.8	-	-	581.0
Procurement	317.1	277.6	192.0	1591.2	2377.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	878.3	297.4	192.0	1591.2	2958.9

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TOMAHAWK (R/UGM-109), December 31, 2002

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

b. Annual Summary -- TACTICAL TOMAHAWK AUR

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

Fiscal Year	Qty	Flyaway FY 1999 Dollars Nonrec	Flyaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				49.9	49.8
1999				120.4	121.5
2000				160.4	164.2
2001				101.6	105.4
2002				60.2	63.0
2003				54.1	57.3
2004				18.4	19.8
Subtotal	10			565.0	581.0

(U) The amounts shown for RDT&E in Section 16 will not track to the President's budget because the SAR reports cost for the Tactical Tomahawk All Up Round only, and the President's Budget includes costs for Mission Planning and Weapons Control System segments of the total Tomahawk Weapons System. Further, because of the unique cost sharing arrangement of the Tactical Tomahawk Engineering Development Contract, the SAR also includes an estimate of the contractor's contribution.

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1999 Dollars Nonrec	Flyaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	25		79.7	69.0	73.0
2003	167		220.0	227.6	244.1
2004	267		162.0	254.8	277.6
2005	218		132.3	173.4	192.0
2006	422		256.7	308.0	346.9
2007	406		247.3	329.3	377.4
2008	471		287.0	377.1	440.0
2009	410		253.0	359.4	426.9
Subtotal	2386		1638.0	2098.6	2377.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2396		1638.0	2663.6	2958.9

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TOMAHAWK (R/UGM-109), December 31, 2002

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 338.1

(U) Percent Total Program Expended: 11.4%

(U) TECHEVAL will start in March 03 with four E&MD missiles to be tested. OPEVAL is planned to commence in Nov 03 with an additional four E&MD missiles to be tested.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The operational concept is a "wooden round" which does not undergo maintenance except at the depot level.

This maintenance cycle is known as a re certification and includes examination and replacement of time limited components.

Tactical Tomahawk depot maintenance is significantly less than Block III because of the 15 year re certification interval.

An operational flight test (OTL) program is conducted to determine operational readiness and aging effects of the deployed system and to provide fleet training. The Block III OTL program generally averaged 8 launches per year, while the Tactical program is estimated at 3 launches per year.

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

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

Theater Mission Planning provides for the programming of Tomahawk missions and maintenance of hardware and software systems. This was a cost element of Tomahawk Block III because those costs were reported at a total weapons system level, but is not a cost element of Tactical Tomahawk because the Tactical costs are reported at the All Up Round (AUR) only level.

Platform maintenance was included for Tomahawk Block III launch platforms at an approximate level of 134 platforms per year.

This was a cost element of Tomahawk Block III because those costs were reported at a total weapons system level, but is not a cost element of

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TOMAHAWK (R/UGM-109), December 31, 2002

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

Tactical Tomahawk because the Tactical costs are reported at the All Up Round (AUR) only level.

The Tactical Tomahawk will be maintained using the same maintenance philosophy and infrastructure as the current Tomahawk Block III. Tomahawk Block III is the antecedent system. Due to differences in the estimation of O&S cost elements for the Tomahawk Block III and the Tactical Tomahawk, the comparison of total O&S costs is not meaningful.

O&S costs for both systems have been normalized to a 30 year period and to FY99 Dollars.

++Total Block III O&S costs in TY \$ is Unavailable.

b. (U) Costs -- (FY 1999 Constant (Base-Year) Dollars in Millions)

Cost Element	TACTICAL TOMAHAWK AUR AVG. ANN. COST FOR TOTAL SYSTEM	TOMAHAWK BLOCK III AVG. ANN. COST FOR TOTAL SYSTEM
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	5.2	36.6
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0
Tech/Operational Support	6.6	16.0
Platform Maintenance	N/A	2.9
Theater Mission Planning	N/A	14.8
Mission Personnel	3.6	N/A
Demilitarization	0.8	N/A
OTL	6.9	18.4
Software Support	2.2	13.3
	N/A	N/A
Total	25.3	102.0

Total O&S Cost	TACTICAL TOMAHAWK AUR	TOMAHAWK BLOCK III
BY\$ (In Millions)	760.1	3058.4
TY\$ (In Millions)	1120.5	N/A

Report Creation Date: 03/21/2003 5:35:47 PM

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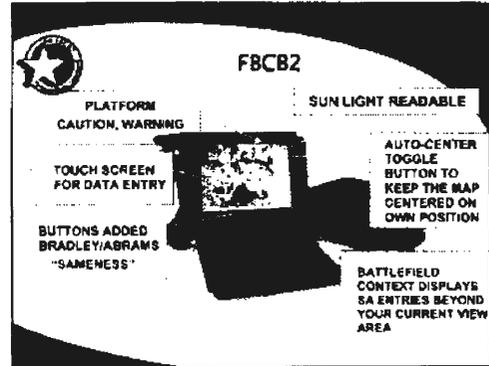
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

**PROGRAM: FBCB2**

**AS OF DATE: December 31, 2002**

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1. Designation and Nomenclature (Popular Name): Force XXI Battle Command Brigade and Below (FBCB2)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM FBCB2	COL Nickolas Justice
ATTN: SFAE-C3T-FB	Assigned: July 13, 2001
Bay 2, Building 2525	DSN 987-3237; COMM 732-427-3237
Fort Monmouth, NJ 07703-5008	justice@us.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0203758A (Shared) Project D374  
PE 0203759A Project D120  
PROCUREMENT:  
APPN 2035 ICN BS9736 (Army)  
APPN 2035 ICN W61900 (Army)  
O&M:  
PE 590000

The initial FBCB2 efforts were funded under Program Element 0203758A, Project D374 as part of the Army's Digitization Initiatives. PE 0203759A, Project D120 was established in FY 1998 to create the PM FBCB2 funding line.

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**5. References:**

SAR Baseline (Development Estimate):

Approved Acquisition Program Baseline (APB) dated December 21, 1999.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated December 21, 2001.

**6. Mission and Description:**

The Force XXI Battle Command Brigade and Below (FBCB2) is a digital, battle command information system that provides integrated, on-the-move, timely, relevant battle command information technology to allow commanders to concentrate combat system effects rather than combat forces, enabling units to be both more survivable and more lethal. FBCB2 provides the capability to pass orders and graphics allowing the warfighter to visualize the commander's intent and scheme of maneuver. FBCB2 affords combat forces the capability to retain the tactical/operational initiatives under all mission, enemy, terrain, troops, and time available conditions to enable faster decisions, real/near-real time communications and responses. The system includes a Pentium based processor, display unit, keyboard and removable hard disk drive cartridge. FBCB2 supports Situational Awareness (SA) (Blue and Red force positions) and Command and Control (C2) down to the soldier/platform level across the Battlefield Operating Systems (BOS) and echelons. FBCB2, as key component of the Army Battle Command System (ABCS), completes the information flow process from brigade to platform and across platforms within the brigade task force and across brigade boundaries.

**7. Executive Summary:**

This Selected Acquisition Report (SAR) submission includes the schedule and cost breaches to the APB, Change 1 dated December 21, 2001. The Schedule breach was caused by the decision to implement a System-Of-Systems testing concept during Initial Operational Test and Evaluation (IOT&E); the Army Battle Command System (ABCS) immaturity to prove interoperability with Army Tactical Command and Control System (ATCCS) systems and postponement of the IOT&E and Full Rate Production (FRP) decision review from FY 2003 to FY 2004. The Cost breach in Research, Development, Test and Evaluation (RDT&E) was caused by the zero-sum funding reprogramming action from Other Procurement Appropriation (OPA) to RDT&E from FY 2002 to FY 2007; additional funding in the RDT&E from FY 2008 through FY 2016 to continue software development; and additional tests in compliance with the new test requirements which necessitated a program restructure. A new Operational Requirements Document (ORD) was validated by the Joint Requirements Oversight Council (JROC) on April 24, 2002. This action has caused all previous ORD Key Performance Parameters (KPPs) to be rendered invalid. New KPPs are incorporated in this SAR submission. The revised Acquisition Program Baseline, Change 2 was signed by the Army Acquisition Executive on October 25, 2002 and was submitted to the Defense Acquisition Executive office for approval.

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

The following events have occurred since the last SAR submission: Successful Field Test #5 in August/September 2002; obtained Milestone Decision Authority approval to exercise the Low Rate Initial Production (LRIP) Contingency Option with additional 3,000 LRIP systems. The PM awarded the Contingency Option contract on December 18, 2002.

During FY 2002, PM FBCB2 has been engaged in the execution of Operation Enduring Freedom (OEF), Blue Force Tracking (BFT) efforts. To date, FBCB2 continues to successfully execute its role in the OEF, BFT.

**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	Yes
-- 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:

The decision to implement a System-Of-Systems testing concept during IOT&E, the ABCS' immaturity to prove interoperability with ATCCS systems, Director, Operational Test and Evaluation (DOT&E) requirement for additional tests to the FBCB2 program, and postponement of Initial Operational Test and Evaluation (IOT&E) and Full Rate Production (FRP) decision review from FY 2003 to FY 2004 caused the schedule breach. Several schedule milestones have slipped (see Section 9).

Reprogramming of funds from Other Procurement Army (OPA) to Research, Development, Test and Evaluation (RDT&E) from FY 2002 to FY 2007; additional funding in RDT&E from FY 2008 through FY 2016 to continue software development; and additional tests in compliance with evolving user/tester requirements resulted in a cost breach in RDT&E. Receipt of Operations and Maintenance Army (OMA) funds in FY 2000 to support the National Training Center (NTC) exercise at Fort Irwin, CA and in FY 2002/2003 to support the Operation Enduring Freedom (OEF), Blue Force Tracking (BFT) efforts caused the Cost breach in OMA.

**8c. Threshold Breaches (Cont'd):**

The APB, Change 2 has been submitted by the PM, was signed by the AAE on October 25, 2002 and is currently at OSD for approval by the DAE. Approval of the new APB will negate the cost breach in RDT&E.

A Program Deviation Report (PDR) and a Change 3, to the Development APB will be prepared and submitted for the cost breach in the OMA.

**9. Schedule:**

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
<b>BLOCK I</b>			
Milestone I/II	NOV 1997	NOV 1997	NOV 1997
Limited User Test 1 (LUT#1) (complete)	AUG 1998	AUG 1998	AUG 1998
Low Rate Initial Production (LRIP) ASARC/DAE Review	DEC 1999	DEC 1999	DEC 1999
Force Development Test & Experiment (FDTE)/Limited User Test (LUT#2)	APR 2000	N/A	N/A
Force Development Test & Experiment (FDTE)/Customer Test (CT)	N/A	APR 2000	APR 2000
Equip 4th ID at Ft Hood (complete)	DEC 2000	DEC 2000	DEC 2000
Division Capstone Exercise (DCX1)/Limited User Test (LUT#2)	N/A	APR 2001	APR 2001
Limited User Test (LUT#2A)	N/A	N/A	DEC 2001
Limited User Test (LUT#3)	N/A	MAR 2002	N/A (Ch-1)
<b>BLOCK II</b>			
PEO C3S Review	APR 2000	APR 2000	APR 2000
Award System Engineering and Integra- tion Contract (Software V 4.0...n)	NOV 2000	NOV 2000	MAY 2001
Initial Operational Test & Evaluation (IOT&E)	NOV 2001	NOV 2001	TBD (Ch-1)
Milestone III Decision Review	APR 2002	JUL 2002	TBD (Ch-1)
Full Rate Production Award	JUN 2002	NOV 2002	TBD (Ch-1)
Participate in Army JTRS IOT&E	SEP 2005	SEP 2005	N/A (Ch-2)
Deployment of Block II Software	SEP 2005	SEP 2005	SEP 2005
<b>BLOCK III</b>			
Follow-on System Engineering and Integration Contract Award	N/A	N/A	JUN 2004 (Ch-3)
Software V 7.0 Operational Evaluation	N/A	N/A	APR 2005 (Ch-3)

The Milestone III Decision Review is the Full Rate Production Decision Review (DAB).

Achievement of Block III capabilities are contingent upon mplementation of enhanced network capability outside of the FBCB2 program, through replacement of Single Channel Ground and Airborne Radio System

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

(SINCGARS)/Enhanced Position Location Reporting System (EPLRS)/Near Term Digital Radio (NTDR) with Joint Tactical Radio System (JTRS). Schedule milestones will be definitized at the MS III (Full Rate Production) Decision Review currently scheduled for FY 2004.

b. Current Change Explanations --

(Ch-1) - Initial Operational Test and Evaluation (IOT&E) and Milestone III Decision Review (Full Rate Production (FRP)) were postponed from FY 2003 to FY 2004. Specific dates have not been established. KPPs shown in the prior ORD were replaced by new KPPs introduced in the revised JROC-validated ORD, dated April 24, 2002. Schedule milestones were moved from Block I to Block II to realign with the revised ORD, FBCB2 program restructure and revised test strategy. Full Rate Production Contract Award slipped from FY 2003 to FY 2004 due to the postponement of the IOT&E and Milestone III Decision Review. Limited User #3 has been deleted.

(Ch-2) - An IOT&E is not planned for the JTRS program.

(Ch-3) - The Block III requirement was added to the revised ORD, validated by JROC on April 24, 2002. The "Follow-on SE&I Contract Award" and "Software V 7.0 Operational Evaluation" were added to the Schedule Milestones to satisfy the new ORD requirements.

**10. Performance Characteristics:**

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate	
KPP #1 Situational Awareness (SA)					(Ch-1)
Picture Displays of the force data rec'd at each echelon.	100%	100% / 95%	N/A	N/A	(Ch-1)
Data Accuracy - Display Platform/ Dismounted Soldier of the Reported Position	10/1 meters	10/1 meters / meters	N/A	N/A	(Ch-1)
KPP #2 Interoperability					
MCS/AFATDS/ASAS	Yes	Yes / Yes	N/A	N/A	(Ch-1)
CSSCS/FAAD C2I	Yes	Yes / Yes	N/A	N/A	(Ch-1)
Ability to push/pull information into/from ABCS databases	Yes	Yes / Yes	N/A	N/A	(Ch-1)
FBCB2 must be interoperable with Navy, Air Force, and Marine Corps	Yes	Yes / Yes	N/A	N/A	(Ch-1)

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
tactical systems FBCB2 must be interoperable with Allied/Coalition tactical systems	Yes	Yes / Yes	N/A	N/A	(Ch-1)
KPP #3 Unit Task Reorganization (UTR) (Time to implement UTR within FBCB2 Network)	N/A	/			
BLOCK I (IOT&E)					
Move a platoon to a new company (same brigade)	1 min	1 min / 5 min	N/A	N/A	(Ch-1)
Move a platoon to a new battalion (same brigade)	1 min	1 min / 5 min	N/A	N/A	(Ch-1)
Move a company to a new battalion (same brigade)	5 min	5 min / 10 min	N/A	N/A	(Ch-1)
Move a platoon to a new brigade	5 min	5 min / 15/60 / min	N/A	N/A	(Ch-1)
Move a company to a new brigade	5 min	5 min / 15/90 / min	N/A	N/A	(Ch-1)
Move a battalion to a new brigade	10 min	10 min / 2hrs/ / 4hrs	N/A	N/A	(Ch-1)
BLOCK II (FY05)					
Move a platoon to a new company (same brigade)	1 min	1 min / 5 min	N/A	N/A	(Ch-1)
Move a platoon to a new battalion (same brigade)	1 min	1 min / 5 min	N/A	N/A	(Ch-1)
Move a company to a new battalion (same brigade)	5 min	5 min / 10 min	N/A	N/A	(Ch-1)
Move a platoon to a new brigade	5 min	5 min / 10/30 / min	N/A	N/A	(Ch-1)
Move a company to a new brigade	5 min	5 min / 15/45 / min	N/A	N/A	(Ch-1)
Move a battalion to a new brigade	10 min	10 min / 30/120 / min	N/A	N/A	(Ch-1)
KPP #4 Information Exchange (time for information exchange between sender and receiver)					

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
BLOCK I (IOT&E)	N/A	/ N/A		
Alerts and Warnings	95% rc'd w/i 4 sec	95% rc'd/ w/i 4 / sec /	85% rc'd w/i 6 sec (Bn) / 80% rc'd / w/i 30 / sec / (Bde)	N/A (Ch-1)
Fire Support Information	95% rc'd w/i 8 sec	95% rc'd/ w/i 8 / sec /	80% rc'd w/i 30 sec	N/A (Ch-1)
Combat Reporting	90% rc'd w/i 15 sec	90% / rc'd / w/i 15 / sec /	80% rc'd w/i 30 sec	N/A (Ch-1)
Mission Planning Information	90% rc'd w/i 8 min	90% / rc'd / w/i 8 min /	90% rc'd w/i 15 min	N/A (Ch-1)
BLOCK II (FY05)				
Alerts and Warnings	95% rc'd w/i 4 sec	95% / rc'd / w/i 4 / sec /	90% rc'd w/i 6 sec	N/A (Ch-1)
Fire Support Information	95% rc'd w/i 8 sec	95% / rc'd / w/i 8 / sec /	90% rc'd w/i 15 sec	N/A (Ch-1)
Combat Reporting	90% rc'd w/i 15 sec	90% rc'd/ w/i 15 / sec /	90% rc'd w/i 30 sec	N/A (Ch-1)
Mission Planning Information	90% rc'd w/i 8 min	90% rc'd/ w/i 8 / min /	90% rc'd w/i 15 min	N/A (Ch-1)
Mean Time Between Essential Function Failure (MTBEFF)	910 hours	910 / hours /	700 hours	TBD
KPP #1 COMMON PICTURE (ORD Table 4.2)				TBD
Picture Displays of force data rec'd at each echelon	100%	100% /	95%	TBD
Operational FBCB2 equipped ground platforms shall display the				TBD

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
operational force					
BLOCK I - Intra Brigade Immediate Battlespace (All operational force)	N/A	N/A	TBD		
Immediate Battlespace ( All operational FBCB2)	N/A	N/A	TBD	50%	(Ch-2)
Extended Battlespace ( Key operational FBCB2)	N/A	N/A	TBD	50%	(Ch-2)
BLOCK II - Inter/ Intra Brigade Immediate Battlespace ( All operational FBCB2)	N/A	N/A	TBD	50%	(Ch-2)
Extended Battlespace ( Key operational FBCB2)	N/A	N/A	TBD	50%	(Ch-2)
BLOCK III - Inter/ Intra Brigade Immediate Battlespace ( All operational FBCB2)	N/A	N/A	TBD	75%	(Ch-2)
Extended Battlespace ( All operational FBCB2)	N/A	N/A	TBD	50%	(Ch-2)
Display of all operational FBCB2 equipped ground platforms			TBD		
BLOCK II (Only) Battalion - Platoon (Center of Mass)	N/A	N/A	TBD	50%	(Ch-2)

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>	
Brigade - Company (Center of Mass)	N/A	N/A	TBD	50%	(Ch-2)
KPP #2			TBD		
INTEROPERABILITY Performance measure of all top-level Information Exchange Requirements (IER)			TBD		
BLOCK I Critical IER	N/A	N/A	TBD	100%	(Ch-2)
BLOCK II/III Critical IER	N/A	N/A	TBD	100%	(Ch-2)
Non-Critical IER	N/A	N/A	TBD	100%	(Ch-2)
Interoperability with other Systems			TBD		
BLOCK I with GPS	N/A	N/A	Yes	Yes	(Ch-2)
BLOCK II with specific ABCS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives enemy position/ correlated information to/ from ASAS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives control of direct fire information to/ from AFATDS/FOS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives orders information to/ from MCS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives logistics information to/ from CSSCS	N/A	N/A	TBD	Yes	(Ch-2)

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>	
Transmits/ receives air defense warning information to/ from AMDPCS	N/A	N/A	TBD	Yes	(Ch-2)
BLOCK III Full ABCS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives enhanced ( aggregate) enemy information to/ from ASAS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives enhanced control of indirect fire information to/ from AFATDS/ FOS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives C2 data (OP ORDs, combined arms graphics) to/ from MCS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives enhanced logistics information ( med/ personnel C2 data) to/ from CSSCS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives SA and C2 data to/ from AMDPCS	N/A	N/A	TBD	Yes	(Ch-2)
Transmits/ receives location information from Combat identification sensors	N/A	N/A	TBD	Yes	(Ch-2)

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Transmits/ receives SA, C 2, fire support, enemy & warning information with Army, Navy, Air Force, and Marine Corps	N/A	N/A	TBD	Yes	(Ch-2)
KPP #3 NETWORK RECONFIGURATION TO SUPPORT UNIT TASK REORGANIZATION (UTR)			TBD		
BLOCK I Intra-Brigade UTR Platoon/ Company in same Brigade	N/A	N/A	TBD TBD	Yes	(Ch-2)
BLOCK II Inter-Brigade UTR Platoon/ Company/ Battalion to new Brigade in same Division	N/A	N/A	TBD TBD	Yes	(Ch-2)
BLOCK III Intra-Brigade UTR Company from Battalion to Battalion within 10 minutes	N/A	N/A	TBD TBD	Yes	(Ch-2)
KPP #4 FBCB2 INFORMATION EXCHANGE Demonstrate the capability to send/ receive FRAGO's specified graphic, control measures, and Call for Fire			TBD TBD		
BLOCK I only	N/A	N/A	TBD	Yes	(Ch-2)

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Reported survivability directly affects close fight displayed on operational force platforms within 5 km of reported entity location	N/A	N/A			
BLOCK I Intra Brigade	N/A	N/A	TBD	50%	(Ch-2)
BLOCK II Inter/ Intra Brigade	N/A	N/A	TBD	50%	(Ch-2)
Provide a capability to exchange information across Brigades			TBD		
Reported mobility/ counter-mobility fire support, tactical intelligence and combat support of the close fight received by the addressed operational force on the first atte	N/A	N/A			
BLOCK II Intra Brigade	N/A	N/A	TBD	75%	(Ch-2)
BLOCK III Intra Brigade	N/A	N/A	TBD	75%	(Ch-2)
Other position location information shall be displayed on the operational force platforms within 5 km of the reported entity location			TBD		

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
BLOCK III only	N/A	N/A	TBD	75%	(Ch-2)

Notes:

For Unit Task Reorganization Key Performance Parameter, the moving unit is digitally established at the time of notification. Time starts for establishment of digital communications with the new parent organization upon the order to re-task organize. Key positions will be digitally re-established first, for example, 15/60 is 15 minutes for key positions, 60 minutes for all other elements and echelons.

Acronym list:

AFATDS = Advanced Field Artillery Tactical Data System  
 AMDPCS = Air & Missile Defense Planning and Control System  
 ASAS = All Source Analysis System  
 CSSCS = Combat Service Support Control System  
 IER = Information Exchange Requirement  
 FRAGO = Fragmentary Order  
 GPS = Global Positioning System  
 MCS = Maneuver Control System  
 MTBEFF = Mean Time Between Essential Function Failure  
 OP ORD = Operations Order

b. Current Change Explanations --

(Ch-1) - Performance characteristics deleted from the revised ORD, JROC-validated April 24, 2002.

(Ch-2) - KPPs from the prior ORD were replaced by new KPPs introduced in the revised JROC-validated ORD, dated April 24, 2002.

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	462.9	462.9	638.3
Procurement	1818.1	1818.1	1675.0
Flyaway	(1337.3)		(0.0)
Non-Recurring Flyaway			(5.1)
Recurring Flyaway			(1098.4)
Total Flyaway	(1337.3)		(1103.5)
Other Weapon System Suppo	(357.0)		(450.3)
Peculiar Support	(0.0)		(60.9)
Initial Spares	(123.8)		(60.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	21.4
Total FY 2000 Base-Year \$	<u>2281.0</u>	<u>2281.0</u>	<u>2334.7</u>
Escalation	336.9	336.9	298.2
Development (RDT&E)	(1.6)	(1.6)	(20.5)
Procurement	(335.3)	(335.3)	(276.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.8)
Total Then Year \$	<u>2617.9</u>	<u>2617.9</u>	<u>2632.9</u>

The APB, Change 2 signed by the Army Acquisition Executive (AAE) on October 25, 2002 and is currently at OSD for approval by the Defense Acquisition Executive (DAE). Approval of the new APB will negate the Cost breach in RDT&E.

A Program Deviation Report (PDR) and a Change 3 to the Development APB will be prepared and submitted for the Cost breach in the O&M.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>59522</u>	<u>59522</u>	<u>56465</u>
Total	<u>59522</u>	<u>59522</u>	<u>56465</u>

The LRIP contract consists of Basic, Option 1, Option 2 and a Contingency Option. The Basic contract, Option 1 and Option 2 quantities of 5,952 is 10% of total Army Acquisition Objectives (AAO) of 59,522 FBCB2 Systems. Obtained Milestone Decision Authority approval to exercise the LRIP Contingency Option for an additional 3,000 LRIP systems in October 2002. The PM awarded the Contingency Option contract on December 18, 2002.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (DEC 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	2281.0	2334.7	
(2) Quantity	59522	56465	
(3) Unit Cost	0.038	0.041	+7.89
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	1818.1	1675.0	
(2) Quantity	59522	56465	
(3) Unit Cost	0.031	0.030	-3.23

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	464.5	2153.4	-	-	2617.9
Previous Changes:					
Economic	+0.2	-27.7	-	-	-27.5
Quantity	-	-85.7	-	-	-85.7
Schedule	-	+104.3	-	-	+104.3
Engineering	-	+126.8	-	-	+126.8
Estimating	+186.3	-269.0	-	+4.0	-78.7
Other	-	-	-	-	-
Support	-	+160.3	-	-	+160.3
Subtotal	+186.5	+9.0	-	+4.0	+199.5
Current Changes:					
Economic	-6.1	-48.9	-	-	-55.0
Quantity	-	-	-	-	-
Schedule	-	+4.7	-	-	+4.7
Engineering	-	-	-	-	-
Estimating	+13.9	-117.5	-	+18.2	-85.4
Other	-	-	-	-	-
Support	-	-48.8	-	-	-48.8
Subtotal	+7.8	-210.5	-	+18.2	-184.5
Total Changes	+194.3	-201.5	-	+22.2	+15.0
Current Estimate	658.8	1951.9	-	22.2	2632.9

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

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	O&M	TOTAL
Development Estimate	462.9	1818.1	-	-	2281.0
Previous Changes:					
Quantity	-	-64.7	-	-	-64.7
Schedule	-	+77.4	-	-	+77.4
Engineering	-	+105.2	-	-	+105.2
Estimating	+162.6	-245.4	-	+4.0	-78.8
Other	-	-	-	-	-
Support	-	+114.9	-	-	+114.9
Subtotal	+162.6	-12.6	-	+4.0	+154.0
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+12.8	-106.3	-	+17.4	-76.1
Other	-	-	-	-	-
Support	-	-24.2	-	-	-24.2
Subtotal	+12.8	-130.5	-	+17.4	-100.3
Total Changes	+175.4	-143.1	-	+21.4	+53.7
Current Estimate	638.3	1675.0	-	21.4	2334.7

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>RDT&amp;E</u>		
Revised Escalation Indices (Economic)	N/A	-6.1
Adjustment for Current and Prior Inflation (Estimating)	+2.3	+2.3
Zero Sum Reprogramming of Funds for Operational Testing from OPA to RDTE in FY04. (Estimating)	+18.8	+20.0
Prior Year Adjustment to reflect actuals. (Estimating)	-3.5	-3.4
RDTE Funding Adjustments from FY03 to FY16. (Estimating)	-4.8	-5.0
RDT&E Subtotal	+12.8	+7.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-56.8
Adjustment for negative program change. (Economic)	N/A	+7.9
Stretchout of annual procurement buy profile. (Schedule)	0.0	+4.7
Adjustment for Current and Prior Inflation. (Estimating)	+1.9	+2.0

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Deletion of Non-Recurring Flyaway in FY 08. (Estimating)	-5.1	-6.1
Dismounted Soldier System Unit (DSSU) Requirement Reduced From 30% to 20% of Hardware Quantity. (Estimating)	-51.1	-61.8
New Requirements to Support Current Contingency Operations. (Estimating)	+139.5	+173.8
Hardware and Installation Kit Unit Price Reductions Based on the LRIP Contract Contingency Option. (Estimating)	-130.7	-162.5
NET Team Size Reduced by 50%. (Estimating)	-15.7	-18.1
Reductions in command, control and communications common support services beginning in FY04. (Estimating)	-34.7	-42.4
Zero Sum Reprogramming of Funds for Operational Testing from OPA to RDTE in FY04. (Estimating)	-18.8	-20.0
Correction of FY00 Peculiar Support Cost Estimate (Estimating)	+2.4	+2.5
Correction to the Dec 01 SAR. "Data costs" miscategorized. (Estimating)	+5.9	+6.5
(Support)	-5.9	-6.5
Correction to the Dec 01 SAR. "Requirement for New Installation Sites and Site Support Cost" miscategorized. (Estimating)	+62.7	+73.9
(Support)	-62.7	-73.9
Correction to Dec 01 SAR. "Reduction in New Equipment Training and Contractor Logistics Support" miscategorized. (Estimating)	-44.7	-49.2
(Support)	+44.7	+49.2
Correction to the Dec 01 SAR. "Reduction in CLS Requirement" miscategorized. (Estimating)	-17.9	-16.1
(Support)	+17.9	+16.1
Adjustment for Current and Prior Inflation. (Support)	+0.9	+1.0
Change in Initial Spares Estimate (Support)	-8.4	-10.2
Change in Peculiar Support Estimate (Support)	+11.1	+13.0
Change in Other Weapons System Support (Support)	-21.8	-37.5
Procurement Subtotal	<u>-130.5</u>	<u>-210.5</u>

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

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(3) O&M		
New Requirement to Support Current Contingency Operations. (Estimating)	+17.4	+18.2
O&M Subtotal	+17.4	+18.2

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.044	-0.001	+0.001	+0.002	+0.002	-0.003	--	+0.002	+0.003	0.047

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	
0.036	-0.001	--	+0.002	+0.002	-0.007	--	+0.002	-0.002	0.035

Milestone III - Full Rate Production (FRP) Decision Review was postponed from FY 2003 to FY 2004. Specific date in FY 2004 has not been established.

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	NOV 1997	N/A	NOV 1997
Milestone II	N/A	NOV 1997	N/A	NOV 1997
Milestone III	N/A	APR 2002	N/A	TBD
IOC	N/A	N/A	N/A	DEC 2000
Total Cost	N/A	2617.9	N/A	2632.9
Total Quantity	N/A	59522	N/A	56465
Prog Acq Unit Cost	N/A	0.0	N/A	0.1

Milestone III - Full Rate Production (FRP) Decision Review was postponed from FY 2003 to FY 2004. Specific date in FY 2004 has not been established.

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

This LRIP contract consist of Basic, Option 1 and Option 2. Although the Contingency Option contract was awarded in December 2002, the C/SSR will not include the cost data until March or April reporting period.

a. Procurement --			Initial Contract Price		
<u>LRIP:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
Northrop Grumman (TRW), Carson, CA					
DAAB07-00-D-E501, FPIF	\$310.0	\$310.0	5952		
Award: January 25, 2000					
Definitized: June 27, 2000					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$126.4	N/A	5952	\$109.7	\$109.5	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$2.9	\$-0.7	
Cumulative Variances To Date (01/21/03)			\$3.7	\$-0.2	
Net Change			\$0.8	\$0.5	

Explanation of Change:

The Cost and Schedule variances are considered insignificant to warrant explanation.

Contract Comments:

The current contract price target was changed accordingly to reflect the actual contract Target Price. Contract Ceiling is not required for LRIP contracts and is not reflected in the Cost/Schedule Status Report (C/SSR).

Contract Number DAAB07-95-D-E604 was completed in August 02. This contract is no longer reported in this SAR submission.

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FBCB2, December 31, 2002

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY95-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-16)	<u>Total</u>
RDT&E	492.0	48.4	20.2	98.2	658.8
Procurement	313.1	87.4	84.8	1466.6	1951.9
MILCON	-	-	-	-	-
O&M	22.2	-	-	-	22.2
Total	827.3	135.8	105.0	1564.8	2632.9

b. Annual Summary -- FBCB2

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2000 Dollars Nonrec</u>	<u>Flyaway FY 2000 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				39.0	37.1
1996				49.7	48.1
1997				49.1	48.0
1998				61.9	61.0
1999				52.1	52.0
2000				66.0	66.8
2001				60.6	62.1
2002				53.1	54.9
2003				59.2	62.0
2004				45.5	48.4
2005				18.7	20.2
2006				13.5	14.8
2007				14.9	16.7
2008				6.9	7.9
2009				7.1	8.2
2010				8.5	10.0
2011				8.3	10.0
2012				8.2	10.0
2013				4.0	5.0
2014				4.0	5.1
2015				4.0	5.2
2016				4.0	5.3
Subtotal				638.3	658.8

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

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	1718	5.1	51.0	65.0	66.2
2001	1651		48.0	65.5	67.4
2002	2235		56.7	83.1	86.4
2003	2398		53.1	88.5	93.1
2004	2674		60.8	81.9	87.4
2005	2381		54.3	78.2	84.8
2006	2585		56.2	88.8	97.9
2007	1762		42.3	73.2	82.2
2008	2837		57.9	89.9	102.7
2009	5117		93.1	131.8	153.3
2010	4759		86.6	126.7	150.0
2011	4809		85.1	124.9	150.5
2012	5173		88.1	130.4	160.0
2013	5391		88.8	136.1	170.0
2014	5690		90.1	141.6	180.0
2015	5285		86.3	139.0	180.0
2016				30.4	40.0
Subtotal	56465	5.1	1098.4	1675.0	1951.9

Appropriation: 2020 - Operation & Maintenance, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				4.0	4.0
2001					
2002				5.1	5.3
2003				12.3	12.9
Subtotal				21.4	22.2

These funds were provided to support the National Training Center (NTC) exercise and current contingency operations.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	56465	5.1	1098.4	2334.7	2632.9

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	5952	5752

Percent Total Program Quantities Delivered: 10.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 731.9

Percent Total Program Expended: 27.8%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The concept of operations for the FBCB2 is for green suit unit and intermediate maintenance and contractor depot support. Green suit unit maintenance is limited to removal of failed Line Replaceable Units (LRU's) identified through the use of Built-In-Test(BIT)/Built-In-Test Equipment (BITE) software, shipment to intermediate support level for exchange and the installation of the new LRU. The extent of intermediate green suit maintenance has not yet been determined. Mission Pay and Allowances includes all Military Pay Allowances (MPA) funded costs, including green suit maintenance, Program Management Office (PMO) and replacement personnel costs. Unit-Level Consumption costs consist of the cost of Replenishment Spares and Repair Parts. Depot maintenance support is also included in Unit-Level Consumption costs. Contractor support consists of the cost of Post Production Software Support (PPSS). Sustaining support is the cost of replenishment training and O&M funded system project management. The FBCB2 hardware will be replaced every three to five years using the Computer Hardware Reprocurement (CHR) concept. Average Annual Costs by Cost Element are presented on a per unit basis in millions. Since no Cost Element exceeds \$10,000 per unit, all costs are shown as \$0.0M.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	FBCB2 AVERAGE ANNUAL COST	NO ANTECEDENT SYSTEM
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.0	N/A
Other	0.0	N/A
Total	0.0	N/A

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FBCB2, December 31, 2002

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

Total O&S Cost	FBCB2	NO ANTECEDENT SYSTEM
BY\$ (In Millions)	835.5	N/A
TY\$ (In Millions)	1159.5	N/A

Report Creation Date: 03/18/2003 8:29:39 AM

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AF-7 C-130 AMP

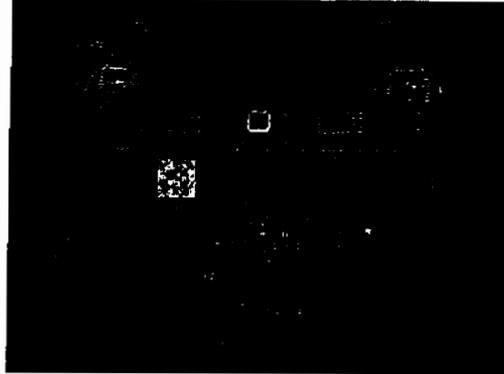
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: C-130 AMP

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): C-130 Avionics Modernization Program (AMP)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/GRB	Col Robert Dillman
2275 D Street, Bldg 16	Assigned: September 1, 2001
Room 149	DSN 785-7100; COMM (937) 255-7100
WPAFB, OH 45433-7239	robert.dillman@wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 41115F

PROCUREMENT:  
APPN 0300 ICN 046404 (DoD)  
APPN 3010 ICN 41115F (Air Force)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

SAF/PAS

00-0084

CONGRESSIONAL

03-C-0252

5. References:

SAR Baseline (Development Estimate):

DAE approved Acquisition Program Baseline (APB) dated July 27, 2001

Approved Program:

Approved Acquisition Program Baseline (APB) dated March 6, 2003.

6. Mission and Description:

The C-130 Avionics modernization program (AMP) consolidates and installs the mandated DOD Navigation/Safety modifications, the Global Air Traffic Management (GATM) systems and the C-130 Broad Area review requirements. These mandated mods are incorporated with various other reliability, maintainability, and sustainability (RM&S) upgrades to include: Traffic Collision Avoidance System (TCAS), Terrain Awareness Warning System (TAWS), replacement of APN-59 and APQ-175 radars, replacement of N-1/C-12 compass, dual autopilot, dual flight management systems and HF/UHF/VHF datalink. The AMP modernization will give the C-130 Fleet complete access to international airspace.

The USAF C-130 fleet consists of 15 different mission design series (MDS) to be modified by AMP. These multiple different MDSs and cockpit configurations create significant support and training inefficiencies. Also, these differences greatly complicate unit/aircraft interoperability at forward locations. C-130 AMP standardizes the cockpit configurations and avionics for the 15 different MDSs by installing a single core avionics package and cockpit configuration thus eliminating the fleet's significant interoperability and training problems.

In addition to these modifications, the USSOCOM-funded Common Avionics Architecture for Penetration (CAAP) program will provide additional capabilities for the MC-130 and the AC-130. Specifically the CAAP program will provide a Low Probability of Intercept Terrain Following/Terrain Avoidance system for the MC-130E/H and increase the situational awareness of the aircrews through incorporation on a Intel Broadcast Receiver (IBR) and through correlation of the on-board defensive systems with the off-board data received via the IBR and present the Aircrew a single integrated picture of the threat environment on the AC-130H/U and the MC-130E/H.

7. Executive Summary:

A Restructure Engineering Change Proposal (ECP) is in work to rebaseline the program because funding reductions in FY03/FY04 have resulted in delays in the System Development and Demonstration (SDD) program of up to 2 years.

There is insufficient funding in the C-130 Avionics Modernization Program (AMP) line to meet the training system requirements specified in the C-130 AMP ORD. C-130 AMP is currently conducting a Training Systems Requirements Analysis

7. Executive Summary (Cont'd):

(TSRA) to fully define C-130 AMP training requirements. Additional funding for C-130 AMP training systems development and production are AMC, ACC, and AFSOC POM 05 initiatives.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	Yes
-- 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:

As a result of funding reductions in FY03 and FY04, C-130 AMP has had to slow down the ramp up of developmental activities. This slow down has resulted in a change to APB milestone dates and an increase in the cost of the program. An Engineering Change Proposal (ECP) replan is currently being evaluated and a revised APB is being staffed to reflect the proposed milestone dates. The proposed changes are: Critical Design Review (CDR) from Jul 2003 to May 2006, LRIP Decision/Contract Award from Jul 2005 to Nov 2007, and Production Readiness Review (PRR) from Jun 2007 to Jan 2009.

In addition to the schedule breach we have an 11 percent cost increase in the RDT&E appropriation due to the additional cost to AMP associated with the stretchout of the program and the acceleration of the Common Avionics Architecture for Penetration (CAAP) portion of the C-130 AMP program. The cost increases to the RDT&E line result in an APB cost breach to RDT&E and Program Acquisition Unit Cost. A Program Deviation Report (PDR) is being staffed and coordinated for both the schedule and cost breaches.

9. Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Critical Design Review (CDR)	FEB 2003	NOV 2005	MAY 2006(Ch-1)
LRIP Decision/Contract Award	FEB 2005	MAY 2007	NOV 2007(Ch-2)
Production Readiness Review (PRR)	JAN 2007	JUL 2008	JAN 2009(Ch-3)

b. Current Change Explanations --

The replan of C-130 AMP as a result of funding reductions in FY03 and FY04, has resulted in a delay to the developmental activities. This delay has resulted in a change to APB milestone dates. An Engineering Change Proposal (ECP) is currently being evaluated and a revised APB is being staffed to reflect the proposed milestone dates. The proposed changes are:

- Ch-1)Critical Design Review (CDR) from Jul 2003 to May 2006,
- Ch-2)LRIP Decision/Contract Award from Jul 2005 to Nov 2007,
- Ch-3)Production Readiness Review (PRR) from Jun 2007 to Jan 2009.

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
GATM/Nav Safety Requirements	Comply with required Navigation Performance 1 (RNP-1)	Comply / Compy with required Navigation Performance 1 (RNP-1)	TBD	Comply with required Navigation Performance 1 (RNP-1).
Removal of Navigator (Combat Delivery)	Navigator removed for combat delivery missions	Navigator / Navigator removed for combat delivery missions	TBD	Navigator removed for combat delivery missions
Improved TF/TA	Safe and effective manual TF flight guidance at selectable Clearanc	Safe and / Safe and effective manual TF flight guidance at selectable Clearanc	TBD	Safe and effective manual TF flight guidance at selectable Set

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	es Plane (SCP) of 100 feet.	es Plane (SCP) of 100 feet. / es Plane (SCP) of 250 feet.		Clearances Plane (SCP) of 250 feet.
ESA Threat Location and Targeting Data	Notify the aircrew within 0.5 seconds when a threat has been identified.	Notify the aircrew within 0.5 seconds when a threat has been identified. / Notify the aircrew within 0.5 seconds when a threat has been identified.	TBD	Notify the aircrew within 0.5 seconds when a threat has been identified.
EW Bus Fused Data	Present the pop-up threat and intervisibility within 1 seconds, 99% of the time.	Present the pop-up threat and intervisibility within 1 seconds, 99% of the time. / Present the pop-up threat and intervisibility within 2 seconds, 99% of the time.	TBD	Present the pop-up threat and intervisibility within 2 seconds, 99% of the time.
Interoperability	100% of top-level IERs.	100% of top-level IERs. / 100% of top-level IERs designated critical	TBD	100% of top-level IERs designated critical

Acronyms:  
 GATM - Global Air Traffic Management  
 TF/TA - Terrain Following/Terrain Avoidance  
 ESA - Enhanced Situational Awareness  
 EW - Electronic Warfare  
 IERs - Information Exchange Requirements

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	625.6	1151.6	1156.0
Procurement	2708.3	2995.8	2736.9
AMP PROD	(2574.8)		(2663.6)
CAAP PROD	(8.8)		(7.3)
Total Flyaway	(2583.6)		(2670.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(124.7)		(66.0)
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 2000 Base-Year \$	3333.9	4147.4	3892.9
Escalation	631.5	718.5	651.0
Development (RDT&E)	(44.5)	(88.8)	(92.3)
Procurement	(587.0)	(629.7)	(558.7)
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 \$	3965.4	4865.9	4543.9
b. Quantity --			
Development (RDT&E)	15	16	14
Procurement	<u>504</u>	<u>503</u>	<u>476</u>
Total	519	519	490

Note: Excludes 16 RDT&E prototypes from the SAR Baseline and 14 from the Current Estimate that are not considered fully configured.

The 14 RDT&E prototypes will be refurbished to make them fully configured production kits.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (FEB 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	3768.3	3892.9	
(2) Quantity	519	490	
(3) Unit Cost	7.261	7.945	+9.42
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	2832.3	2736.9	
(2) Quantity	503	476	
(3) Unit Cost	5.631	5.750	+2.11

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	670.1	3295.3	-	3965.4
Previous Changes:				
Economic	-1.7	-221.2	-	-222.9
Quantity	+28.7	-28.7	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+328.0	+502.8	-	+830.8
Other	-	-	-	-
Support	-	+3.7	-	+3.7
Subtotal	+355.0	+256.6	-	+611.6
Current Changes:				
Economic	-23.9	-161.5	-	-185.4
Quantity	-	-167.0	-	-167.0
Schedule	+119.0	+58.8	-	+177.8
Engineering	-	-	-	-
Estimating	+128.1	+13.4	-	+141.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+223.2	-256.3	-	-33.1
Total Changes	+578.2	+0.3	-	+578.5
Current Estimate	1248.3	3295.6	-	4543.9

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

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	625.6	2708.3	-	3333.9
Previous Changes:				
Quantity	+25.4	-25.4	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+285.8	+146.2	-	+432.0
Other	-	-	-	-
Support	-	+3.5	-	+3.5
Subtotal	+311.2	+124.3	-	+435.5
Current Changes:				
Quantity	-	-112.4	-	-112.4
Schedule	+99.4	-	-	+99.4
Engineering	-	-	-	-
Estimating	+119.8	+16.7	-	+136.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+219.2	-95.7	-	+123.5
Total Changes	+530.4	+28.6	-	+559.0
Current Estimate	1156.0	2736.9	-	3892.9

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-23.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Revised Estimate (Accelerated CAAP) (Estimating)	+116.2	+124.4
Adjustment for Current and Prior Inflation. (Estimating)	+3.2	+3.3
Schedule delay - Revised Dev approach (Schedule)	+99.4	+119.0
RDT&E Subtotal	+219.2	+223.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-185.3
Economic adjustment for negative program change. (Economic)	N/A	+23.8
Total Quantity Variance associated with decrease of 27 units. (Quantity)	-112.4	-167.0
Stretchout of annual procurement buy profile by two years. (Schedule)	0.0	+58.8
Revised Estimate (Estimating)	-1.5	-2.0

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

b. Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
New estimating change (Estimating)	+18.2	+15.4
Procurement Subtotal	-95.7	-256.3

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	
7.64	-0.833	+0.115	+0.363	--	+1.98	--	+0.008	+1.63	9.27

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	
6.54	-0.804	-0.023	+0.124	--	+1.08	--	+0.008	+0.385	6.92

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	N/A	N/A	JUL 2001
Milestone C	N/A	N/A	N/A	JUL 2008
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	3965.4	N/A	4543.9
Total Quantity	N/A	519	N/A	490
Prog Acq Unit Cost	N/A	7.6	N/A	9.3

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

a. RDT&E --			Initial Contract Price		
<u>C-130 AMP:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing, Wichita, KS					
F33657-01-C-0047, CPAF			\$484.6	\$453.0	519
Award: July 31, 2001					
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>	
\$500.5	\$556.7	490	\$619.7	\$819.0	
Previous Cumulative Variances			<u>Cost Variance</u> <u>Schedule Variance</u>		
			\$-4.8	\$-19.0	
Cumulative Variances To Date (01/30/03)			<u>\$-7.6</u>	<u>\$-26.4</u>	
Net Change			\$-2.8	\$-7.4	

Explanation of Change:

The contractor's estimate does not recognize cost growth, this cost growth will be part of an Over Target Baseline (OTB) that will be done in Jun 2003 in conjunction with implementation of the replan proposal.

A Restructure Engineering Change Proposal (ECP) is in work to rebaseline the program because funding reductions in FY03/FY04 have resulted in delays in the System Development and Demonstration (SDD) program of up to 2 years. As a result we have had to slow down the program. This is the reason for the cost and schedule variances.

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> (FY01-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-15)	<u>Total</u>
RDT&E	310.3	163.6	232.1	542.3	1248.3
Procurement	-	-	-	3295.6	3295.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	310.3	163.6	232.1	3837.9	4543.9

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

b. Annual Summary -- C-130AMP

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				6.6	6.8
2002				14.7	15.2
2003				18.3	19.1
2004				55.0	58.2
2005				75.8	81.5
2006				29.6	32.3
2007					
Subtotal				200.0	213.1

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001		46.9	15.0	61.9	63.3
2002		34.7	23.3	49.2	50.8
2003		105.0	47.3	148.7	155.1
2004		90.0	11.3	99.5	105.4
2005		120.0	22.3	140.1	150.6
2006		140.0	28.3	164.3	179.6
2007		110.0	21.3	127.9	142.2
2008		85.0	13.9	95.9	108.6
2009		30.0	7.3	36.0	41.5
2010				32.5	38.1
Subtotal	14	761.6	190.0	956.0	1035.2

Funding for Common Avionics Architecture for Penetration (CAAP) for special mission aircraft is not a stand alone kit. For example, all 490 aircraft will be modified with a "common" kit. However, the AC-130U will be modified with a common kit and within that kit there will be software associated with CAAP. Therefore, special mission aircraft do not receive stand alone kits.

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C-130 AMP, December 31, 2002

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

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006		2.1		2.1	2.3
2007		3.1		3.1	3.5
2008		1.7		1.7	1.9
2009		0.4		0.4	0.5
Subtotal		7.3		7.3	8.2

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006	4		100.9	100.9	111.6
2007	13		139.3	139.3	156.9
2008	33		215.8	215.8	247.3
2009	65		363.6	363.6	424.3
2010	75		403.3	403.3	479.1
2011	79		409.1	431.1	521.2
2012	75		391.1	411.9	507.1
2013	75		341.2	357.3	447.7
2014	51		248.5	255.6	326.2
2015	6		50.8	50.8	66.0
Subtotal	476		2663.6	2729.6	3287.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD		7.3		207.3	221.3
USAF	490	761.6	2853.6	3685.6	4322.6
Grand Total	490	768.9	2853.6	3892.9	4543.9

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): \$ 107.2

Percent Total Program Expended: 2.4%

At the preparation of this Dec 01 SAR, there were no prototypes delivered.

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C-130 AMP, December 31, 2002

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

NOTE: Expenditures are calculated against the total program which includes procurement. Actual kit buys will not occur until FY05.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

All C-130 O&S costs are reflected in the individual aircraft lines, i.e. C-130, MC-130, AC-130, etc. The C-130 AMP is a mod program and the overall cost associated with O&S for C-130s is budgeted by the C-130 Program Office at WR-ALC, not the C-130 AMP program at Wright-Patterson.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	C-130AMP	Antecedent System
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

Total O&S Cost	C-130AMP	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/21/2003 9:00:41 AM

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A-22 STRYKER (IAV)

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

**PROGRAM:** Stryker

**AS OF DATE:** December 31, 2002

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1. Designation and Nomenclature (Popular Name): Stryker Family of Vehicles

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM Brigade Combat Team	COL David Ogg
PEO-GCS	Assigned: January 16, 2001
Attn: SFAE-GCS-BCT	DSN 786-2000; COMM (586) 753-2000
Warren, MI 48397-5000	OggD@tacom.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0603653A Project C03  
PROCUREMENT:  
APPN 2033 ICN G85100 (Army)  
MILCON:  
PE 0202096A (Shared)

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DEPARTMENT OF DEFENSE

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03-C-0445-

Stryker, December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated November 16, 2000.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated November 16, 2000.

**6. Mission and Description:**

Mission: The Family of Stryker Vehicles is air transportable in a C-130 aircraft, capable of immediate employment upon arrival in the area of operations, and maximizes commonality among variants. The Stryker equipped Brigade Combat Team (BCT) provides an immediate improvement in national, conventional deterrence by establishing the capability to place a credible combat force on the ground anywhere in the world in 96 hours from liftoff. The BCT is a self-contained organization, which enhances strategic responsiveness by providing a base unit that is fully mobile and completely air deployable by C-130 tactical lift aircraft. It is a force which is essential in providing the strategic responsiveness and full spectrum versatility demanded by the National Military Strategy.

System Description: The Stryker family of vehicles is centered on the Infantry Carrier Vehicle (ICV). There are eight additional configurations of the ICV: Reconnaissance Vehicle, Mortar Carrier, Commander's Vehicle, Fire Support Vehicle, Engineer Squad Vehicle, Medical Evacuation Vehicle, Anti-Tank Guided Missile Vehicle, and Nuclear, Biological, Chemical (NBC) Reconnaissance Vehicle. The Mobile Gun System represents the second variant of the Stryker for this acquisition.

(1) Infantry Carrier Vehicle (ICV) - The ICV is the base vehicle in the BCT. The BCT mission, based on decisive action through dismounted infantry assault, mandates an ICV capability to rapidly deploy an overmatching infantry force anywhere on the battlefield. Within the ICV variant, there are eight additional configurations as follows:

(a) Reconnaissance Vehicle (RV) - The principal function of the RV configuration is to provide an effective platform to enable the Reconnaissance, Surveillance, & Target Acquisition (RSTA) Squadron and battalion scouts to perform reconnaissance and surveillance operations.

(b) Mortar Carrier (MC) - The MC provides immediate, responsive fire support to the BCT in the conduct of fast paced offensive operations. These immediate, on-demand fires are critical to the ability of dismounted infantry to rapidly achieve decisive results. The MC will be fielded with the M121 120mm mortar until a vehicle mounted Soltam mortar is completed with its integration and Limited User Test.

(c) Commander's Vehicle (CV) - The CV provides an operational platform for selected elements of command within the BCT. Commanders must have the capability to see and direct the battle continuously, maintaining the Common

Stryker, December 31, 2002

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

Relevant Operating Picture (CROP) for all friendly forces within their respective areas of operation.

(d) Fire Support Vehicle (FSV) -The FSV provides enhanced surveillance, target acquisition, target identification, target designation, and communications to support the BCT with "first round" fire for effect capability.

(e) Engineer Squad Vehicle (ESV) -The ESV provides the platform for the Engineer Company to provide the required mobility and limited counter mobility to support the BCT.

(f) Medical Evacuation Vehicle (MEV) -The MEV integrates medical evacuation support into the BCT as an essential element of the inter netted combat forward formation.

(g) Anti-Tank Guided Missile Vehicle (ATGM) -The ATGM provides the brigade's primary tank killing capability.

(h) NBC Reconnaissance Vehicle (NBCRV) - The NBCRV, with its integral NBC Reconnaissance Sensor Suite, provides NBC situational awareness and Detect to Warn via cooperative NBC networks and reconnaissance to increase the combat power of the deployed force. The NBCRV is not required for Initial Operational Capability (IOC).

(2) Mobile Gun System (MGS) - The MGS supports assaulting infantry and is the key weapons overmatch platform to ensure mission success and survivability of the Combined Arms Company. The In-Lieu-Of (ILO) until the MGS is completed with its development, is the IAV ATGM vehicle. To accommodate temporary use of the ATGM ILO MGS, the Army will complete development of a separate Tube-launched Optically-tracked Wire-guided missile (TOW) warhead optimized to defeat the MGS targets.

**7. Executive Summary:**

The program currently is in Engineering and Manufacturing Development (EMD) and Low Rate Initial Production (LRIP). At the November 2000 milestone decision, 7 out of 10 vehicles in the Stryker family were approved for LRIP. Currently, 8 of the 10 vehicles are approved for LRIP, with the FSV approved in August 2001.

Delivery of the first four production vehicles, Infantry Carrier Vehicles (ICV), took place on February 28, 2002. A "Roll-Out" ceremony occurred on March 8, 2002 at London, Ontario. As of 31 December 2002, cumulative acceptance is 352 Stryker vehicles: 256 Strykers have been delivered to Ft. Lewis, WA with 206 handed off, 4 in Field Level Maintenance New Equipment Training (FLMNET), and 46 in Deprocessing. Testing of Stryker vehicles continues at an ever increasing pace. PM BCT has 38 vehicles which are undergoing Production Verification test (PVT), Live Fire Test & Evaluation (LFT&E), and other testing at six test sites. MGS vehicles started contractor testing in the Dec 02 time frame.

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7. Executive Summary (Cont'd):

The first of four Mounted Mortar Stryker vehicles was delivered to Yuma Test Center the week of 16 - 20 Dec 02. The first Mounted Mortar vehicle received in December is undergoing mortar firing safety tests. The remaining vehicles of a total of 4 vehicles are scheduled for delivery in January, February and March 2003.

The program is progressing to meet schedule for a Mar 03 First Unit Equipped and a Dec 03 Milestone III production decision. The Program Management Office (PMO) plans to request slips to the right of threshold for some program milestones primarily as a result of the 5 month stop work due to the contract protest.

Although cost performance indexes indicate increased cost for the EMD Delivery Order 1, the program is deemed to be affordable within current funded levels. The PMO is working with the prime contractor and the test community to insure an executable program in the current fiscal year and in the POM years.

Fielding and Contractor Logistics Support (CLS) present immediate potential issues due to the complexity of the program, and the requirement to synchronize fielding activities of several vehicles in conjunction with Interim Brigade Combat Team fielding and the "Contingency Force". Some additional concerns are the maturity of the remote weapons station, air transportability weight of the vehicles and the add-on-armor capabilities. The PMO feels that these issues are currently manageable.

Emerging issues that affect the Interim Armored Vehicles are:

1) The development and validation of the Rocket Propelled Grenade (RPG) add-on armor to support the Milestone III decision. General Motors (GM) Defense recently issued a contract to United Defense Limited Partnership (UD(LP)) for qualification and integration of their RPG add-on armor designs into the Stryker Family of Vehicles.

2) The development and integration of several weight reduction items for integration into all of the Stryker vehicle configurations, especially the MGS.

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**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- 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:

**SCHEDULE BREACH:**

- a) A decision was made on December 21, 2001 to rebaseline the NBCRV. As a result, the NBCRV program schedule slipped by 12 Months. The rationale for adjusting the NBCRV schedule is to align it and bring it to sync with the NBC Sensor Suite production schedule. The NBC sensor suite is Government Furnished Equipment (GFE) for the Stryker program, and is managed by PM NBC Defense Systems.
- b) Late delivery of the Mobile Gun System has resulted in a requirement to slip the LRIP decision past the current threshold which is Jun 03. The PMO will request a change in the objective of 12 months to Dec 03.
- c) Other program milestone thresholds will be extended from 6 months to 12 months primarily due to the slip to the program as a result of the stop work in FY01.

**RDT&E COST BREACH:**

The FY03 President's Budget significantly increased the RDTE funding for the Stryker program. This increase was required to support the test cost increases that support the Director of Operational Test and Evaluation (DOT&E) requirements for vehicle testing, the stretch-out of the NBC Reconnaissance Vehicle program which slipped LRIP by 12 months, and the MGS cost increases during development. This increased funding has resulted in a program cost breach in the RDTE appropriation.

A revised Acquisition Program Baseline (APB) is in staffing. The current, planned dates for IOC and MS III are unchanged and will not be changed in the APB.

9. Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
ICV - NDI			
Low Rate Initial Production (LRIP)	AUG 2000	AUG 2000	NOV 2000
Award			
Milestone II	AUG 2000	AUG 2000	NOV 2000
FSV Initial Production IPR	JUN 2001	JUN 2001	AUG 2001
First Unit Equipped (FUE)	JUL 2002	JUL 2002	MAR 2003 (Ch-1)
Initial Operational Test and Evaluation (IOT&E #1)			
Start	AUG 2002	AUG 2002	FEB 2003
Completion	JAN 2003	JAN 2003	JUL 2003
NBC RV Initial Production IPR	JUL 2002	JUL 2002	NOV 2004
MGS Initial Production IPR (Mobile Gun System)	DEC 2002	DEC 2002	AUG 2003 (Ch-2)
Initial Operational Capability (IOC)	MAY 2003	MAY 2003	MAY 2003
Milestone III	SEP 2003	SEP 2003	DEC 2003
Full Operational Capability (FOC): BDE #3	FEB 2005	FEB 2005	SEP 2005 (Ch-1)
ICV - NDI			

ACRONYMS:

ABCS: Army Battle Command System  
AP: Anti-Personnel  
ATGM: Anti-Tank Guided Missile  
BDE: Brigade  
C4ISR: Command, Control, Communications, Computers, Intelligence,  
Surveillance and Reconnaissance  
CV: Commander's Vehicle  
DOTE: Director of Operational Test & Evaluation  
EPLRS: Enhanced Position Location Reporting System  
ESV: Engineer Squad Vehicle  
FBCB2: Future Battle Command Brigade and Below  
FSV: Fire Support Vehicle  
FUE: First Unit Equipped  
GFE: Government Furnished Equipment  
GM: General Motors  
HE: High Explosive  
ICR: Infantry Cavalry Regiment  
ICV: Infantry Carrier Vehicle  
IDE: Integrated Data Environment  
ILO: In-Lieu-of vehicles  
IOC: Initial Operational Capability  
IPR: Interim Progress Review  
JV: Joint Venture  
LRAS3: Long Range Advanced Scout Surveillance System  
MC: Mortar Carrier  
MEP: Mission Equipment Package

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

MEV: Medical Evacuation Vehicle  
 MGS: Mobile Gun System  
 MMBCF: Mean Miles Between Critical Failures  
 NBC RV: Nuclear, Biological, Chemical Reconnaissance Vehicle  
 NDI: Non-Development Item  
 OSP: Objective Sensor Package  
 PVT: Production Verification Test  
 RSTA: Reconnaissance, Surveillance and Target Acquisition  
 RV: Reconnaissance Vehicle  
 UDLP: United Defense Limited Partnership  
 WIN-T: Warfighter Information Network - Tactical

**b. Current Change Explanations --**

(Ch-1) First Unit Equipped has slipped two months past the current threshold due to delays in the delivery of sufficient production vehicles and slip in completion of New Equipment Training for Fire Support Vehicle. Full Operational Capability (FOC) has slipped due to program milestone slips in the NBC RV and MGS programs; FOC cannot be accomplished unless these vehicles are available in sufficient quantities to support TOE requirements. Note: FOC Brigade at MS II was Brigade 3; due to changes in planned fielding of vehicles, FOC will be Brigade 1.

(Ch-2) MGS Low Rate Initial Production Decision is slipped 2 months so that sufficient RAM data is available from vehicle testing to insure a high confidence level in RAM projections of system performance.

**10. Performance Characteristics:**

**a. Performance --**

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Transportability:				
Air Transportation*	Trans- portable in a C-130 aircraft & combat ready on exit	Trans- / Trans- portable/ portable in a / on a C-130 / C-130 aircraft/ aircraft & combat/ & combat ready on/ ready on exit / exit / (full / basic / load not / req'd)	Certified 8 Mar 2003 for 10 out of vehicles	Trans- portable in a C-130 aircraft & combat ready on exit
Interoperability*	Host and inte- grate planned	Host and/ Host inte- / and grate / inte- planned / grate	TBD	Host and inte- grate planned

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate C4ISR systems</u>
	C4ISR systems	C4ISR systems / existing systems / C4ISR systems / (EPLRS, / FBCB2, / ABCS, / WIN-T / Sub-scriber / Node)		
Reliability: (Less GFE)				
MMBCF	2000 MMBCF	2000 / 80% MMBCF / confidence of achieving 1000 / MMBCF	TBD	2000 MMBCF
Supportability (Commonality)	Maintain Commonality baseline in contract with fielding of IAV Block Improvements	Maintain/ Commonality baseline/ in contract with fielding of IAV Block Improvements / Support / charac- / teris- / tics / esta- / blished / in IAV / contract / Block / Improve- /	TBD	Maintain Commonality baseline in contract with fielding of IAV Block Improvements
Mobility				
Cruising Range	300 miles w/o refueling	300 / 300 miles / miles w/o / w/o refueling	Demonstrated in PVT	300 miles w/o refueling
Sustained Hard Surface Speed	40 mph	40 mph / 40 mph	Demonstrated in PVT	40 mph
Survivability:	Overhead crew protection against 152mm HE airburst	Overhead/ crew / protec- / tion / against / 152mm HE / airburst / Integral / frontal, / side, / rear, / and / overhead / protec-	TBD	Overhead crew protection against 152mm HE airburst

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	at [Classified] meters; all around crew protection against blast and over-pressure effects of 7.5kg explosive	at [Classified] meters; all around crew protection against blast and over-pressure effects of 7.5kg explosive / from 7.62mm AP at [Classified] meters; overhead crew protection against 152mm HE airburst at [Classified] meters; all around crew protection		at [Classified] meters; all around crew protection against blast and over-pressure effects of 7.5kg explosive
Combat Capability:				
FUE	2 Company Teams equipped with ICV, MC, CV, FSV, MGS	2 Company Teams equipped with ICV, MC, CV, FSV, MGS/	2 Company Teams equipped with ICV, MC, CV	TBD
IOC	Brigade equipped with ICV, RV, MC, CV, FSV, ESV, MEV, ATGM, MGS	Brigade equipped with ICV, RV, MC, CV, FSV, MEV, ATGM, MGS /	Brigade equipped with ICV, RV, MC, CV, ESV, MEV, ATGM, MGS	TBD

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
ICV/ESV Squad Carrying*	10 soldiers and 2 crew members, with individual eqmt	10 soldiers and 2 crew members, with individual eqmt / Infantry Squad (9 soldiers) and 2 crew members, with individual eqmt	Demonstrated in PVT	10 soldiers and 2 crew members, with individual eqmt
MGS Lethality*	Defeat std infantry bunker and create opening for infantry in double reinforced concrete wall	Defeat std infantry bunker and create opening for infantry in double reinforced concrete wall / Defeat std infantry bunker and create opening for infantry in double reinforced concrete wall	TBD	Defeat std infantry bunker and create opening for infantry in double reinforced concrete wall
ATGM Antitank Capability	Host next generation of fire & forget and LOSAT missiles	Host next generation of fire & forget LOSAT missiles / Integrate a lt-wt laser designator/ Range-finder	Demonstrated Threshold in PVT	Host next generation of fire & forget and LOSAT missiles
FSV: Target Acquisition accuracy of Sensor	Integrate a lt-wt laser designator/ Range-finder	Integrate a lt-wt laser designator/ Range-finder / Integrate a M707 Striker MEP with current functions	Demonstrated Threshold in PVT	Integrate a M707 Striker MEP with current functions

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	MEP	MEP /		
ESV: Obstacle Neutralization	Inte-grate emerging mine detec-tion devices	Inte-grate / Inte-grate / grate emerging/ existing mine / obstacle detec-tion / neutral-ization, & lane marking, and mine detec-tion devices	TBD	Inte-grate existing obstacle neutral-ization, & lane marking, and mine detec-tion devices
RV	OSP must operate on the move/ incor-porate masted sensor & target at a platform height of 5-10m	OSP / Host, must / inte-grate & fully employ LRAS3 / sensor & target / platform/ height / of 5-10m/	Demonstrated Threshold in PVT	Host, inte-grate & fully employ LRAS3

ACRONYMS:

- ABCS: Army Battle Command System
- AP: Anti-Personnel
- ATGM: Anti-Tank Guided Missile
- C4ISR: Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
- CV: Commander's Vehicle
- DOTe: Director of Operational Test & Evaluation
- EPLRS: Enhanced Position Location Reporting System
- ESV: Engineer Squad Vehicle
- FBCB2: Future Battle Command Brigade and Below
- FSV: Fire Support Vehicle
- FUE: First Unit Equipped
- GFE: Government Furnished Equipment
- GM: General Motors
- HE: High Explosive
- IBAS: Improved Bradley Acquisition System
- ICR: Infantry Cavalry Regiment

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

ICV: Infantry Carrier Vehicle  
IDE: Integrated Data Environment  
ILO: In-Lieu-of vehicles  
IOC: Initial Operational Capability  
ITAS: Improved Target Acquisition System  
JV: Joint Venture  
LRAS3: Long Range Advanced Scout Surveillance System  
MC: Mortar Carrier  
MEP: Mission Equipment Package  
MEV: Medical Evacuation Vehicle  
MGS: Mobile Gun System  
MMBCF: Mean Miles Between Critical Failures  
NBC RV: Nuclear, Biological, Chemical Reconnaissance Vehicle  
NDI: Non-Development Item  
OSP: Objective Sensor Package  
RSTA: Reconnaissance, Surveillance and Target Acquisition  
RV: Reconnaissance Vehicle  
UDLP: United Defense Limited Partnership  
WIN-T: Warfighter Information Network - Tactical

b. Current Change Explanations --  
None.

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	488.0	488.0	613.5
Procurement	5706.0	5706.0	5776.1
Recurring Rollaway	(3984.8)		(4142.2)
Non-recurring Rollaway	(684.4)		(621.5)
Total Rollaway	(4669.2)		(4763.7)
Other Weapon System	(956.1)		(971.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(41.2)
Construction (MILCON)	286.8	286.8	286.8
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	<u>6480.8</u>	<u>6480.8</u>	<u>6676.4</u>
Escalation	639.4	639.4	502.7
Development (RDT&E)	(20.0)	(20.0)	(26.7)
Procurement	(584.0)	(584.0)	(447.8)
Construction (MILCON)	(35.4)	(35.4)	(28.2)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>7120.2</u>	<u>7120.2</u>	<u>7179.1</u>
b. Quantity --			
Development (RDT&E)	3	3	10
Procurement	<u>2128</u>	<u>2128</u>	<u>2111</u>
Total	<u>2131</u>	<u>2131</u>	<u>2121</u>

LRIP Note: Initial production vehicles are required to maintain momentum of the CSA and Army's transformation and to fill the urgent need associated with the BCT and development of doctrine, training, leadership, organization and soldiers for the Army Transformation Plan. The program's total LRIP quantity for 7 of the 10 variants is 968 which was approved by the Defense Acquisition Executive in November 2000. Subsequently, the Fire Support Vehicle's (FSV) IPR approved 55 FSVs for LRIP for a total of 1023 IAVs. The MGS and NBCRV are currently on their own development path. LRIP quantities for these systems will be requested at their Initial Production IPR decision points. The projected LRIP quantities are 80-MGSs and 17-NBCRVs for a total of 97 vehicles. The low rate initial production quantity (1023 vehicles total) will fill, in order, the requirements for PVT and LFTE test vehicles, the 1st BCT, training and AMC vehicles, the 2nd BCT, and the 3rd BCT. The large number of initial production vehicles is driven by MS III not occurring until 1Q FY 04 which is after the date the contract must be awarded to avoid a break-in-production vehicles for the 3rd BCT. The date is driven, in turn, by the completion of LFTE, PVT and IOTE, and statutory required reports.

c. Foreign Military Sales -- None.

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

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (NOV 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	6480.8	6676.4	
(2) Quantity	2131	2121	
(3) Unit Cost	3.041	3.148	+3.52
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	5706.0	5776.1	
(2) Quantity	2128	2111	
(3) Unit Cost	2.681	2.736	+2.05

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	508.0	6290.0	322.2	7120.2
Previous Changes:				
Economic	+0.2	-39.9	-3.3	-43.0
Quantity	+13.0	-23.3	-	-10.3
Schedule	-	-2.7	-	-2.7
Engineering	-	+11.3	-	+11.3
Estimating	+42.8	-137.2	+3.2	-91.2
Other	-	-	-	-
Support	-12.1	-27.8	-	-39.9
Subtotal	+43.9	-219.6	-0.1	-175.8
Current Changes:				
Economic	-5.9	-112.4	-7.1	-125.4
Quantity	-5.6	-20.8	-	-26.4
Schedule	-	+4.8	-	+4.8
Engineering	+21.5	-0.3	-	+21.2
Estimating	+76.9	+287.9	-	+364.8
Other	-	-	-	-
Support	+1.4	-5.7	-	-4.3
Subtotal	+88.3	+153.5	-7.1	+234.7
Total Changes	+132.2	-66.1	-7.2	+58.9
Current Estimate	640.2	6223.9	315.0	7179.1

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

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	488.0	5706.0	286.8	6480.8
Previous Changes:				
Quantity	+12.9	-20.0	-	-7.1
Schedule	-	-	-	-
Engineering	-	+10.3	-	+10.3
Estimating	+37.2	-147.7	-	-110.5
Other	-	-	-	-
Support	-11.8	-14.9	-	-26.7
Subtotal	+38.3	-172.3	-	-134.0
Current Changes:				
Quantity	-5.5	-17.8	-	-23.3
Schedule	-	-	-	-
Engineering	+18.9	-1.3	-	+17.6
Estimating	+72.4	+271.0	-	+343.4
Other	-	-	-	-
Support	+1.4	-9.5	-	-8.1
Subtotal	+87.2	+242.4	-	+329.6
Total Changes	+125.5	+70.1	-	+195.6
Current Estimate	613.5	5776.1	286.8	6676.4

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-5.9
Decrease in RDT&E prototype quantity from 12 to 10 vehicles (Quantity)	-5.5	-5.6
Integration effort for the RV/FSV Masted Sensor (Engineering)	+18.9	+21.5
Adjustment for Current and Prior Inflation. (Estimating)	+4.4	+4.5
Test requirements refined for NBCRV, MGS, LFT and IOT&E (Estimating)	+35.4	+38.4
Updated matrix support personnel requirements (Estimating)	+8.1	+8.6
Revised Contract Estimate to Complete (Estimating)	+24.5	+25.4
Training Devices requirements refined (Support)	+1.4	+1.4
RDT&E Subtotal	+87.2	+88.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-113.1

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic adjustment for negative program change. (Economic)	N/A	+0.7
Total Quantity Variance associated with decrease of 8 units.	-15.5	-18.2
Quantity decrease of -8 units. (Quantity)	-17.8	-20.8
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	0.0	+0.1
Allocation to Engineering variance resulting from Quantity Change. (QR)(Engineering)	-0.2	-0.2
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	+2.5	+2.7
Stretchout of annual procurement buy profile. (Schedule)	0.0	+4.7
Vehicle configuration changes for RV, FSV, ESV & ATGM (Engineering)	-9.0	-9.3
FSV Mission Equipment Package design changes and updated contract costs (Engineering)	-29.3	-31.6
New FSV sensor (Engineering)	+4.0	+4.5
Configuration changes required for MGS weight reduction (Engineering)	+33.2	+36.3
Adjustment for Current and Prior Inflation. (Estimating)	+27.0	+28.1
Matrix support requirement refined (Estimating)	+53.3	+57.9
System Technical Support requirements redefined (Estimating)	-48.0	-55.9
ICR model mix and pricing range adjustment (Estimating)	+91.1	+99.6
Testing Increase due to ATEC estimates (Estimating)	+33.3	+35.5
Contractor Test Support effort aligned with test effort (Estimating)	+78.0	+82.9
Engineering Change Order updated costs (Estimating)	-4.9	-4.7
GFE costs update to latest prices (Estimating)	+21.2	+23.2
RV Sensor updated costs (Estimating)	+17.5	+18.6
Adjustment for Current and Prior Inflation. (Support)	+3.3	+3.4
Initial Spares requirements refined (Support)	-19.1	-19.9
Change in Training Devices and IDE requirements (Support)	+6.3	+10.8
Procurement Subtotal	<u>+242.4</u>	<u>+153.5</u>

(3) MILCON

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

b. Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Revised escalation indices. (Economic)	N/A	-7.1
MILCON Subtotal	0.0	-7.1

QR = Quantity related changes.

**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	
3.34	-0.079	-0.001	+0.001	+0.015	+0.129	--	-0.021	+0.044	3.38

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	
2.96	-0.072	+0.003	+0.001	+0.005	+0.071	--	-0.016	-0.008	2.95

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	N/A	N/A
Milestone II	AUG 2000	AUG 2000	N/A	NOV 2000
Milestone III	N/A	SEP 2003	N/A	DEC 2003
IOC	TBD	MAY 2003	N/A	MAY 2003
Total Cost	352.5	7120.2	N/A	7179.1
Total Quantity	N/A	2131	N/A	2121
Prog Acq Unit Cost	N/A	3.3	N/A	3.4

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

a. RDT&E --  
RDTE: Initial Contract Price  
Target Ceiling Qty  
 GM GD Defense Group LLD, Sterling Heights MI  
 DAAE07-00-D-M051, CPAF \$203.1 \$203.1 0  
 Award: November 16, 2000  
 Definitized: November 16, 2000

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$263.3	\$263.3	0	\$328.1	\$328.1
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/31/02)			\$-12.4	\$-13.2
Net Change			\$-30.5	\$-17.2
			\$-18.1	\$-4.0

Explanation of Change:

Cost increases are due to program changes primarily in MGS and NBCRV. Contract scrub of LRE is currently in-process.

Contract Comments:

This contract is funded with both RDTE and Procurement appropriation funding.

RDT&E funding in section 15a is for the development Delivery Order 1. It does not include an additional \$36M in RDT&E funding used to procure 10 vehicles, Firm Fixed Price (FFP) in Delivery Order 2. Vehicle mix of the 10 vehicles is 1 ICV, 1 ATGM and 8 MGSs.

Procurement: Initial Contract Price  
Target Ceiling Qty  
 GM GD Defense Group LLD, Sterling Heights MI  
 DAAE07-00-D-M051, FFP \$578.5 \$578.5 366  
 Award: November 16, 2000  
 Definitized: November 16, 2000

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1197.0	\$1197.0	754	\$1197.0	\$1197.0

Explanation of Change:

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

None.

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

**Contract Comments:**

This contract is funded with both RDTE and Procurement appropriation funding, with most of the contract paid for out of procurement. The total projected value for the procurement funded portion of the contract is \$4.3B, with a total hardware buy of 2111 vehicles.

Current contract price reflects total dollars obligated on the production CLINs of the contract.

Target/ceiling increase in production reflects a vehicle quantity change from 366 to 754 vehicles when the second production buy was called up. Total estimated cost for the production delivery orders upon completion of all planned vehicle buys is \$4.5B.

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

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

<u>Appropriation</u>	<u>Prior Years (FY00-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	497.1	61.4	52.4	29.3	640.2
Procurement	2371.0	955.0	969.8	1928.1	6223.9
MILCON	95.4	24.9	66.0	128.7	315.0
O&M	-	-	-	-	-
Total	2963.5	1041.3	1088.2	2086.1	7179.1

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Stryker, December 31, 2002

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

b. Annual Summary -- Stryker

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

Fiscal Year	Qty	Rollaway FY 2000 Dollars Nonrec	Rollaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				14.4	14.6
2001				235.2	241.1
2002				94.9	98.1
2003				136.7	143.3
2004				57.8	61.4
2005				48.5	52.4
2006				7.0	7.7
2007				0.1	0.1
2008				18.8	21.4
2009				0.1	0.1
Subtotal	10			613.5	640.2

Appropriation: 2033 - Procurement of W&TCV

Fiscal Year	Qty	Rollaway FY 2000 Dollars Nonrec	Rollaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	7		21.1	21.6	22.0
2001	447	24.8	788.8	894.5	920.9
2002	300	84.3	478.6	628.1	653.3
2003	302	95.5	579.7	734.1	774.8
2004	301	111.8	646.9	890.8	955.0
2005	340	97.1	702.1	890.1	969.8
2006	330	71.1	636.2	815.1	903.4
2007	84	53.2	288.8	691.3	779.9
2008		41.8		66.5	76.4
2009		41.9		144.0	168.4
Subtotal	2111	621.5	4142.2	5776.1	6223.9

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Rollaway FY 2000 Dollars Nonrec	Rollaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				17.8	18.7
2003				72.0	76.7
2004				23.0	24.9
2005				60.0	66.0
2006				62.0	69.4
2007				52.0	59.3

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

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Rollaway FY 2000 Dollars Nonrec	Rollaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal				286.8	315.0

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2121	621.5	4142.2	6676.4	7179.1

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	4	4
Procurement	348	348

Percent Total Program Quantities Delivered: 16.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 970.1

Percent Total Program Expended: 13.5%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The O&S costs are representative of the average of the 10 variants. The average annual operating miles is 1157. The expected operating life is 20 years. The Army Cost Position dated Nov 2000 is the source for the costs in 18.b.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	Stryker Average Annual Cost Per Vehicle	N/A
Mission Pay & Allowances	189.0	N/A
Unit Level Consumption	17.0	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	1.0	N/A
Contractor Support	3.0	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A

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Stryker, December 31, 2002

10b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

Cost Element	Stryker Average Annual Cost Per Vehicle	N/A
Total	210.0	N/A

Total O&S Cost	Stryker	N/A
BY\$ (In Millions)	8947.6	N/A
TY\$ (In Millions)	14026.7	N/A

Report Creation Date: 3/18/2003 2:10:05 PM

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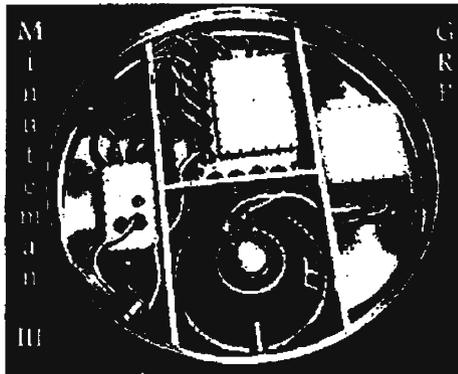
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: MMIII GRP**

**AS OF DATE: December 31, 2002**

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1. (U) Designation and Nomenclature (Popular Name): Minuteman III Guidance Replacement Program (MM III GRP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  
 OO-ALC/LMG MAJ MARK E. COLUZZI  
 6031 GUM LANE Assigned: September 4, 2001  
 HILL AFB, UT 84056-5826 DSN 775-2293; COMM (801) 775-2293  
 Mark.Coluzzi@hill.af.mil
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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03-C-0288

5. (U) References:

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated June 8, 1999.

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated June 8, 1999.

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 the recent Nuclear Posture Review, the Minuteman III is projected to become the only land-based Intercontinental Ballistic Missile (ICBM) in the United States nuclear arsenal when Peacekeeper is retired. The guidance electronics require replacement since current electronic components continue to degrade and are becoming unreliable and unsupportable. 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) One hundred eighty-two Guidance Replacement Program (GRP) (NS-50) Missile Guidance Sets (MGS) have been delivered as of December 31, 2002. Initial Operating Capability (IOC) was met on July 20, 2000 after ten NS-50 equipped Minuteman III (MM III) missiles had been on alert for 720 hours each. As of December 31, 2002, a total of one hundred forty-three units have been deployed, sixty-eight at Malmstrom Air Force Base (AFB), MT, thirty-one at Minot AFB, ND, and thirty-three at F.E. Warren AFB, WY. Performance continues to be outstanding, with more than 1,295,000 alert hours accumulated. The Mean Time Between Failure (MTBF) for the NS-50 is over 17,000 hours, exceeding the requirement of 15,000 hours.

The GRP Prime contractor, TRW Inc., was bought by Northrop Grumman. Northrop Grumman Missile Systems (NMGS) is now responsible for management of the program, however contract data in this report reflects TRW as the contractor. The Low Rate Initial Production (LRIP) contract was completed in March 2002 after an 8-month extension to accommodate a hardware/software design change in FY01. The first Full Rate Production (FRP) contract overlapped LRIP by 5 months, which contributed to the contractor catching back up to the original baseline delivery schedule in March 2002. This contract completed on schedule in July 2002. The FY02 FRP contract for 76 kits was awarded in January 2002, and the FY03 FRP contract for 80 kits was awarded in December 2002. The program is currently delivering 5 units ahead of schedule. The FY04 President's Budget restored GRP to a total kit quantity of 641. The Air Force is evaluating the documented requirement of 652 kits against competing priorities within the Programming cycle.

There have been a number of significant hardware changes to the NS-50 since deliveries began. Four hardware fixes requiring changes to the configuration baseline have been implemented in production. Units fielded before the

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

production changes are being corrected at the depot.

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)	Yes

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

The President's Budget FY2004 restored GRP to a total kit quantity of 641. The Air Force is evaluating the documented requirement of 652 kits against competing priorities within the Programming cycle.

The APUC breach is caused in part by contractor rate increases, but is mainly an effect of the lower kit quantity. When GRP receives the funding it requires for the remaining 11 kits (from 641 to 652 total) the APUC will decrease.

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9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I/II AFSARC	AUG 1993	AUG 1993	AUG 1993
Engineering and Manufacturing Development Contract Award	AUG 1993	AUG 1993	AUG 1993
Preliminary Design Review (PDR) Complete	FEB 1996	FEB 1996	FEB 1996
Critical Design Review (CDR) Complete	JUN 1997	JUN 1997	JUL 1997
AF QT&E Start	MAY 1996	MAY 1996	JUN 1996
Complete	JAN 1998	JAN 1998	FEB 1998
Low Rate Initial Production (LRIP) Contract Award	JAN 1998	JAN 1998	MAR 1998
AF QOT&E Integration Demonstration Flight (IDF)	JUL 1998	JUL 1998	SEP 1998
Milestone III AFSARC	JUN 1999	JUN 1999	NOV 1999
First Asset Delivery (FAD) to User	JUL 1999	JUL 1999	AUG 1999
Initial Operational Capability (IOC)	MAY 2000	MAY 2000	JUL 2000

(U) AFSARC: Air Force Systems Acquisition Review Council  
 QT&E: Qualifying Test and Evaluation  
 QOT&E: Qualifying Operational Test and Evaluation

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Demonstrated</u>	<u>Current</u>
--	----------------------------------	-------------------------------	---------------------	----------------



(\*) ~~(S)~~ Results of seven NS-50 tests to date indicated a concern with an NS-50 down range bias (long) of approximately (b)(1). Air Force Space Command (AFSPC) and U. S. Strategic Command (USSTRATCOM) are aware of this bias and continued NS-50 deployments, due to minimal impact on weapon system effectiveness.

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

**AS AMENDED**

(\*) ~~(S)~~ In August 2000 the program initiated an accuracy investigation of both the older NS-20 and the new NS-50. Investigation results showed that: 1) a small NS-20 cross range bias of (b)(1) was caused by known flight gyroscope coefficient drift (fixed by more frequent calibration) and 2) a majority of the NS-50 down range bias was caused by a computational error (b)(1) in the guidance computer and mechanization of the Reentry Vehicle Deployment Attitude Guidance (DAG) (b)(1).

(U) The program completed the accuracy investigation and implemented fixes to the NS-50 software. Two flights, GT-179 and GT-180 flew successfully with the new software. The latest flight (GT-180) flew on September 19, 2002. It appears the new software has corrected the long bias. The new software was delivered to the field in late September and 125 sites have been upgraded. Installation at the remaining sites is scheduled to be complete by March 2003.

b. Current Change Explanations -- None

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

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	496.0	496.0	509.9
Procurement	1516.5	1516.5	1660.1
Fly-Away Recurring	(0.0)		(0.0)
Recurring Flyaway	(1060.6)		(1167.0)
Nonrecurring Flyaway	(334.9)		(369.5)
Total Flyaway	(1395.5)		(1536.5)
Total Weapon Other System	(8.6)		(8.8)
Peculiar Support	(65.5)		(67.0)
Initial Spares	(46.9)		(47.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1993 Base-Year \$	<u>2012.5</u>	<u>2012.5</u>	<u>2170.0</u>
Escalation	387.6	387.6	324.8
Development (RDT&E)	(35.9)	(35.9)	(33.3)
Procurement	(351.7)	(351.7)	(291.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2400.1</u>	<u>2400.1</u>	<u>2494.8</u>

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

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>652</u>	<u>652</u>	<u>641</u>
Total	652	652	641

(U) The initial planned LRIP quantities were 46, the current planned LRIP quantities are 83.

This represents more than 10% of the total planned buy as approved by the Component Acquisition Executive per the Acquisition Strategy Panel.

The unit of measure for this program is the Missile Guidance Set for the Minuteman III missile.

c. (U) Foreign Military Sales --  
None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (JUN 1999 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	2012.5	2170.0	
(2) Quantity	652	641	
(3) Unit Cost	3.087	3.385	+9.65
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1993 BY\$)	1516.5	1660.1	
(2) Quantity	652	641	
(3) Unit Cost	2.326	2.590	+11.35

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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	531.9	1868.2	-	2400.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-78.3	-	-78.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.3	+117.6	-	+128.9
Other	-	-	-	-
Support	-	+22.2	-	+22.2
Subtotal	+11.3	+61.5	-	+72.8
Current Changes:				
Economic	-	+0.6	-	+0.6
Quantity	-	+18.0	-	+18.0
Schedule	-	+0.1	-	+0.1
Engineering	-	-	-	-
Estimating	-	+22.8	-	+22.8
Other	-	-	-	-
Support	-	-19.6	-	-19.6
Subtotal	-	+21.9	-	+21.9
Total Changes	+11.3	+83.4	-	+94.7
Current Estimate	543.2	1951.6	-	2494.8

(U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	496.0	1516.5	-	2012.5
Previous Changes:				
Quantity	-	-66.6	-	-66.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+13.9	+155.1	-	+169.0
Other	-	-	-	-
Support	-	+18.9	-	+18.9
Subtotal	+13.9	+107.4	-	+121.3
Current Changes:				
Quantity	-	+14.3	-	+14.3
Schedule	-	+0.4	-	+0.4
Engineering	-	-	-	-
Estimating	-	+37.8	-	+37.8
Other	-	-	-	-
Support	-	-16.3	-	-16.3
Subtotal	-	+36.2	-	+36.2
Total Changes	+13.9	+143.6	-	+157.5
Current Estimate	509.9	1660.1	-	2170.0

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>Procurement</u>		
	Economic adjustment for current and prior inflation. (Economic)	N/A	+0.6
	Total Quantity Variance associated with increase of 19 Missile Guidance Sets from 621 to 641.	+52.9	+28.6
	Quantity increased from 622 to 641 for a total of 19 units. (Quantity)	+14.3	+18.0
	Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	+0.4	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+38.2	+23.2
	Decrease in support is due to adjustment to other program initial spares of FY03 funding being put incorrectly into GRP program. (Support)	-16.3	-19.6
	Procurement Subtotal	<u>+36.2</u>	<u>+21.9</u>

QR = Quantity related changes.

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 Prod Est
PAUC Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.51	-0.166	-0.004	+0.319	-0.009	+0.915	--	+0.116	+1.17	3.68

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

Current SAR Baseline to Current Estimate									PAUC Cur Est
PAUC Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.68	+0.001	-0.031	--	--	+0.237	--	+0.004	+0.211	3.89

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

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

Initial SAR Baseline to Current SAR Baseline									PUC
PUC	Changes								Prod Est
Init Est.	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.82	-0.151	-0.030	+0.217	+0.033	+0.860	--	+0.116	+1.05	2.87

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

Current SAR Baseline to Current Estimate									PUC
PUC	Changes								Cur Est
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.87	+0.001	-0.045	--	--	+0.219	--	+0.004	+0.179	3.04

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

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	N/A	AUG 1993	N/A	AUG 1993
Milestone II	N/A	AUG 1993	AUG 1993	AUG 1993
Milestone III	N/A	MAY 1997	MAY 1997	NOV 1999
IOC	N/A	MAR 1998	MAR 1998	JUL 2000
Total Cost	N/A	1636.2	1636.2	2494.8
Total Quantity	N/A	652	652	641
Prog Acq Unit Cost	N/A	2.5	2.5	3.9

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

a. Procurement --

(U) MM III GRP FRP 00 (IPIC): TRW Inc, San Bernadino, CA F42610-98-C-0001, FPIF/AF Award: December 17, 1999 Definitized: December 17, 1999	Initial Contract Price		
	Target	Ceiling	Qty
	\$167.0	\$181.2	65
Current Contract Price		Estimated Price At Completion	
Target	Ceiling	Contractor	Program Manager
\$167.2	\$185.7	\$167.2	\$167.2
		65	

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.5	\$-3.3
Cumulative Variances To Date (12/20/02)	\$4.8	\$0.0
Net Change	\$6.3	\$3.3

Explanation of Change:

(U) The favorable net change to the cost variance of \$6.3M is the result of lower than expected subcontractor material. The contract finished with a declared \$3.5M underrun. All work has been accomplished. All management reserve has been applied which resulted in the net change.

The cumulative schedule variance is zero. All hardware was delivered on schedule.

(U) Contract Comments:

This contract is over 90% complete and will not be reported in the next SAR.

(U) <u>MM III GRP FRP 01 (IPIC):</u> TRW Inc, San Bernadino, CA F42610-98-C-0001, FPIF/AF Award: November 15, 2000 Definitized: November 15, 2000	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$185.0	\$201.3	80

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$188.0	\$204.4	80	\$171.9	\$171.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.5	\$-2.2
Cumulative Variances To Date (12/20/02)	\$6.7	\$-3.3
Net Change	\$6.2	\$-1.1

Explanation of Change:

(U) The favorable net change to the cost variance of \$6.2M is the result of lower than expected material costs and fewer subcontractor manhours required than planned. The manpower decrease was driven in part by late receipt of subsystem material, which delays the labor expenditures into CY03.

The continued unfavorable schedule variance reflects late delivery of subsystem material caused by minor production problems. Alternate

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

processes, though more time-consuming, are enabling deliveries to continue. Solutions are being sought at the factory to eliminate these delays and recover the schedule. Deliveries to the field remain ahead of schedule.

(U) <u>MM III GRP FRP 02 (IPIC):</u>			Initial Contract Price		
TRW inc, San Bernadino, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F42610-98-C-0001, FPIF/AF			\$107.3	\$117.1	18
Award: November 6, 2001					
Definitized: November 6, 2001					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$204.5	\$216.8	76	\$197.9	\$197.9	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/20/02)			\$0.0	\$0.0	
Net Change			\$3.5	\$-0.1	
			\$3.5	\$-0.1	

Explanation of Change:

(U) The favorable net change to the cost variance of \$3.5M was driven by a decrease in manhours caused by late subsystem buildup and staffing delays. This variance will decrease as the schedule variance improves. Another contributor is a favorable subcontractor rate position at year end.

The cumulative schedule variance of (\$0.1M) is a result of the subcontractor being behind schedule due to the delays associated with minor production process

(U) Contract Comments:

The increase to the current contract target price was due to the addition of fifty-eight production units when additional program funding was received.

(U) <u>MM III GRP FRP 03:</u>			Initial Contract Price		
TRW Inc, San Bernadino, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F42610-C-98-0001, FPIF/AF			\$182.4	\$218.9	80
Award: December 13, 2002					
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>	

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MMIII GRP, December 31, 2002

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

\$182.4            \$218.9            80            \$0.0            \$0.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/20/02)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) Contract Performance Reporting will begin February 2003.

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 (FY93-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	543.2	-	-	-	543.2
Procurement	1120.8	232.5	223.0	375.3	1951.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1664.0	232.5	223.0	375.3	2494.8

b. Annual Summary -- MM III GRP

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				52.8	53.7
1994				81.6	84.5
1995				88.2	93.0
1996				103.4	111.1
1997				106.0	115.4
1998				69.9	76.6
1999				8.0	8.9
Subtotal				509.9	543.2

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

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	4	1.3	7.9	9.2	10.0
1997	10	21.8	19.3	57.4	63.1
1998	30	26.0	51.2	94.0	104.2
1999	39	25.6	57.3	93.9	105.4
2000	65	36.0	103.0	157.1	178.3
2001	80	36.3	128.2	175.1	200.7
2002	76	32.5	144.5	186.0	215.8
2003	80	45.7	152.5	206.9	243.3
2004	84	33.2	152.1	194.7	232.5
2005	76	33.7	141.4	183.8	223.0
2006	76	37.4	138.5	184.8	228.0
2007	21	38.1	71.0	115.2	144.7
2008		1.4		1.4	1.8
2009		0.6		0.6	0.8
Subtotal	641	369.6	1166.9	1660.1	1951.6

(U) The FY04 PB restored GRP to a total kit quantity of 641. The Air Force is evaluating the documented requirement of 652 kits against competing priorities within the Programming cycle.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	641	369.6	1166.9	2170.0	2494.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	177	182

(U) Percent Total Program Quantities Delivered: 28.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1189.1

(U) Percent Total Program Expended: 47.7%

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. The only change in the Operating and Support (O&S) costs between the NS-20 and the NS-50 is lower depot maintenance costs due to fewer estimated recycles. Calculations are based on historical guidance repair data, which have 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 Program Office Estimate (POE) dated May 1999.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	MM III GRP (NS-50 System) Avg Annual Cost	MM III (NS-20) Average Annual Cost
Mission Pay & Allowances	18.2	18.2
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	12.1	14.9
Contractor Support	0.0	0.0
Sustaining Support	8.0	8.0
Indirect Costs	2.9	2.9
Total	41.2	44.0

Total O&S Cost	MM III GRP	MM III (NS-20)
BY\$ (In Millions)	908.2	1024.4
TY\$ (In Millions)	1287.7	1452.5

Report Creation Date: 03/19/2003 12:33:57 PM

# AF-23 WIDEBAND GAFILLER

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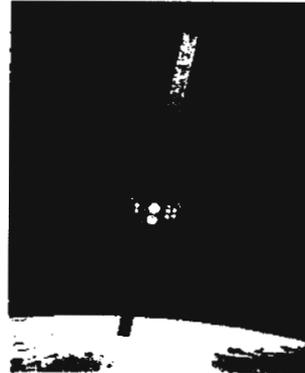
SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

**PROGRAM:** WGS

**AS OF DATE:** December 31, 2002

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1. Designation and Nomenclature (Popular Name): Wideband Gapfiller Satellites (WGS)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

2420 Vela Way	SES Christine Anderson
Suite 1467-A8	Assigned: December 30, 2000
Los Angeles AFB, CA 90245-4659	DSN 833-4877; COMM 310/363-4877
	chris.anderson@losangeles.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603854F (Shared) Project Number 4811

PROCUREMENT:

APPN 3080 ICN 836780 (Navy)

APPN 3020 ICN GAP000 (Air Force)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

WGS/AFS

03 0100

03-C-0291

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03-C-0291

WGS, December 31, 2002

**5. References:**

SAR Baseline (Production Estimate):

DAE Approved Acquisition Program Baseline dated December 15, 2000.

Approved Program:

USecAF Approved Acquisition Program Baseline (APB) dated February 14, 2003.

**6. Mission and Description:**

Wideband Gapfiller Satellites (WGS) will augment the DoD's Interim Wideband System, which includes Defense Satellite Communications System (DSCS III), and the Global Broadcast Service Phase II (GBS). WGS is a fully duplexed communications platform offering warfighters a quantum leap in capacity, connectivity, and interoperability. It will provide high capacity and digitally channelized service at both X and Ka frequency bands, opening up a new 2-way Ka communication capability. This highly flexible communications satellite design leverages commercial processes, practices and technology to provide a wideband payload compatible with existing and future terminals. The critical first WGS launch is scheduled for no later than October 2004, with satellites 2-3 launches scheduled no later than October 2005. In December 2002, OSD directed the addition of satellites 4 and 5 currently planned for launch in FY09 and FY10 respectively.

**7. Executive Summary:**

The Joint Requirements Oversight Council (JROC) approved the Wideband Gapfiller Satellites (WGS) Operational Requirements Document on May 4, 2000. The Defense Acquisition Board authorized WGS to proceed into a combined Milestone II/Production phase on November 6, 2000. A Firm Fixed Price (FFP) contract, containing six FFP satellite options, was awarded to Boeing Satellite System (BSS) of El Segundo, California on January 2, 2001.

The WGS Program continues to enjoy a strong cooperative team effort between the MILSATCOM Joint Program Office (MJPO), BSS and numerous DoD stakeholders. Together, these organizations are facilitating this fast paced space program. During this past year, the WGS successfully completed all Critical Design Reviews (CDR) and began manufacture of the first two satellites. Since the completion of the CDRs, the digital channelizer unit, the heart of the WGS payload and a high-risk watch item, experienced first-pass success by properly transmitting electronic signals through associated engineering models (EM). Satellite battery design life testing did not guarantee objective design life could be met, and the MJPO initiated two Engineering Change Proposals (ECPs) to mitigate this risk. One ECP provides four additional cells per satellite battery. The second ECP provides test batteries to be used during production testing and checkout and will increase life of actual flight batteries. Finally, software development in the control segment continues to be a watch item for the program office, as some development has experienced delays. The contractor has assigned more senior engineers to the software development

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

effort to recover lost schedule margin. The program office is currently reviewing the overall software development program to determine the full impacts. The WGS and Evolved Expendable Launch Vehicle (EELV) program offices continue to work integration efforts required to maintain the schedule for a no later than October 2004 launch date. On November 20, 2002, WGS exercised the Firm Fixed Price (FFP) contract option for Satellite 3.

Air Force Operational Test and Evaluation Center (AFOTEC) completed their WGS Operational Assessment and determined the system is making satisfactory progress in meeting all requirements. However, AFOTEC is requesting up to 95 additional days over the currently scheduled 90 days to complete their analysis, write and coordinate their report and obtain Office of Secretary of Defense / Director, Operational Test & Evaluation (OSD/DOT&E) Initial Operational Capability (IOC) approval. The program office will work with AFOTEC to mitigate impact to schedule.

In December 2002, the Deputy Secretary of Defense directed two additional WGS's (Satellites 4-5). The launches are currently planned for FY09 and FY10 respectively. The contract will require renegotiations for satellites 4 and 5 due to a greater than 24-month production gap between satellite 3 and satellite 4. The current estimate for satellites 4 and 5 do not reflect costs of renegotiating satellites 4 and 5. Renegotiations of the Firm Fixed Price contract in a sole source environment will likely result in additional costs. The Air Force included additional funding for slight modifications on Satellites 4-5 to better support the Airborne Intelligence, Surveillance and Reconnaissance mission.

**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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone II/Procurement (DAB)	OCT 2000	OCT 2000	NOV 2000
Contract Award EMD/Production	DEC 2000	DEC 2000	JAN 2001
Critical Design Review	MAR 2002	MAR 2002	JUL 2002
Initial Operational Capability (IOC)	DEC 2004	DEC 2004	JUN 2005 (Ch-1)
Full Operational Capability (FOC)	DEC 2005	DEC 2005	JUN 2006 (Ch-2)

b. Current Change Explanations --

(Ch-1) - Initial Operational Capability (IOC) estimate changed from December 2004 to June 2005 because of two factors. First, the launch vehicle funding for Satellite 1 was delayed as part of the FY02 OMNIBUS. The subsequent negotiations with the launch vehicle and satellite contractors for the delay of funding resulted in a minimum three month delay to launch of Satellite 1. Second, the Air Force Operational Test & Evaluation Center (AFOTEC) has requested an additional 95 days to complete their analysis, write and coordinate their report, and obtain Office of Secretary of Defense / Director, Operational Test & Evaluation (OSD/DOT&E) IOC approval.

(Ch-2) - Delays in achieving IOC have a corresponding effect to Full Operational Capability (FOC). The FOC estimate has changed from December 2005 to June 2006.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Coverage	Capable of providing communications connectivity anywhere between 70 deg N and 65 deg S latitude and at all longitudes within each satellites	Capable / Capable of providing communications / communications / connectivity / connectivity / anywhere / between 70 deg N / 65 deg N and 65 deg S / latitude / and at all / longitudes / within each / satellites	TBD	Capable of providing communications connectivity anywhere between 65 deg N and 65 deg S latitude and at all longitudes within each satellites

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Capacity	Each satel- lite should provide a min through- put of 3.6 Gbps	Each / Each satel- / satel- lite / lite should / should provide / provide a min / a min through- / through- put of / put of 3.6 Gbps / 1.2 Gbps	TBD	Each satel- lite should provide a min through- put of ~2.4 Gbps
Access and Control	Provide platform and pay- load con- trolled capabil- ities to perform Launch and Early Orbit, On-Orbit Opera- tions, Station- keeping, Satel- lite Reposi- tioning, Platform and Payload Mainte- nance, and An	Provide / Provide platform / platform and pay- / and pay- load / load con- / con- trolled / trolled capabil- / capabil- ities to / ities to perform / perform Launch / Launch and / and Early / Early Orbit, / Orbit, On-Orbit / On-Orbit Opera- / Opera- tions, / tions, Station- / Station- keeping, / keeping, Satel- / Satel- lite / lite Reposi- / Reposi- tioning, / tioning, Platform / Platform and / and Payload / Payload Mainte- / Mainte- nance, / nance, and / and An / An	TBD	Provide platform & payload con- trolled capabil- ities to perform Launch & Early Orbit, On-Orbit Ops, Station- keeping, Sat Reposi- tioning, Platform & Payload Mainte- nance, & Anomaly ID & resolu- tion
Interoperability	Satel- lites must be fully inter- operable with existing	Satel- / Satel- lites / lites must be / must be fully / fully inter- / inter- operable / operable with / with existing / existing	TBD	Satel- lites must be fully inter- operable with existing

10a. Performance Characteristics (Cont'd):

<u>Production Estimate (SAR)</u> and pro-grammed DSCS and GBS ter-minals	<u>Approved Program (APB) Obj/Threshold</u> and pro-/ and pro-grammed / DSCS and/ DSCS and GBS ter-/ GBS ter-minals / minals	<u>Demonstrated Perf</u>	<u>Current Estimate</u> and pro-grammed DSCS and GBS ter-minals
---	--	--------------------------	--

b. Current Change Explanations -- None

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)	175.8	229.7	223.8
Procurement	804.6	1211.4	1219.7
Total Flyaway	(758.5)		(1192.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(46.1)		(26.8)
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 2001 Base-Year \$	<u>980.4</u>	<u>1441.1</u>	<u>1443.5</u>
Escalation	62.1	141.4	100.6
Development (RDT&E)	(3.0)	(7.9)	(4.9)
Procurement	(59.1)	(133.5)	(95.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>1042.5</u>	<u>1582.5</u>	<u>1544.1</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>3</u>	<u>5</u>	<u>5</u>
Total	3	5	5

There is no Low Rate Initial Production (LRIP) for WGS.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	1441.1	1443.5	
(2) Quantity	5	5	
(3) Unit Cost	288.220	288.700	+0.17
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	1211.4	1219.7	
(2) Quantity	5	5	
(3) Unit Cost	242.280	243.940	+0.69

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	178.8	863.7	-	1042.5
Previous Changes:				
Economic	+0.1	-6.7	-	-6.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-7.6	-150.0	-	-157.6
Other	-	-	-	-
Support	-	-1.4	-	-1.4
Subtotal	-7.5	-158.1	-	-165.6
Current Changes:				
Economic	-1.2	-8.2	-	-9.4
Quantity	-	+634.3	-	+634.3
Schedule	-	-	-	-
Engineering	+63.2	-	-	+63.2
Estimating	-4.6	+3.7	-	-0.9
Other	-	-	-	-
Support	-	-19.9	-	-19.9
Subtotal	+57.4	+609.8	-	+667.2
Total Changes	+49.9	+451.7	-	+501.6
Current Estimate	228.7	1315.4	-	1544.1

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

Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	175.8	804.6	-	980.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-7.3	-129.1	-	-136.4
Other	-	-	-	-
Support	-	-1.3	-	-1.3
Subtotal	-7.3	-130.4	-	-137.7
Current Changes:				
Quantity	-	+560.5	-	+560.5
Schedule	-	-	-	-
Engineering	+59.7	-	-	+59.7
Estimating	-4.4	+3.0	-	-1.4
Other	-	-	-	-
Support	-	-18.0	-	-18.0
Subtotal	+55.3	+545.5	-	+600.8
Total Changes	+48.0	+415.1	-	+463.1
Current Estimate	223.8	1219.7	-	1443.5

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-1.2
Radio Frequency Modification on Satellites #4 and #5 to better support Airborne Intelligence Surveillance and Reconnaissance (Engineering)	+59.7	+63.2
Adjustment for Current and Prior Inflation. (Estimating)	+2.4	+2.4
Transfer of the Joint Terminals Engineering Office (JTEO) effort to the Military Satellite Communications (MILSATCOM) Terminals program (Estimating)	-3.5	-3.7
General Congressional Reductions (Estimating)	-3.3	-3.3
RDT&E Subtotal	+55.3	+57.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-8.7
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Addition of Satellites #4 and #5 (Quantity)	+467.3	+520.6
Launch and Flight Support for addition of satellites #4 and #5 (Quantity)	+93.2	+113.7

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Mitigation of FY02 congressional appropriations \$20M reduction: restores launch and flight support services for WGS satellites #1-3 in FY04-FY07 (Estimating)	+17.4	+18.6
General Congressional Reduction (Estimating)	-8.7	-8.9
Adjustment for Current and Prior Inflation. (Estimating)	+6.2	+6.7
Transfer of the Joint Terminals Engineering Office (JTEO) effort to the MILSATCOM Terminals program (Estimating)	-11.9	-12.7
Contract savings through use of existing hardware resulted in revised estimate for Primary Injection Points for Gapfiller broadcast service (Support)	-18.0	-19.9
Procurement Subtotal	<u>+545.5</u>	<u>+609.8</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 Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
347.50	-3.20	-12.15	--	+12.64	-31.71	--	-4.26	-38.68	308.82

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	
287.90	-2.98	+11.69	--	--	-29.27	--	-4.26	-24.82	263.08

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	OCT 2000	NOV 2000
Milestone III	N/A	N/A	OCT 2000	NOV 2000
IOC	N/A	N/A	DEC 2004	JUN 2005
Total Cost	N/A	N/A	1042.5	1544.1
Total Quantity	N/A	N/A	3	5
Prog Acq Unit Cost	N/A	N/A	347.5	308.8

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

a. RDT&E --  
Wideband Gapfiller:  
 Boeing Satellite Systems, El Segundo CA  
 F04701-00-C-0011, FFP  
 Award: January 2, 2001  
 Definitized: January 2, 2001

Target	Initial Contract Price	
	Ceiling	Qty
\$137.0	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$139.4	N/A	0	\$139.4	\$139.4

Explanation of Change:

None.

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

b. Procurement --  
Wideband Gapfiller:  
 Boeing Satellite Systems, El Segundo CA  
 F04701-00-C-0011, FFP  
 Award: January 2, 2001  
 Definitized: January 2, 2001

Target	Initial Contract Price	
	Ceiling	Qty
\$19.6	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$648.8	N/A	3	\$648.8	\$648.8

Explanation of Change:

None.

15. Contract Information (Cont'd):

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

Contract Comments:

Initial procurement contract price represents only advanced parts for satellite 1. Difference between initial procurement contract price and current procurement price is the exercise of options for procurement of satellites 1-3, advance parts for satellites 1-3 and launch services for satellite 1. The difference between previous Contract Price and Current Contract Price is associated with the exercise of options for a third Wideband Gapfiller Satellite.

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> (FY99-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-15)	<u>Total</u>
RDT&E	165.4	-	53.3	10.0	228.7
Procurement	591.1	46.8	21.5	656.0	1315.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	756.5	46.8	74.8	666.0	1544.1

b. Annual Summary -- WGS

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2001 Dollars Nonrec</u>	<u>Flyaway FY 2001 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1999				0.7	0.7
2000				4.9	4.9
2001				77.7	78.0
2002				78.7	79.8
2003				2.0	2.0
2005				50.5	53.3
2006				7.2	7.7
2007				2.1	2.3
Subtotal				223.8	228.7

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

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001			1.2	25.3	25.6
2002	2		360.7	353.2	361.3
2003	1		198.1	181.5	188.2
2004			32.9	32.9	34.6
2005			20.1	20.1	21.5
2006			55.5	55.5	60.4
2007	1		241.8	241.8	267.7
2008	1		151.3	151.3	170.5
2009			38.1	38.1	43.7
2010			15.4	15.4	18.0
2011			15.5	15.5	18.4
2012			15.5	15.5	18.7
2013			15.5	15.5	19.1
2014			15.6	15.6	19.5
2015			15.7	15.7	20.0
Subtotal	5		1192.9	1192.9	1287.2

Flyaway costs in years without a satellite quantity reflect on-orbit operational support for all satellites and is not attributable to a single satellite.

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				15.3	16.0
2004				11.5	12.2
Subtotal				26.8	28.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5		1192.9	1443.5	1544.1

**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): \$ 270.8

Percent Total Program Expended: 17.5%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Operations and Support costs include all costs for operating, maintaining and supporting the WGS assets (five satellites and ground segment) for an assumed design life of twelve years (2007-2018). The costs include program software maintenance, unit level consumption, depot maintenance, contractor logistics support and sustaining engineering support for both space and ground segments. Wideband Gapfiller Satellites were developed to maximize use of existing Army and Air Force infrastructures; the operations and support costs are based on current and future infrastructure cost projections.

The antecedent system is Defense Satellite Communication System (DSCS) III. The first DSCS III three satellite was launched in October 1982, and the last DSCS III satellite is scheduled to launch in the summer of 2003. Operations and support efforts for DSCS will transition to Air Force Operations and Maintenance funding in fiscal year 2005. Prior to this transition, on-going operations and support for on-orbit DSCS satellites were part of missile procurement costs. Operations and Support costs include all costs for operating, maintaining and supporting the DSCS assets (ten satellites and ground segment) for an assumed design life of ten years (2001-2010).

Operations and support costs for both systems are based on validated requirements from the Air Force Space Command (AFSPC) Logistics Support Requirements Brochures for the FY04 President's Budget. These estimates were finalized on April 15, 2002 with AFSPC's budget request to Headquarters Air Force.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Millions)

Cost Element	WGS Annual Average for System	DSCS III Annual Average for System
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.5	0.7
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.2	0.3

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WGS, December 31, 2002

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

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Millions)

Cost Element	WGS Annual Average for System	DSCS III Annual Average for System
Sustaining Support	8.4	10.5
Indirect Costs	0.9	1.1
Other Mission Personnel	1.6	2.0
Total	11.6	14.6

Total O&S Cost	WGS	DSCS III
BY\$ (In Millions)	140.4	146.0
TY\$ (In Millions)	159.4	156.1

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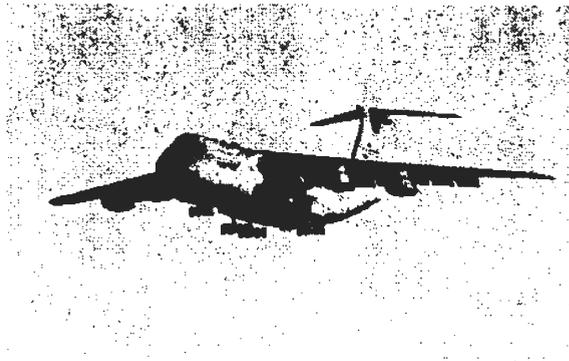
SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: C-5 RERP

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): C-5 Reliability Enhancement and Reengining Program

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/GRA	Lt Col Ralph King
AMC III Complex, Bldg 558	Assigned: April 9, 2001
2590 Loop Rd., West, Room 011	DSN 986-9582; COMM 937-656-9582
WPAFB, OH 45433-7142	ralph.king@wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
 PE 0401119F Project 4835

PROCUREMENT:  
 APPN 3010 ICN 0401119F (Air Force)

MILCON:  
 PE 0401119F

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**MAR 03 2003 5**

**DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE**

**SAF/PAS**

**00-0086**

**CONGRESSIONAL**

*03-C-0253*

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**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated November 5, 2001.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 19, 2002.

**6. Mission and Description:**

The C-5 Reliability Enhancement and Reengining Program (RERP) is a comprehensive modernization effort that will improve aircraft reliability, maintainability and availability. RERP will enable the C-5 to achieve wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability) while reducing total ownership costs (TOC). This effort centers on replacing the current TF-39 with more reliable, commercially available (COTS) turbofan engines with increased takeoff thrust and stage three noise compliance. In addition to new engines/pylons, C-5 RERP will provide upgrades to wing attach fittings, thrust reversers, Auxiliary Power Units (APUs), electrical system, hydraulics, fuel system, fire suppression system, pressurization/air conditioning systems, landing gear and airframe to increase payload capability and access to Global Air Traffic Management (GATM) airspace. It also decreases aircraft time to climb, increases engine-out climb gradient for takeoff, improves transportation system throughput, and decreases engine removals.

**7. Executive Summary:**

The C-5 Pre-System Development and Demonstration (SDD) phase contract began in FY00 and continued through FY01. The Operational Requirements Document (ORD) was released in June 2001 and was validated by the Joint Requirements Oversight Council (JROC) in August 2001. The Acquisition Decision Memorandum (ADM) was approved November 2, 2001, and the initial Acquisition Program Baseline (APB) was approved November 5, 2001. A subsequent APB was approved March 19, 2002. The SDD contract was awarded in the first quarter of FY02 under an Undefinitized Contract Action (UCA). The contract was definitized March 28, 2002. Development includes flight test of three prototypes, one C-5A and two C-5Bs. Major SDD milestones completed to date include the System Requirements Review (SRR) and several subcontractor Preliminary Design Reviews (PDRs).

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 --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Program Initiation	FEB 2000	FEB 2000	FEB 2000
Milestone B	NOV 2001	NOV 2001	NOV 2001
Contract Award	DEC 2001	DEC 2001	DEC 2001
Hardware/Software CDR	JAN 2004	APR 2004	APR 2004(Ch-2)
First Flight	AUG 2005	NOV 2005	NOV 2005(Ch-2)
Start Combined QT&E/QOT&E	NOV 2006	NOV 2005	NOV 2005(Ch-2)
Milestone C	DEC 2006	MAR 2007	MAR 2007(Ch-2)
Complete Dedicated QOT&E	AUG 2007	DEC 2007	DEC 2007(Ch-2)
FRP For B Models	SEP 2008	JAN 2009	JAN 2009(Ch-2)
IOC	MAR 2010	JUN 2010	JUN 2010(Ch-2)
FRP For A Models	N/A	JUN 2011	JUN 2011(Ch-2)
System Requirements Review (SRR)	N/A	N/A	FEB 2002(Ch-1)

Acronym List:

CDR	Critical Design Review
FRP	Full Rate Production
IOC	Initial Operational Capability
QOT&E	Qualification Operational Test and Evaluation
QT&E	Qualification Test and Evaluation

9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) Dec 2001 SAR - Schedule Milestones added to reflect SRR and FRP For A Models.

(Ch-2) Dec 2002 SAR - Current Estimates for remaining Schedule Milestones adjusted to reflect FY02 Congressional Budget cuts which resulted in a three (3) month program schedule slip.

10. Performance Characteristics:

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Time To Climb/Initial Level Off	840,000 lbs take-off weight; RCR 23; climb condi- tion: standard day plus 18 deg Fahren- heit; 31,000 ft in less than 25 min	840,000 / 769,000 lbs / lbs take-off/ take-off weight; / weight; RCR 23; / RCR 23; climb / climb condi- / condi- tion: / tion: standard/ standard day plus/ day plus 18 deg / 18 deg Fahren- / Fahren- heit; / heit; 31,000 / 31,000 ft in / ft in less / less than 25 / than 25 min / min / /	TBD	840,000 lbs take-off weight; RCR 23; climb condi- tion: standard day plus 18 deg Fahren- heit; 31,000 ft in less than 25 min
Aircraft Take-off Climb Gradient	One engine out 2.5% climb gradient /840,000 lbs takeoff weight/ hot day/ from rotation	One / One engine / engine out 2.5%/ out 2.5% climb / climb gradient/ gradient /840,000/ /840,000 lbs / lbs takeoff / takeoff weight/ / weight/ hot day// hot day/ from / from rotation/ rotation /	TBD	One engine out 2.5% climb gradient /840,000 lbs takeoff weight/ hot day/ from rotation

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Stage III Noise/ Pollution Compliance	Aircraft shall meet Stage IV community noise and emission requirements	Aircraft shall meet Stage IV/ community noise and emission requirements	Aircraft / shall meet III noise emission requirements	TBD	Aircraft shall meet Stage IV community noise and emission requirements
Break Rate (Reliability) (Per 100 Sorties)	Break rate shall not exceed 5.7 per 100 sorties	Break rate shall not exceed 5.7 per 100 sorties	Break / rate shall not exceed 10.5 per 100 sorties	TBD	Break rate shall not exceed 5.7 per 100 sorties
Fix Rate	4-hr fix rate shall be no less than 34.3%; 12-hr fix rate shall be no less than 66.5%; 24-hr fix rate shall be no less than 84.1%	4-hr fix rate shall be no less than 34.3%; 12-hr fix rate shall be no less than 66.5%; 24-hr fix rate shall be no less than 84.1%	4-hr / fix rate shall be no less than 30.1%; 12-hr / fix rate shall be no less than 62.9%; 24-hr / fix rate shall be no less than 82.4%	TBD	4-hr fix rate shall be no less than 34.3%; 12-hr fix rate shall be no less than 66.5%; 24-hr fix rate shall be no less than 84.1%

Acronym List:  
RCR Runway Condition Reading

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	1413.9	1396.5	1401.1
Procurement	7381.0	6733.2	7150.4
Recurring Flyaway	(6626.2)		(6207.1)
Nonrecurring Flyaway	(34.0)		(0.0)
Total Flyaway	(6660.2)		(6207.1)
Training	(82.1)		(75.3)
Data	(74.6)		(71.2)
Other wpn sys spt costs	(262.9)		(283.0)
Total Other Wpn Sys	(419.6)		(429.5)
Peculiar Support	(97.7)		(88.6)
Initial Spares	(203.5)		(425.2)
Construction (MILCON)	3.1	3.1	3.2
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 2000 Base-Year \$	8798.0	8132.8	8554.7
Escalation	2295.9	1887.8	1702.4
Development (RDT&E)	(124.6)	(121.5)	(94.3)
Procurement	(2170.8)	(1765.8)	(1607.7)
Construction (MILCON)	(0.5)	(0.5)	(0.4)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	11093.9	10020.6	10257.1
b. Quantity --			
Development (RDT&E)	4	3	3
Procurement	<u>122</u>	<u>109</u>	<u>109</u>
Total	126	112	112

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	8132.8	8554.7	
(2) Quantity	112	112	
(3) Unit Cost	72.614	76.381	+5.19
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	6733.2	7150.4	
(2) Quantity	109	109	
(3) Unit Cost	61.772	65.600	+6.20

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1538.5	9551.8	3.6	11093.9
Previous Changes:				
Economic	-3.8	-422.0	-	-425.8
Quantity	-	-607.4	-	-607.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.3	+256.2	-	+256.5
Other	-	-	-	-
Support	-	-47.5	-	-47.5
Subtotal	-3.5	-820.7	-	-824.2
Current Changes:				
Economic	-26.9	-69.9	-	-96.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+29.8	-221.6	-	-191.8
Other	-	-	-	-
Support	-42.5	+318.5	-	+276.0
Subtotal	-39.6	+27.0	-	-12.6
Total Changes	-43.1	-793.7	-	-836.8
Current Estimate	1495.4	8758.1	3.6	10257.1

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

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1413.9	7381.0	3.1	8798.0
Previous Changes:				
Quantity	-	-477.2	-	-477.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.9	+195.5	+0.1	+194.7
Other	-	-	-	-
Support	-	-34.7	-	-34.7
Subtotal	-0.9	-316.4	+0.1	-317.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+27.8	-171.4	-	-143.6
Other	-	-	-	-
Support	-39.7	+257.2	-	+217.5
Subtotal	-11.9	+85.8	-	+73.9
Total Changes	-12.8	-230.6	+0.1	-243.3
Current Estimate	1401.1	7150.4	3.2	8554.7

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation rates. (Economic)	N/A	-26.9
Increased cost and number of spares as the result of changing maintenance concept from Total Systems Performance Responsibility (TSPR) to Level 2 Organic maintenance. (Support)	-39.7	-42.5
Estimating changes result from reduction of SDD aircraft from 4 to 3 and overall rate changes for prime contractor. (Estimating)	+27.8	+29.8
RDT&E Subtotal	-11.9	-39.6
(2) <u>Procurement</u>		
Revised escalation rates. (Economic)	N/A	-69.9
Increased cost and number of spares as the result of changing maintenance concept from Total Systems Performance Responsibility (TSPR) to Level 2 Organic maintenance. (Support)	+257.2	+318.5

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

b. Current Change Explanations --

(Dollars in Millions)

Estimating changes result of overall rate changes for prime contractor. (Estimating)

Procurement Subtotal

(3) MILCON

MILCON Subtotal

	<u>Base-Year</u>	<u>Then-Year</u>
	-171.4	-221.6

	+85.8	+27.0
--	-------	-------

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

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

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
88.05	-4.67	+5.59	--	--	+0.578	--	+2.04	+3.53	91.58

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
78.29	-4.51	+3.76	--	--	+0.317	--	+2.49	+2.06	80.35

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	FEB 2000	N/A	FEB 2000
Milestone B	N/A	NOV 2001	N/A	NOV 2001
Milestone C	N/A	DEC 2006	N/A	DEC 2006
IOC	N/A	MAR 2010	N/A	MAR 2010
Total Cost	N/A	11093.9	N/A	10257.5
Total Quantity	N/A	126	N/A	112
Prog Acq Unit Cost	N/A	88.1	N/A	91.6

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

a. RDT&E --			Initial Contract Price		
<u>C-5 RERP SDD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Marietta, GA			\$986.1	\$0.0	3
F33657-02-C-2000, CPAF with T&M					
Award: December 5, 2001					
Definitized: March 28, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$986.1	\$0.0	3	\$986.1	\$995.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date			\$0.0	\$0.0	
Net Change			<u>\$-0.5</u>	<u>\$-1.6</u>	
			\$-0.5	\$-1.6	

Explanation of Change:

Negative Cost and Schedule Variances are the result of the unexpected upgrades to the legacy stress tool methods. Variances are considered negligible at this time and are expected to improve. Program management continues to monitor progress.

<u>C-5 RERP PES:</u>			Initial Contract Price		
Lockheed Martin, Marietta, GA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-01-C-2083, FFP			\$20.8	N/A	0
Award: June 2, 2001					
Definitized: June 2, 2001					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$20.8	N/A	0	\$20.6	\$20.6	

Explanation of Change:

None.

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

Contract Comments:

Contract Completed. Firm Fixed Price (FFP) plus Time and Materials (T&M). This contract will no longer be reported on future SARs.

C-5 RERP Preliminary Engineering Studies (PES) contract.

15. Contract Information (Cont'd):

<p>C-5 RERP Pre-SDD:                  Lockheed Martin, Marietta, GA                  F33657-00-C-0022, FFP                  Award: February 17, 2000                  Definitized: February 17, 2000</p>	<table border="0"> <tr> <th colspan="3" style="text-align: center;">Initial Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$25.0</td> <td>N/A</td> <td>0</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$25.0	N/A	0
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$25.0	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>
\$25.9	N/A	0	\$25.9	\$25.9

Explanation of Change:

None.

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

Contract Comments:

Contract Completed. Firm Fixed Price (FFP) plus Time and Materials (T&M). This contract will no longer be reported on future SARs.

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> (FY00-03)	<u>Budget</u> <u>Year</u> (FY04)	<u>Budget</u> <u>Year</u> (FY05)	<u>Balance To</u> <u>Complete</u> (FY06-16)	<u>Total</u>
RDT&E	374.1	290.5	454.2	376.6	1495.4
Procurement	-	-	-	8758.1	8758.1
MILCON	-	-	-	3.6	3.6
O&M	-	-	-	-	-
<b>Total</b>	<b>374.1</b>	<b>290.5</b>	<b>454.2</b>	<b>9138.3</b>	<b>10257.1</b>

\*\*\* UNCLASSIFIED \*\*\*

C-5 RERP, December 31, 2002

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

b. Annual Summary -- C-5 RERP

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				18.5	18.7
2001				38.7	39.6
2002				82.8	85.5
2003				220.8	230.3
2004				274.3	290.5
2005				422.5	454.2
2006				285.6	312.2
2007				57.5	63.9
2008				0.4	0.5
Subtotal	3			1401.1	1495.4

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				135.0	149.3
2007	5		436.8	394.3	444.0
2008	7		516.5	620.9	711.6
2009	12		673.4	764.1	891.7
2010	12		653.6	744.5	884.5
2011	12		702.8	802.0	969.6
2012	12		659.2	752.8	926.7
2013	12		649.0	744.1	932.4
2014	12		642.8	729.5	930.8
2015	12		646.3	733.9	953.3
2016	13		626.7	729.3	964.2
Subtotal	109		6207.1	7150.4	8758.1

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				3.2	3.6
Subtotal				3.2	3.6

\*\*\* UNCLASSIFIED \*\*\*

\*\*\* UNCLASSIFIED \*\*\*

C-5 RERP, December 31, 2002

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	112		6207.1	8554.7	10257.1

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): \$ 109

Percent Total Program Expended: 1.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

O&S costs not tracked separately for C-5 RERP. O&S costs are included in the overall operational costs for the existing C-5 fleet.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	C-5 RERP	Antecedent System
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

Total O&S Cost	C-5 RERP	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/20/2003 4:31:50 PM

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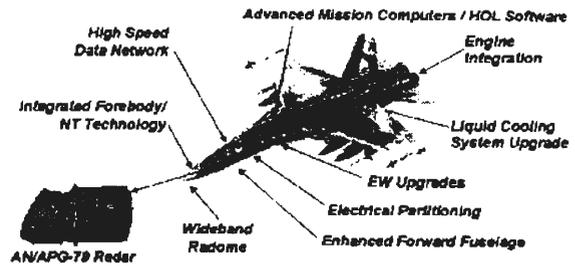
\*\*\* ~~SECRET~~ \*\*\*

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

AS OF DATE: December 31, 2002

INDEX

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1. (U) Designation and Nomenclature (Popular Name): Active Electronically Scanned Array (AESA) (AN/APG-79)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  

NAVAIRSYSCOMHQ	CAPT Jeffrey Wieringa
47123 Buse Road, Unit IPT	Assigned: April 7, 2000
BLDG 2772, Suite 445	DSN 757-7669; COMM 301-757-7669
Patuxent River, MD 20670-1547	wieringaja@navair.navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0204136N Project E2065

**CLEARED**  
FOR OPEN PUBLICATION  
AS AMENDED AS AMENDED  
MAR 24 2003 6  
DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

No Security Objection  
to Open Publication  
(AS AMENDED)  
03-MAR-24 2003  
Chief of Naval Operations  
Dept. of the Navy

Derived from: Security Classification Guide for F/A-18 AESA Radar  
AN/APG-79 dated June 6 2001  
Downgrade instructions: X3  
Reclassify on: X3

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5. (U) References:

SAR Baseline (Development Estimate):

(U) NAE Approved Acquisition Program Baseline dated June 15, 2001

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated June 15, 2001.

6. (U) Mission and Description:

(U) The AN/APG-79 radar will be the primary search/track and weapons control radar for the F/A-18E/F aircraft. The AN/APG-79 radar will significantly improve F/A-18E/F air to air and air to ground lethality and situational awareness, and improve aircraft survivability, supportability and affordability. The AN/APG-79 radar will incorporate embedded Electronic Support (ES) and Electronic Protection (EP) capabilities and Electronic Attack (EA) Radio Frequency (RF) jamming. The AN/APG-79 radar may be employed on any Block II F/A-18E/F and EA-18G missions to include: Anti-Air Warfare (AAW), Strike Warfare, Electronic Warfare (EW), Anti-Surface Ship Warfare, Close Air Support (CAS), Tactical Air Control, Reconnaissance and Near Simultaneous Missions.

The F/A-18E/F AESA program includes development, integration and test of an advanced, high power wideband airborne radar. The radar upgrade includes development of an advanced affordable AESA antenna, a wideband receiver exciter, advanced Commercial Off The Shelf (COTS) signal and data processors, high-density power supplies and custom radar rack. The AN/APG-79 antenna will be an electronically scanned antenna composed of many active transmitting and receiving elements. A computer will control the antenna elements individually, or in groups, to electronically steer a radar beam for various tactical purposes. In addition to the radar development, the program is to develop a new wideband radome, support the increased demand on aircraft power and cooling systems and integrate with the new aircraft mission system avionics and Higher Order Language (HOL) software over an advanced fibre channel network interface.

7. (U) Executive Summary:

(U) This is the third AN/APG-79 SAR following approval to enter Engineering and Manufacturing Development (EMD), MSII, in February 2001. Upon milestone approval, the program entered into an EMD and production readiness contract in February 2001. Procurement funding related information for this program is included in the F/A-18E/F SAR.

An Over Target Baseline (OTB) was recognized in early CY02 and is funded in PB04. The EMD contract will be modified in the third quarter of FY03 to reflect the \$40.1M cost overrun. This overrun was due to increases in contractor rates, technical issues with the Fibre Channel Network Switch (since mitigated), and the purchase of additional equipment necessary for flight test that had been initially omitted. The OTB did not constitute either a schedule

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

or cost APB breach.

As approved at MS II, the AESA program required reprogramming and rephasing of APN-1 to RDT&E funding in FY03-05 due to delayed program start and lower contractor recoupment under the AESA Advanced Agreement contract. FY03-04 reprogramming was accomplished during the FY03 budget cycle and the FY2004 President's Budget provided for the FY04-05 portion. Total program cost did not increase. Since MS II an Anti-Tamper requirement for FY04 and beyond has been identified for \$33M and is currently unfunded.

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 --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone II	DEC 2000	DEC 2000	FEB 2001
EMD Contract Award	DEC 2000	DEC 2000	FEB 2001
Critical Design Review	MAY 2001	MAY 2001	AUG 2001
DT&E			
DT-IIA	APR 2002	APR 2002	MAY 2002
DT-IIB	NOV 2002	NOV 2002	FEB 2003
DT-IIC	AUG 2004	AUG 2004	AUG 2004
IOT&E			
OT-IIA	OCT 2002	OCT 2002	FEB 2003
OT-IIB	JUN 2004	JUN 2004	JUN 2004

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
OT-IIC	FEB 2006	FEB 2006	FEB 2006
Milestone III	JAN 2007	JAN 2007	JAN 2007
Full Rate Production Contract Award	JAN 2007	JAN 2007	JAN 2007
IOC	SEP 2006	SEP 2006	OCT 2006

(U) Note: The approved program (APB) dates are objectives

ACRONYM LIST

- DT&E-Development Test and Evaluation
- DT-Developmental Testing
- EMD-Engineering and Manufacturing Development
- OT&E-Initial Operational Test and Evaluation
- OT-Operational Testing
- IOC-Initial Operational Capability

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

KEY PERFORMANCE PARAMETERS (KPPs) (Specified in AESA ORD)/1	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Interoperability	Achieve all IERS	Achieve / Achieve all IERS/ All / Critical	TBD	Achieve All IERS
(S) Near Simultaneous (b)(1)	(b)(1)	(b)(1)	TBD	(b)(1) (Ch-1)
(S) Multiple (Air-to-Air) Target Track (NM)/4/5	(b)(1)	(b)(1)	TBD	(b)(1) (Ch-1)
(S) SAR Imagery Expand (b)(1) SAR TEE:	(b)(1)	(b)(1)	TBD	(b)(1) (Ch-1)

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate	
Horizontal TLE-A Range(ft CEP)	(b)(1)	[Redacted]	TBD	(b)(1)	Ch-1)
Horizontal TLE-B Range(ft CEP)	(b)(1)		TBD		Ch-1)
AESA Operational Availability (A sub O)/10/11			TBD		

(U) ACRONYM LIST

- ORD-Operational Requirements Document
- IER-Information Exchange Requirement
- NM-Nautical Mile
- SAR-Synthetic Aperture Radar
- TLE-Target Location Error
- CEP-Circular Error Probability

b. Current Change Explanations --

(Ch-1) The current updated estimates are based on early test data from EDM units which have slightly lower effective radiated power and gain, and higher noise figure. Updates also include a modification to test setup assumptions.

Performance Characteristics

- Near Simultaneous Missions
- Multiple (Air to Air) Target Track
- SAR Imagery Expand
- Horizontal TLE-A
- Horizontal TLE-B

From	To
(b)(1)	[Redacted]

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

a. (U) Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	494.8	494.8	521.2
Procurement	0.0	0.0	0.0
Non-Recurring			(0.0)
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	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 2000 Base-Year \$	494.8	494.8	521.2
 Escalation	 30.4	 30.4	 25.1
Development (RDT&E)	(30.4)	(30.4)	(25.1)
Procurement	(0.0)	(0.0)	(0.0)
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 \$	525.2	525.2	546.3

(U) Procurement funding related information for this program is included in the F/A-18E/F SAR.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	N/A	N/A	0

(U) The program of record at this time is 415 radars based on the current annual aircraft mix and quantities. Changes to the annual aircraft mix and quantities could change the quantity.

c. (U) Foreign Military Sales --

An OSD Executive Committee approved releasability of AESA as installed on the F/A-18E/F in June 2001. The program office is working toward potential future sales of the Super Hornet. Potential Foreign Military Sales (FMS) customers include Malaysia, Singapore, Australia, and Kuwait.

d. (U) Nuclear Costs --

None

12. (U) Unit Cost Summary:

	UCR Baseline (JUN 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	494.8	521.2	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

(U) Procurement funding related information for this program is included in the F/A-18E/F SAR.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	525.2	-	-	525.2
Previous Changes:				
Economic	+0.8	-	-	+0.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.7	-	-	-25.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-24.9	-	-	-24.9
Current Changes:				
Economic	-7.0	-	-	-7.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+53.0	-	-	+53.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+46.0	-	-	+46.0
Total Changes	+21.1	-	-	+21.1
Current Estimate	546.3	-	-	546.3

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

(U) Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	494.8	-	-	494.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-23.5	-	-	-23.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-23.5	-	-	-23.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+49.9	-	-	+49.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+49.9	-	-	+49.9
Total Changes	+26.4	-	-	+26.4
Current Estimate	521.2	-	-	521.2

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-7.0
Adjustment for Current and Prior Inflation. (Estimating)	+3.3	+3.4
Revised estimate to reflect updated cost. -OTB was funded. -rephasing of funding approved by ASN(RDA) at the MSII decision. (Funding phasing was out of sync with contractor requirements.) -Many year cost increases for NAWC-AD personnel -Small Business Innovation Research tax -Inflation Adjustment -Below threshold reprogramming for cost overrun -N7 cut to support Fire Scout program (Estimating)	+46.6	+49.6
RDT&E Subtotal	+49.9	+46.0

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	N/A

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	
N/A	--	--	--	--	--	--	--	--	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	N/A	N/A	N/A
Milestone II	N/A	DEC 2000	N/A	FEB 2001
Milestone III	N/A	JAN 2007	N/A	JAN 2007
IOC	N/A	SEP 2006	N/A	OCT 2006
Total Cost	N/A	525.2	N/A	546.3
Total Quantity	N/A	0	N/A	0
Prog Acq Unit Cost	N/A	0.0	N/A	0.0

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

a. RDT&E --

(U) AN/APG-79 EMD:  
 MCDONNELL DOUGLAS CORP., ST. LOUIS MO  
 N00019-01-C-0074, CPFF/AF  
 Award: February 8, 2001  
 Definitized: February 8, 2001

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$324.5	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$329.4	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$362.5	\$369.8

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.3	\$-1.3
Cumulative Variances To Date (12/13/02)	<u>\$-6.7</u>	<u>\$-4.4</u>
Net Change	\$-2.4	\$-3.1

Explanation of Change:

(U) The unfavorable net change in the Cost Variance was due primarily to the transfer of all non-recurring Kent SPIN 2/3 costs from 2001-2002 to Boeing (\$4.8M) partially offset by efficiencies in Boeing Integration & Test and Northrop Grumman Environmental Control System efforts. The unfavorable net change in Schedule Variance was due to delays with Raytheon's Common Integrated Sensor Processor software (General Dynamics Data Storage System) and hardware/equipment deliveries, as well as late Northrop Grumman EC50 test activities.

(U) Contract Comments:

The Current Contract Price and Estimated Price at Completion do not include the initial \$4.5M production readiness phase, which is funded with APN-1 funding. There is limited management insight into cost and schedule performance for this effort in that it is a firm fixed price subcontract.

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> (FY99-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06)	<u>Total</u>
RDT&E	322.1	110.0	78.6	35.6	546.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	322.1	110.0	78.6	35.6	546.3

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

b. Annual Summary -- AESA

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

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				2.5	2.5
2000				3.7	3.7
2001				94.9	97.1
2002				110.7	114.3
2003				100.1	104.5
2004				103.8	110.0
2005				73.0	78.6
2006				32.5	35.6
2007					
Subtotal				521.2	546.3

(U) Procurement funding related information for this program is included in the F/A-18E/F SAR.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				521.2	546.3

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): \$ 229.9

(U) Percent Total Program Expended: 42.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Operating & Support Costs are included in the F/A-18E/F SAR report.

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

b. (U) Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	AESA	No Antecedent System
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

Total O&S Cost	AESA	No Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

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

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): OHIO CLASS Guided Missile Nuclear Submarine (SSGN)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
 SSGN PROGRAM OFFICE (PMS398)                      CAPT. Brian Wegner  
 PEO SUBMARINES    Assigned: October 13, 2000  
 614 SICARD STREET, SE                                      DSN 326-1349; COMM 202.781.1349  
 WASHINGTON NAVY YD, DC 20376-7034                      wegnerbj@navsea.navy.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0603559N Project F2413, F2859  
 PROCUREMENT:  
 (U) APPN 1810 ICN 101000 (Navy)  
 (U) APPN 1711 ICN 201700 (Navy)

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03-C-0492

5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline on December 5, 2002.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated December 5, 2002.

6. (U) Mission and Description:

(U) The OHIO Class Guided Missile Nuclear Submarine (SSGN) Program develops, procures and installs modifications to the existing OHIO Class ballistic missile submarines in order to deliver large payload capabilities for Covert Strike and Special Warfare missions. SSGN will be a covertly positioned, quick-response platform able to project sustained offshore operations. The SSGN submarine addresses the missions of conventional deterrence, forward presence, littoral and amphibious warfare, and special operations. As a transformational asset with the ability to adapt to future requirements, the SSGN submarine flexibly provides both a conventional strike capability using vertical launch Tomahawk cruise missiles as well as a robust Special Operations Forces (SOF) support capability to include hosting of the Advanced SEAL Delivery System (ASDS). The SSGN Program includes the refueling of the OHIO Class ballistic missile submarine prior to or in conjunction with conversion modifications.

7. (U) Executive Summary:

(U) This is the initial submission of the Selected Acquisition Report (SAR) for the OHIO Class Guided Missile Nuclear Submarine (SSGN) acquisition program.

Programmatic

The SSGN Operational Requirements Document was signed by the Chief of Naval Operations on September 23, 2002.

The Milestone C Defense Acquisition Board (DAB) review with the Under Secretary of Defense (Acquisition, Technology & Logistics) (USD(AT&L)) was conducted on November 19, 2002 and included the following highlights:

- a) Milestone C approved,
- b) an accelerated program schedule approved, and
- c) an FY03 above-threshold reprogramming for \$177.5 million of SCN was recognized as being required to execute the accelerated program schedule.

The USS OHIO (SSBN 726) Engineered Refueling Overhaul started on November 15, 2002.

Contracts

The SSGN Detail Design and Long Lead Time Material (LLTM) contract was awarded

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

to Electric Boat Corporation on September 26, 2002.

The contract for the design and production of the Multiple All-Up-Round Canister (MAC) was awarded to Northrop Grumman Marine Systems on December 16, 2002.

The contract for the design and production of the Attack Weapons Control System (AWCS) was awarded to General Dynamics Advanced Information Systems on December 16, 2002.

Test and Evaluation

The Live Fire Test and Evaluation Management Plan was signed out on May 22, 2002 by Director, Operational Test and Evaluation (DOT&E), and the Live Fire Test and Evaluation Waiver was signed out on June 28, 2002 by USD(AT&L).

The SSGN Test and Evaluation Master Plan (TEMP) was signed by DOT&E on November 1, 2002.

MAC Demonstration and Validation (DEMVAL) Ground Testing was successfully completed in October 2002 in preparation for DEMVAL at-sea testing.

DEMVAL at-sea test launches were successfully conducted from USS FLORIDA (SSBN 728) on January 14 and 16, 2003 using TOMAHAWK Block III test missiles.

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

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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone C	NOV 2002	NOV 2002	NOV 2002
Start of Lead Ship Availability	NOV 2002	NOV 2002	NOV 2002
MAC Demonstration and Validation (DEMVAL) Complete	MAR 2003	MAR 2003	MAR 2003
Lead Ship Conversion Complete	NOV 2005	NOV 2005	NOV 2005
Developmental Testing/Operational Testing			
Start	NOV 2005	NOV 2005	NOV 2005
Complete	MAY 2007	MAY 2007	MAY 2007
Initial Operational Capability (IOC)	MAY 2007	MAY 2007	MAY 2007

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
*Interoperability	100% of top-level IERs	100% of / top-level IERs / designated / critical	TBD	100% of top-level IERs
*Land Attack/Strike Warfare - "A Full Strike Configured"	"x" = 154	"x" = 154 / 132	TBD	"x" = 154
*Land Attack/Strike Warfare Operational Availability (Ao) Special Operations Forces (SOF) Operations Support	(b)(1)	(b)(1)	TBD	(b)(1)
*SOF Mobility Assets	Ability to support 2 ASDS, or 2	Ability / Ability to support 2 ASDS, / 2 / ASDS, or	TBD	Ability to support 2 ASDS, or 2

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

<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
DDS, or 1 ASDS and 1 DDS simulta- neously	DDS, or / 2 DDS, 1 ASDS / or 1 and 1 / ASDS DDS / and 1 simulta- / DDS neously / simulta-		DDS, or 1 ASDS and 1 DDS simulta- neously

/ / \*System  
 / / Operational  
 / / Availability (Ao)  
 / / \*"Full SOF  
 / / Configured" - SOF  
 / / Personnel

(b)(1) TBD

TBD

TBD

TBD

TBD

(b)(1)

/ / Endurance  
 / / Maximum Transit Speed  
 / / with DDS or ASDS  
 / / attached  
 / / Radiated Broad Band  
 / / Noise

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	support	support / support		
	struc- tures	struc- / struc- tures / tures		
	attached (to ship)	attached/ attached to ship/ to ship		
✓ Radiated Narrow Band Noise	(b)(1)		TBD	(b)(1)
✓ Exceptions to Noise Requirements - SOF Operations Support			TBD	

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
(U) Exceptions to Noise Requirements - Land Attack/Strike Warfare Launch Operations	(b)(1)	(b)(1)	TBD	(b)(1)
(U) Land Attack/Strike and Warfare Attributes	(b)(1)	(b)(1)	TBD	(b)(1)
(U) Average Tomahawk Launch Interval	(b)(1)	(b)(1)	TBD	(b)(1)
TLAM Block III Single Mission Response Time	(b)(1)	(b)(1)	TBD	(b)(1)
Tactical Tomahawk Single Mission Response Time	(b)(1)	(b)(1)	TBD	(b)(1)
Tomahawk Multi-Mission Response Time	(b)(1)	(b)(1)	TBD	(b)(1)

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
SOF Operations Support Attributes	(b)(1)			(b)(1)
Number of sorties per single DDS per typical SSGN deployment period			TBD	
Number of sorties per single ASDS per typical SSGN deployment period			TBD	
Number of sorties per single LOC per typical SSGN deployment period			TBD	
Internal Stowage - SEASUB Ordnance while SSGN is in a Land Attack/Strike Warfare configuration			TBD	
Internal Stowage - SEASUB Non-Ordnance while SSGN is in a Land Attack/Strike Warfare configuration			TBD	
Berthing			TBD	
Reconfigurable for maximum SOF stowage			TBD	
Organic Lock-out	Dual Lock-out Chambers	Dual / Dual Lock-out/ Chambers/ Chambers	TBD	Dual Lock-out Chambers

(U) \* - KPP (Key Performance Parameter)

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

b. Current Change Explanations -- None

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

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	329.4	329.4	326.0
Procurement	3539.7	3539.7	3435.1
Total Sailaway	(3529.5)		(3424.8)
	(0.0)		(0.0)
	(0.0)		(0.0)
Total Sailaway	(3529.5)		(3424.8)
Total Other Wpn Sys Costs	(0.0)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(10.2)		(10.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 2002 Base-Year \$	3869.1	3869.1	3761.1
 Escalation	 182.8	 182.8	 137.4
Development (RDT&E)	(9.3)	(9.3)	(7.2)
Procurement	(173.5)	(173.5)	(130.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	4051.9	4051.9	3898.5
 b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>4</u>	<u>4</u>	<u>4</u>
Total	4	4	4

(U) The Acquisition Decision Memorandum of December 5, 2002 contains approval for a Low Rate Initial Production of 4 SSGN conversions, which constitutes the total conversion program at this time.

c. (U) Foreign Military Sales --  
Foreign Military Sales - None

d. (U) Nuclear Costs --  
The Nuclear costs associated with SSGN propulsion (4 reactor cores) is \$452.2 million and is fully accounted for in the total procurement costs. The first reactor core is \$112 million funded with SCN and the last three total \$342.1 million funded with OPN.

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	3869.1	3761.1	
(2) Quantity	4	4	
(3) Unit Cost	967.275	940.275	-2.79
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	3539.7	3435.1	
(2) Quantity	4	4	
(3) Unit Cost	884.925	858.775	-2.96

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	338.7	3713.2	-	4051.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-1.9	-34.7	-	-36.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.6	-113.2	-	-116.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-5.5	-147.9	-	-153.4
Total Changes	-5.5	-147.9	-	-153.4
Current Estimate	333.2	3565.3	-	3898.5

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

(U) Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	329.4	3539.7	-	3869.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.4	-104.7	-	-108.1
Other	-	-	-	-
Support	-	+0.1	-	+0.1
Subtotal	-3.4	-104.6	-	-108.0
Total Changes	-3.4	-104.6	-	-108.0
Current Estimate	326.0	3435.1	-	3761.1

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E

Revised Escalation Rates (Economic)	N/A	-1.9
The current estimate was reduced to reflect inflation reductions. (Estimating)	-3.4	-3.6
RDT&E Subtotal	<u>-3.4</u>	<u>-5.5</u>

(2) Procurement

Revised Escalation Rates (Economic)	N/A	-34.7
Adjustment for prior year to current year inflation. (Support)	+0.1	0.0
The current estimate was reduced to reflect Mission Funding to Puget Sound Naval Shipyard in FY04 and later, Post Delivery not yet funded to the PLCCE requirement, and revised inflation reductions. (Estimating)	-104.7	-113.2
Procurement Subtotal	<u>-104.6</u>	<u>-147.9</u>

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1012.97	-9.15	--	--	--	-29.20	--	--	-38.35	974.62

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	
928.30	-8.68	+0.005	--	--	-28.30	--	--	-36.98	891.32

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone C	N/A	N/A	NOV 2002	NOV 2002
IOC	N/A	N/A	MAY 2007	MAY 2007
Total Cost	N/A	N/A	4051.9	3898.5
Total Quantity	N/A	N/A	4	4
Prog Acq Unit Cost	N/A	N/A	1013.0	974.6

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

a. Procurement --

(U) Detail Design/LLTM:

Electric Boat Corp., Groton, CT  
 N00024-02-C-2901, CPFF-PI  
 Award: September 26, 2002  
 Definitized: September 26, 2002

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$442.9	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>
\$535.8	N/A	4	\$535.8	\$535.8

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	<u>N/A</u>	<u>N/A</u>
Net Change	N/A	N/A

Explanation of Change:

(U) Contract performance reporting will begin with the next SAR submission.

(U) Contract Comments:

The difference between the Initial Contract Price and the Current Contract Price is due to the award of contract options.

(U) <u>AWCS Design/Procurement:</u> Gen. Dyn. Adv. Info. Sys., Pittsfield MA N00030-03-C-0008, CPIF Award: December 16, 2002 Definitized: December 16, 2002	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$6.5	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>
\$42.1	N/A	4	\$42.1	\$42.1

	<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) Contract performance reporting will begin with the next SAR submission.

(U) Contract Comments:

The difference between the Initial Contract Price and the Current Contract Price is due to the award of contract options.

(U) <u>MAC Design/Procurement:</u> North. Grum. Marine Sys., Sunnyvale CA N00030-03-C-0055, CPIF Award: December 16, 2002 Definitized: December 16, 2002	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$34.2	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>

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

\$34.2	N/A	1	\$34.2	\$34.2
			<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) Contract performance reporting will begin with the next SAR submission.

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> (FY00-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-08)	<u>Total</u>
RDT&E	205.2	69.0	19.5	39.5	333.2
Procurement	1456.5	1169.6	796.9	142.3	3565.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1661.7	1238.6	816.4	181.8	3898.5

b. Annual Summary -- OHIO CLASS SSGN CONVER.

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

Fiscal Year	Qty	Sailaway FY 2002 Dollars Nonrec	Sailaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				12.9	12.7
2001				35.9	35.8
2002				71.8	72.2
2003				83.1	84.5
2004				66.8	69.0
2005				18.6	19.5
2006				30.1	32.1
2007				6.8	7.4
Subtotal				326.0	333.2

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

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 2002 Dollars Nonrec	Sailaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002		107.5	242.3	349.8	353.7
2003	2	218.4	754.2	972.6	995.7
2004	1	197.7	927.5	1125.2	1169.6
2005	1	10.5	632.5	647.4	683.7
2006			1.6	7.5	8.1
2007			7.5	7.5	8.2
2008			3.8	3.8	4.2
2009					
Subtotal	4	534.1	2569.4	3113.8	3223.2

(U) The recurring SCN SAILAWAY cost in FY02 of \$242.3M is required to support SSGN advanced procurement. The recurring SCN SAILAWAY costs in FY06-FY08 of \$1.6M, \$7.5M, and \$3.8M respectively, are required to support Outfitting and Post Delivery.

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Sailaway FY 2002 Dollars Nonrec	Sailaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003			104.6	104.6	107.1
2004					
2005			107.2	107.2	113.2
2006					
2007					
2008			109.5	109.5	121.8
Subtotal			321.3	321.3	342.1

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	4	534.1	2890.7	3761.1	3898.5

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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): \$ 282.5

(U) Percent Total Program Expended: 7.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
Cost Analysis Approach:

The Operating and Support (O&S) estimate is an analogy to historical, TRIDENT SSBN 726 Class average O&S costs for the period FY84-00 adjusted to reflect an SSGN configuration. The annual Trident class average O&S cost data was extracted from the Navy's Visibility and Management of Operating Support Costs (VAMOSOC) and was used to compute FY84-00 class average for each CAIG O&S cost element, and adjustments were made to reflect the SSGN configuration.

O&S cost data in this section was derived from the the Navy's November 2002 Program Life Cycle Cost Estimate (PLCCE).

The Trident SSBN program is the antecedent system.

b. (U) Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	OHIO CLASS SSGN CONVER. Average Costs per SSGN boat per year	TRIDENT SSBN Program Average Costs per SSBN boat per year
Mission Pay & Allowances	14.5	14.5
Unit Level Consumption	13.0	21.4
Intermediate Maintenance	2.8	2.8
Depot Maintenance	7.4	7.3
Contractor Support	N/A	N/A
Sustaining Support	3.4	0.6
Indirect Costs	3.3	2.7
Total	44.4	49.3

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

Total O&S Cost	OHIO CLASS SSGN CONVER.	TRIDENT SSBN Program
BY\$ (In Millions)	3465.2	3850.2
TY\$ (In Millions)	4648.7	5165.2

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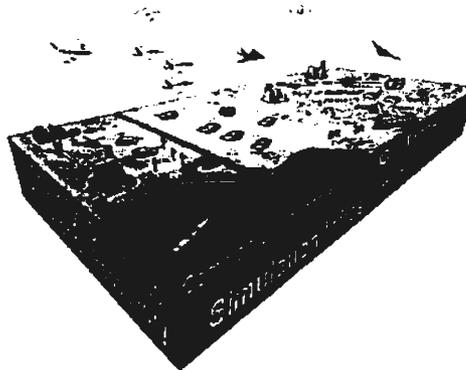
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: JSIMS**

**AS OF DATE:** December 31, 2002

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1. Designation and Nomenclature (Popular Name): Joint Simulation System (JSIMS)

2. DoD Component: OSD

Joint Participants:

USA (WARSIM), USAF (NASM), USN (Maritime), USMC, JSIMS JPO,  
DIA (DOMINO), NRO (NATSIM), NSA (J-SIGSIM), DMSO (RTI)

3. Responsible Office and Telephone Number:

12000 Research Parkway	BG Stephen M. Seay
Suite 300	Assigned: October 1, 2001
Orlando, FL 32826-3276	DSN 970-3524; COMM (407) 384-3524
	Stephen_Seay@us.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:

- PE 0204571N
- PE 0206313M
- PE 0207601F
- PE 0301011G
- PE 0303140G
- PE 0305885G
- PE 0603757N
- PE 0604715A
- PE 0604738A
- PE 0604742A
- PE 0902740J

PROCUREMENT:

- APPN 1810 ICN 0204571N (Navy)
- APPN 1109 ICN 0206497M (Navy)
- APPN 3080 ICN 0207601F (Air Force)

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03-0-0413

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

APPN 2035 ICN 0537020A (Army)

This is the first SAR that PE Number 0603757N has been reported. This funding was provided to the JSIMS program as part of the December 12, 2002, Program Decision Memorandum. The funding is provided to sustain the Software Support Facility for the Joint Warfighting Center.

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated March 21, 2001.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 21, 2001.

**6. Mission and Description:**

The Joint Simulation System (JSIMS) is a distributed, constructive wargaming simulation designed to provide a readily available, operationally valid, synthetic environment for Combatant Commanders, components/commands, other Joint organizations and the Military Services to conduct Joint Training Exercises. It will interface with command, control, communications, computers, and intelligence (C4I) functions and equipment in the field. JSIMS is a multi-Service/Agency development effort led by the JSIMS PM in Orlando, Florida.

The JSIMS Program will contain representations to meet the requirements of Joint and Service training, software infrastructure, and interfaces augmented by representations of land, air/space, and maritime warfare functions. These representations will be provided by Executive Agents (EAs) and Development Agents (DAs) from the Defense Modeling and Simulation Office (DMSO), the U.S. Army, the U.S. Air Force, and the U.S. Navy for each warfare domain. The U.S. Marine Corps DA provides a leverage-based program through the reuse of other domain's developmental activities. In addition, EAs from the Defense Information Systems Agency (DISA), U.S. Transportation Command (USTRANSCOM), and U.S. Special Operations Command (USSOCOM) represent the functions of C4, defense transportation systems, and special operations, respectively. The Defense Intelligence Agency (DIA) acts as both an EA and DA. As a DA, DIA provides national level intelligence (e.g., the U.S. intelligence processes and foreign representation) along with the National Security Agency (NSA) and National Reconnaissance Office (NRO) providing their associated capabilities. JSIMS will employ the DoD High Level Architecture (HLA) for modeling and simulation (M&S) interoperability. The Alliance Executive (AE) works directly for PM JSIMS and leads JSIMS integration, test, training and deployment activities.

JSIMS Components

Development Agent

Executive Agent

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

Warfighters' Simulation (WARSIM) 2000	U.S. Army, Simulation, Training, and Instrumentation Command (STRICOM)	U.S. Army
National Air & Space Model (NASM)	U.S. Air Force, Electronic Systems Command (ESC)	U.S. Air Force
JSIMS-Maritime (JSIMS-M)	Space and Naval Warfare Systems Command (SPAWAR)	U.S. Navy
US Marine Corps (USMC)	U.S. Marine Corps Systems Command (MARCORSYSCOM)	U.S. Marine Corps
Joint Models	Joint Development Agent (JDA)	Joint Warfighting Center (JWFC)
Deployable Intelligence Simulation for Collaborative Operations (DISCO)	Defense Intelligence Agency (DIA)	DIA
Joint Simulation System Signals Intelligence Simulation (J-SIGSIM)	National Security Agency (NSA)	DIA
National Simulation (NATSIM)	National Reconnaissance Office (NRO)	DIA
High-Level Architecture Run Time Infrastructure (HLA-RTI)	Defense Modeling & Simulation Office (DMSO)	N/A

**7. Executive Summary:**

In FY 1994, the first JSIMS Memorandum of Agreement (MOA) resulted in the establishment of the JSIMS Joint Program Office (JPO). Initial partner programs included the Air Force's National Air and Space Warfare Model (NASM), the Army's Warfighters' Simulation 2000 Model (WARSIM 2000), and the Navy's Maritime Component (JSIMS Maritime). Other programs later joined JSIMS including the National Reconnaissance Office's National Simulation (NATSIM), the National Security Agency's Joint Signals Intelligence Simulation (J-SIGSIM) and the Deployable Intelligence Simulation for Collaborative Operations (DISCO). In February 1996, an acquisition strategy was approved and in 1998 Milestone I/II was approved. During the fall of 1999, a Senior Technical Review Board recommended both technical and management changes to the program resulting in a technical rebaselining and an Acquisition Decision Memorandum directing changes to the program. The Defense Modeling and Simulation Office became a partner at this time. The initial Acquisition Program Baseline (APB) for JSIMS as an ACAT ID program was approved on March 21, 2001, and a new

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

Acquisition Strategy was approved August 13, 2001.

In July 2002 JSIMS obtained a Joint Cost Position from the Army Cost and Economic Analysis Center (CEAC). JSIMS then proceeded through an Army System Acquisition Review Council (ASARC), an Integrating Integrated Product Team (IIPT), and an Overarching IPT (OIPT). The ASARC directed the Deputy Under Secretary of the Army - Operations Research (DUSA(OR)) to conduct an Analysis of Alternatives (AoA) and committed Army support for the JSIMS FY2003 unfunded requirement of \$14.8M upon successful completion of a Test Readiness Review (TRR). The AoA determined that JSIMS is the best alternative to meet user requirements. On October 31, 2002, JSIMS presented the TRR to the DUSA(OR) and received approval to continue through testing. On December 12, 2002, JSIMS successfully completed the required developmental test, delivering Version Release 1.0 to the User on December 20, 2002.

On December 12, 2002, the Deputy Secretary of Defense issued guidance requesting that JSIMS 1) Finish development and deliver Block 1 by July 2003; 2) Complete an Analysis of Alternatives (AoA) within 12 months following receipt of OSD direction; 3) Conduct System Verification and Validation Testing by 4th Quarter of FY03; 4) Establish a Software Support Facility (SSF) at the Joint Warfighting Center (JWFC); and 5) Transfer all software, hardware, licenses, etc., to the JWFC SSF. This guidance cancels JSIMS and all partner funding after FY03, adding a funding line for JWFC to establish and operate a Software Support Facility.

It is anticipated that this will be the final SAR for JSIMS.

**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

**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:

In April 2002, as the JSIMS program progressed to an Army Systems Acquisition Review Council (ASARC) Program Review, it was determined that the software would not be fully developed and verified by June 28, 2002, due to integration taking longer than expected. This led to a Joint War Fighting Center (JWFC) decision not to utilize JSIMS for the Unified Endeavor (UE) 03-01 training exercise in March 2003. This training exercise was to be utilized as the JSIMS Block 1 Multi-Service Operational Test and Evaluation (MOT&E) event. Extended integration resulted in a slip to delivery of Version Release 1.0 to December 2002.

The December 12, 2002, Deputy Secretary of Defense guidance eliminated outyear funding for the JSIMS' program. Future development efforts beyond Block 1 are on hold pending completion of an AoA and a decision on how best to meet the user requirements.

**9. Schedule:**

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
	OCT 1998	OCT 1998	OCT 1998	
MS I/II				
Version 1.0				
Federate Integration Events	FEB 2001	FEB 2001	FEB 2001	
System Functional Assessment	OCT 2001	OCT 2001	DEC 2001	
Federation Integration Events	FEB 2002	FEB 2002	OCT 2002	
Federation Systems Test	MAR 2002	MAR 2002	NOV 2002	
Version Release 1.0	MAR 2002	MAR 2002	DEC 2002	
Operational Assessment	AUG 2002	AUG 2002	OCT 2003 (Ch-1)	
MOT&E/IOC Training Event	MAR 2003	MAR 2003	SEP 2004	
Milestone C	AUG 2003	AUG 2003	N/A	(Ch-2)
Version Release 2.0	SEP 2003	SEP 2003	N/A	(Ch-2)
Version Release 3.0	MAR 2005	MAR 2005	N/A	(Ch-2)
Version Release 4.0	SEP 2006	SEP 2006	N/A	(Ch-2)

Note:

- All event, assessment and test entries show completion dates.
- Program Milestones prior to the December 1999 Acquisition Decision Memorandum designating JSIMS an ACAT ID program are as follows:

22 Jul 1994 Mission Needs Statement.  
 3 Jun 1995 Milestone I.  
 9 Oct 1998 Milestone II.

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

Definitions/Acronyms:

- HLA - High-Level Architecture.
- MOT&E - Multi-Service Operational Test & Evaluation.
- RTI - Runtime Infrastructure.
- Federate - Software program that participates as a peer in a HLA environment.

Elaboration:

1. Federate Integration Event - Integrating components within a federate and testing the exchange of data between a federate and RTI.
2. System Functional Assessment - Early user assessment/validation.
3. Federation Integration Event - Integrating evolving functionality and testing the exchange of data between multiple federates via the RTI.
4. Version Release constitutes completion of the development activity.
5. IOC Training Event is the event during which MOT&E will occur. Per the Joint Warfighting Center direction, the IOC Training Event/MOT&E to be conducted during an USJFCOM Unified Endeavor Joint Task Force Exercise.

b. Current Change Explanations --

(Ch-1) The Operational Assessment is modified from June 2003 to October 2003, the end of System Test.

(Ch-2) The December 12, 2002, Deputy Secretary of Defense guidance eliminated out year funding for the JSIMS program. Future development is on hold pending a decision on how best to meet User requirements. The following milestones changed as indicated below:

Milestone C changed from August 2003 to N/A, and;

Version Releases 2.0, 3.0, and 4.0 changed from September 2003, March 2005, and September 2006, respectively, to N/A.

**10. Performance Characteristics:**

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Tailorability - Set of Operational Tasks and Conditions (KPP1)	Spt full range of UJTL tasks/ conditions in CJCS Manual 3500.04 series	Spt full/ Spt tng range of/ of CINC UJTL / JMETL & Svc TL items, / using in CJCS / CINC/JTF Manual / TWCFC & JUCL series /	JSIMS function ality fully satis- fies 66% of oper- ational require- ments, 23% were	Spt full range of UJTL tasks/ condi- tions in CJCS Manual 3500.04 series

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u> partial-ly met, 11% were not evaluat-ed or were deferred to future tests.	<u>Current Estimate</u>
Composability - Trainer/User C4I System Interface (KPP2)	Full integration w/all Joint, Svc, and Sp Ops C4I sys; includes voice recog-nition	Full / Integra-tion / w/all Joint, Svc, and Sp Ops / C4I sys; includes voice recog-nition	86% of the C4I Informa-tion Exchange C4I messages were verified	Full integra-tion w/all Joint, Svc, and Sp Ops C4I sys; includes recog-nition
Composability - Distributed Simulation Environment (KPP3)	Spt Svc distrib to de-ployed platform & units to allow exercise at geo remote sites	Spt Svc / distrib / de-ployed platform/ & units to allow exercise/ at geo remote sites	Distrib-uted opera-tion was emulated at Fed-eration System Test	Spt Svc distrib to de-ployed platform & units to allow exercise at geo remote sites
System Uptime Ratio (KPP4)	Achieve 95% sys avail during a 14 day, 24 hours per day	Achieve / Sys avail / 90% during a/ 14 day, / 24 hours/ per day	Demonstr-ated 93% availa-bility (S/W relia-bility)	Achieve 95% sys avail during a 14 day, 24 hours per day

10a. Performance Characteristics (Cont'd):

<u>Development</u> <u>Estimate (SAR)</u> CAX	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u> CAX / CAX	<u>Demon-</u> <u>strated</u> <u>Perf</u> over 8 days of Federa- tion System Test with 16-hour days max.	<u>Current</u> <u>Estimate</u> CAX
--	--	---	--

1. Tailorability - Set of Operational Tasks and Conditions (Key Performance Parameter (KPP) 1)  
 Threshold: Support training of Joint Mission Essential Task Lists (JMETL) and Service Task List (TL) items, for Combatant Commander's/Joint Task Force (JTF) Training with Components Functional Capability (TWCFC) J-3 Operations Minimum, which is consistent with the Chairman of the Joint Chiefs of Staff (CJCSI) 3500.02A Joint Training Master Plan, 1998 CINC Joint Training Plans, and the JSIMS Universal Capabilities List (JUCL).

Objective: Support the full range of Universal Joint Task List (UJTL) tasks and conditions described in Chairman of the Joint CJCSI 3500.04 series.

2. Composability - Trainer/User C4I System Interface (KPP2)  
 Threshold: JSIMS will be interoperable with the following command, control, communications, computers, and intelligence (C4I) systems or programmed replacements, regardless of the High Level Architecture (HLA) compliance status: Common Operational Picture (COP) of the Global Command and Control System (GCCS), Global Command and Control System -Maritime (GCCS-M), Joint Maritime Command Information System (JMCIS), Contingency Theatre Advanced Planning System (CTAPS), Theater Battle Management Core Systems (TBMCS), Logistics Anchor Desk (LAD), Army Tactical Command and Control System (ATCCS), Joint Worldwide Intelligence Communication System (JWICS) capable system, and Global Transportation Network (GTN) [Manual Global Transportation Network (GTN) interface at Initial Operation Capability (IOC), fully interoperable thereafter]. JSIMS threshold capability will be achieved when 100 percent of top-level Information Exchange Requirements (IERS) designated critical for JSIMS Universal Capabilities List (JUCL) Functional Capability J-3 Operations Minimum are satisfied for the listed systems.

Objective: 100 percent completion of top-level IERS. Those non-critical IERS that are not achieved by IOC will be accomplished in subsequent version releases of JSIMS. Full integration with all Joint, Service, and Special Operations C4I systems; includes voice recognition.

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

3. Composability - Distributed Simulation Environment (KPP 3)

Threshold: Given a DOD network infrastructure, JSIMS shall provide distribution of the Joint Synthetic Battlespace (JSB) to geographically separated participants and shall support distribution to simulators that will be designed to be linked to JSIMS via Service-developed interfaces.

Objective: JSIMS should support Service distribution to deployed platforms and units to allow collaborative exercises at geographically remote sites.

4. Other - Simulation System Uptime Ratio (KPP 4)

Threshold: Simulation system availability of at least 90% during a 14 day, 24 hours per day computer assisted exercise (CAX).

Objective: Achieve 95% simulation system availability during a 14 day, 24 hours per day CAX.

b. Current Change Explanations -- None

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

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	1110.8	1110.8	911.7
Procurement	170.8	170.8	18.8
Flyaway	(170.8)		(18.8)
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 2001 Base-Year \$	<u>1281.6</u>	<u>1281.6</u>	<u>930.5</u>
Escalation	35.1	35.1	0.7
Development (RDT&E)	(23.4)	(23.4)	(0.5)
Procurement	(11.7)	(11.7)	(0.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>1316.7</u>	<u>1316.7</u>	<u>931.2</u>

On December 12, 2002, Deputy Secretary of Defense issued guidance eliminating all outyear funds for JSIMS.

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

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
Total	1	1	1

Note:

Total procurement quantity of one equates to the total software development effort for all Service and Agency components as one complete system.

There is no Low Rate Initial Production for this program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (MAR 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	1281.6	930.5	
(2) Quantity	1	1	
(3) Unit Cost	1281.600	930.500	-27.40
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	170.8	18.8	
(2) Quantity	1	1	
(3) Unit Cost	170.800	18.800	-88.99

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1134.2	182.5	-	1316.7
Previous Changes:				
Economic	-0.6	-0.3	-	-0.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+17.2	-39.7	-	-22.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+16.6	-40.0	-	-23.4
Current Changes:				
Economic	+0.3	+0.2	-	+0.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-238.9	-123.7	-	-362.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-238.6	-123.5	-	-362.1
Total Changes	-222.0	-163.5	-	-385.5
Current Estimate	912.2	19.0	-	931.2

Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1110.8	170.8	-	1281.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+16.1	-37.8	-	-21.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+16.1	-37.8	-	-21.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-215.2	-114.2	-	-329.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-215.2	-114.2	-	-329.4
Total Changes	-199.1	-152.0	-	-351.1
Current Estimate	911.7	18.8	-	930.5

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-11.9
	Economic adjustment for negative program change. (Economic)	N/A	+12.2
	Elimination of outyear funds (Estimating)	-260.3	-288.1
	Adjustment for Current and Prior Inflation. (Estimating)	+5.4	+5.6
	Revision of funding expenditures (Estimating)	-18.3	-19.4
	Provision of funding to JWFC for SSF Maintenance (Estimating)	+69.7	+75.6
	Congressional reductions (Estimating)	-11.7	-12.6
	RDT&E Subtotal	-215.2	-238.6
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-3.2
	Economic adjustment for negative program change. (Economic)	N/A	+3.4
	Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.7
	Elimination of outyear funds (Estimating)	-114.1	-123.7
	Revision to funding outlays (Estimating)	-0.7	-0.7
	Procurement Subtotal	-114.2	-123.5

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	
1316.70	-0.400	--	--	--	-385.10	--	--	-385.50	931.20

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
182.50	-0.100	--	--	--	-163.40	--	--	-163.50	19.00

**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 C	N/A	AUG 2003	N/A	N/A
IOC	N/A	MAR 2003	N/A	SEP 2004
Total Cost	N/A	1316.7	N/A	931.2
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	1316.7	N/A	931.2

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

There is no longer a contractual EVMS reporting requirement for WIM. Data provided is based upon month ending Feb 2002 C/SSR, the last cost report received from Veridian.

a. RDT&E --  
WARSIM Intel Model:  
 Veridian Info Solutions, Fairfax VA  
 DAAH01-97-C-A012, CPAP  
 Award: May 1, 1995  
 Definitized: April 18, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$43.4	N/A	1

Current Contract Price		
Target	Ceiling	Qty
\$89.9	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$232.9	\$239.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.4	\$-0.3
Cumulative Variances To Date (05/31/02)	\$-0.4	\$-0.3
Net Change	\$0.0	\$0.0

Explanation of Change:

There are no net variances. The WIM contract has had modifications that significantly changed the Statement of Work and increased the value of the contract.

15. Contract Information (Cont'd):

<u>JSIMS LAND (WARSIM):</u>			Initial Contract Price		
Lockheed Martin, Orlando, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N61339-95-C-0051, CPAF	\$52.5	N/A	1		
Award: May 1, 1995					
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>	
\$231.5	N/A	1	\$232.9	\$239.9	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-0.5	\$-0.7	
Cumulative Variances To Date (05/31/02)			\$-0.5	\$-0.7	
Net Change			\$0.0	\$0.0	

Explanation of Change:

There are no net variances. The WARSIM contract has had modifications that significantly changed the Statement of Work and increased the value of the contract.

b. Procurement --			Initial Contract Price		
<u>NASM:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon, Marlborough, MA			\$50.9	N/A	1
F19628-97-C-0016, CPAF					
Award: March 3, 1997					
Definitized: March 3, 1997					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$100.6	N/A	1	\$100.5	\$100.7	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-1.8	\$-0.6	
Cumulative Variances To Date (11/30/02)			\$-2.4	\$-1.4	
Net Change			\$-0.6	\$-0.8	

Explanation of Change:

The major cause of the unfavorable net cost and schedule variances are a result of resources required above the plan for support to JSIMS Integration & Test. There are several actions pending on the contractor's side to update their system to reflect recent contract changes, which is causing the anomaly in the variances.

Since the last SAR input, the NASM contract has incorporated several negotiated contract change proposals, which has increased the value of the contract.

15. Contract Information (Cont'd):

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> (FY93-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-09)	<u>Total</u>
RDT&E	836.6	14.0	14.6	47.0	912.2
Procurement	19.0	-	-	-	19.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	855.6	14.0	14.6	47.0	931.2

b. Annual Summary -- JSIMS

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2001 Dollars Nonrec</u>	<u>Flyaway FY 2001 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				7.5	7.0
1996				11.9	11.3
1997				21.9	21.0
1998				24.2	23.4
1999				25.1	24.6
2000				24.2	24.1
2001				44.3	44.6
2002				2.8	2.8
2003				3.8	3.9
2004					
2005					
2006					
2007					
Subtotal				165.7	162.7

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2001 Dollars Nonrec</u>	<u>Flyaway FY 2001 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997				3.7	3.6
1998				15.5	15.0
1999				17.5	17.1
2000				13.6	13.5

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

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

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				15.5	15.6
2002				18.3	18.6
2003				15.7	16.2
2004				13.4	14.0
2005				13.8	14.6
2006				12.5	13.5
2007				11.2	12.3
2008				10.0	11.2
2009				8.8	10.0
Subtotal				169.5	175.2

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

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				2.2	2.0
1994				3.1	2.8
1995				5.2	4.9
1996				11.4	10.8
1997				25.8	24.8
1998				48.7	47.2
1999				39.7	38.9
2000				59.6	59.3
2001				48.3	48.6
2002				89.6	91.0
2003				55.5	57.1
2004					
2005					
2006					
2007					
Subtotal				389.1	387.4

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				13.3	12.8
1998				24.9	24.1
1999				23.0	22.5
2000				24.3	24.2

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

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				29.9	30.1
2002				26.4	26.8
2003				23.6	24.3
2004					
2005					
2006					
2007					
Subtotal				165.4	164.8

Appropriation: 9991 - RDT&E, Other Funding

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				1.4	1.4
1999				4.1	4.0
2000				3.7	3.7
2001				5.3	5.3
2002				3.9	4.0
2003				3.6	3.7
2004					
2005					
2006					
2007					
Subtotal				22.0	22.1

9991 - NSA (J-SIGSIM) Program RDT&E funds.

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003			1.5	1.5	1.5
2004					
2005					
2006					
2007					
Subtotal			1.5	1.5	1.5

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

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998			1.7	1.7	1.7
1999					
2000			1.0	1.0	1.0
2001			1.3	1.3	1.3
2002			1.8	1.8	1.8
2003			1.0	1.0	1.0
2004					
2005					
2006					
2007					
Subtotal			6.8	6.8	6.8

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	1				
2004					
2005					
2006					
2007					
Subtotal	1				

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999			1.2	1.2	1.2
2000			0.7	0.7	0.7
2001			2.5	2.5	2.5
2002			3.3	3.3	3.4
2003			2.8	2.8	2.9
2004					
2005					
2006					
2007					
Subtotal			10.5	10.5	10.7

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				165.7	162.7
Navy			8.3	177.8	183.5
Army	1			389.1	387.4
USAF			10.5	175.9	175.5
Other Funding				22.0	22.1
Grand Total	1		18.8	930.5	931.2

**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): \$ 802

Percent Total Program Expended: 86.1%

It is anticipated that this will be the final SAR for the JSIMS program, with the program expected to exceed 90% expenditures prior to March 31, 2003.

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --  
In July 2002, JSIMS estimate was validated as a Joint Cost Position. There is no antecedant system for this program.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Millions)

Cost Element	JSIMS	N/A
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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JSIMS, December 31, 2002

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

Total O&S Cost	JSIMS	N/A
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 3/25/2003 10:19:41 AM

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# A-4 BLACKHAWK UPGRADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM:** UH-60M Recap/Upgrade

**AS OF DATE:** December 31, 2002

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1. Designation and Nomenclature (Popular Name): UH-60M  
Recapitalization/Modernization

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Utility Helicopters Project Office	COL William G. Lake, Jr.
SFAE-AV-UH-M	Assigned: June 23, 2000
Program Executive Office Aviation	DSN 645-8938; COMM (256) 955-8938
Redstone Arsenal, AL 35898-5000	William.Lake@uh.redstone.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 273744504 (Shared)  
PROCUREMENT:  
APPN 2031 ICN AA0492 (Army) (Shared)

5. References:

SAR Baseline (Development Estimate):  
DAE Approved Acquisition Program Baseline (APB) dated February 21, 2002.

Approved Program:  
DAE Approved Acquisition Program Baseline (APB) dated February 21, 2002.

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FOR OPEN PUBLICATION

MAR 17 2003 11

DIRECTORATE FOR FINANCIAL OPERATIONS  
AND SECURITY POLICY  
DEPARTMENT OF DEFENSE

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03-c-0407

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UH-60M Recap/Upgrade, December 31, 2002

## **6. Mission and Description:**

The UH-60M BLACKHAWK will be an improved version of the existing UH-60 BLACKHAWK utility helicopter to meet evolving warfighting concepts and ensure the system is equipped/capable of meeting operational requirements beginning in 2006 and extending beyond 2025. Improvements will enhance the future division commander's ability to conduct non-linear, simultaneous, integrated operations to decisively mass the effects of warfighting assets. As a critical system of systems, the UH-60M helicopter will provide networked digital connectivity for enhanced situational awareness and information exchange, improved external lift capability, increased range, and improved survivability to meet the maneuver commander's need to conduct distributed multidimensional operations throughout the entire spectrum of the future battlespace. Additionally, a requirement exists for an improved evacuation platform for tactical, en route patient care and evacuation. The UH-60M, with the integrated MEDEVAC mission equipment package (MEP) kit, will provide day/night and adverse weather emergency evacuation of casualties.

## **7. Executive Summary:**

The UH-60M is a key element to the US Army Modernization Plan, which in turn has its basis in the Army Vision and overarching modernization plan. The Modernization Plan provides a proactive course of continuous improvement supporting the National Military Strategy, Joint Vision 2010 and the Army Vision. The UH-60M modernization strategy reflects the Army Vision and Army modernization goals, 2010 war fighting requirements, the change in force structure requirements from the 1993 Aviation Restructuring Initiative (ARI) to Aviation XXI Force Structure, and emerging structure changes from Aviation XXI to meet the Army's new vision.

The following significant accomplishments occurred during this period: A successful Air Vehicle Critical Design Review was held during June 2002. Two test reviews were held during the period: The Wide Chord Blade Flight Test Readiness Review was held during June and the Shakedown Test Plan Review was conducted with Combined Test Team during October. Following supplier capabilities briefings and down select, a new MFD supplier was selected for the program. The selection of Rockwell Collins as the MFD supplier was a major step towards facilitating the cockpit integration effort because of their past performance and experience on similar Sikorsky programs. Teardown of the two UH-60A aircraft and one UH-60L aircraft continued at the Sikorsky facility in Troy, AL.

The UH-60M Systems Preliminary Design Review (PDR) was held in Stratford, CT 18-22 November. The Systems PDR provided a formal review of the preliminary design against the system performance specification. Sikorsky demonstrated a thorough design approach and provided status of trade studies, design and developments by Integrated Product Team (IPT), with accompanying specification compliance commentary. Overall the PDR was very informative and action items are currently being resolved to ensure successful closure to this program milestone. Additionally, Sikorsky Aircraft/Rockwell Collins conducted a successful Multifunctional Display (MFD) PDR and Goodrich conducted a successful PDR of AVR-2B (laser detection).

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

During November 2002, a detailed review of the Sikorsky integrated cost and schedule data was held. Sikorsky Aircraft initiated a bottoms up Estimate at Completion (EAC) during the period. This EAC was presented to the Government during December. A comprehensive review of Sikorsky bottoms-up EAC was performed during the first two weeks of December. On 19 December, a detailed review of UH-60M cost and schedule performance data was presented to PEO Aviation. Annual Estimate to Complete (ETC) costs associated with Sikorsky EAC exceed current program funding levels and present a potential APB threshold breach. The UH-60M program is pursuing a program restructure option to minimize the program schedule impact. The restructure option procures 4 additional prototype aircraft to support Operational Testing. The restructured program requires the reprogramming of APA funds to RDTE during the FY04-07 time frame.

**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:

Sikorsky Aircraft presented a bottoms-up Estimate at Completion that may result in potential breaches in the APB RDT&E Cost and program schedule thresholds. Program options are currently being explored.

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UH-60M Recap/Upgrade, December 31, 2002

9. Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone B	APR 2001	APR 2001	APR 2001
SDD Contract Award	APR 2001	APR 2001	APR 2001
System PDR	NOV 2002	NOV 2002	NOV 2002
System CDR	APR 2003	APR 2003	APR 2003
First Flight	AUG 2003	AUG 2003	AUG 2003
Milestone C	MAR 2004	MAR 2004	JUL 2004 (Ch-1)
LRIP Contract Award	APR 2004	APR 2004	AUG 2004 (Ch-1)
OT Start	JUL 2005	JUL 2005	SEP 2005 (Ch-1)
OT Complete	SEP 2005	SEP 2005	DEC 2005 (Ch-1)
Full Rate Production IPR	MAR 2006	MAR 2006	JUN 2006 (Ch-1)
FUE	SEP 2006	SEP 2006	OCT 2006 (Ch-1)

b. Current Change Explanations --

(Ch-1) Sikorsky Aircraft presented a bottoms-up Estimate at Completion (EAC) that may result in potential breaches in the APB RDT&E Cost and program schedule threshold. EAC required some FY03 efforts to be deferred into FY04 timeframe. Program options are currently being explored, which may result in additional schedule delays.

Description	From	To
Milestone C	MAR 2004	JUL 2004
LRIP Contract Award	APR 2004	AUG 2004
OT Start	JUL 2005	SEP 2005
OT Complete	SEP 2005	DEC 2005
Full Rate Production IPR	MAR 2006	JUN 2006
FUE	SEP 2006	OCT 2006

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>
Troop Movement				
Airspeed (Sustained Cruise) (KTAS)	175	175 / 145	TBD	146 (Ch-1)
One Engine Inopera- tive (KTAS)	100	100 / 100	TBD	105 (Ch-1)
Combat Radius (w 20 min reserve) (KM)	500	500 / 225	TBD	232 (Ch-1)
Vertical Rate of Climb (fpm)	750	750 / 500	TBD	500 (Ch-1)
Vertical Rate of Climb w One Engine Inoperative (fpm)	200	200 / 100	TBD	238 (Ch-1)

10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Vertical Rate of Climb w One Engine Inoperative (fpm)	11	11 / 11	TBD	11	
Internal Lift Capa- bility (290 lbs each)					
Payload (KPP)	10000	10000 / 4500	TBD	5309	(Ch-1)
Vertical Rate of Climb (fpm)	500	500 / 200	TBD	500	
Combat Radius (w 20 min reserve) (KM)	275	275 / 135	TBD	135	(Ch-1)
Self-Deploy Range (nautical miles)	1260	1260 / 1056	TBD	1087	(Ch-1)
Ballistic Protection (ground fired armor piercing (mm))	14.5	14.5 / 7.62	TBD	14.5	
Maintainability (mhrs per flight hr)	4.6	4.6 / 5.4	TBD	4.6	
Unscheduled mhrs per flight hr	1.3	1.3 / 2.1	TBD	1.3	
Interoperability (meet information exchange rqmts) (KPP)	All	All / All / Critical	TBD	All	

b. Current Change Explanations --

(Ch-1) The performance Current Estimate in the previous SAR submit was incorrect and is corrected, as follows:

Performance Characteristic	From*	To
Troop Movement		
Airspeed	175	146
One Engine Inoperative	100	105
Combat Radius	500	232
Vertical rate of climb	750	500
Vertical rate of climb w/one engine inoperative	200	238
External Lift		
Payload	10000	5309
Combat Radius	275	135
Self Deployment Range	1260	1087

\*Reflects corrected date that should have been reflected on initial SAR submittal.

Acronym List:

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UH-60M Recap/Upgrade, December 31, 2002

10b. Performance Characteristics (Cont'd):

KTAS Knots True Air Speed  
KM Kilometer  
fpm feet per minute  
lbs pounds  
KPP Key Performance Parameter  
mm millimeter  
mhrs man hours

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	274.2	274.2	283.1
Procurement	10388.8	10388.8	10993.9
Flyaway	(9856.6)		(10422.7)
Data	(8.2)		(12.0)
Training	(81.1)		(98.2)
Initial Support Equipme	(19.2)		(20.8)
Transportation	(21.2)		(21.3)
Logistics	(70.3)		(70.3)
Total Other Wpn Sys	(200.0)		(222.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(332.2)		(348.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2001 Base-Year \$	10663.0	10663.0	11277.0
Escalation	3999.0	3999.0	3060.8
Development (RDT&E)	(12.5)	(12.5)	(8.6)
Procurement	(3986.5)	(3986.5)	(3052.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	14662.0	14662.0	14337.8
b. Quantity --			
Development (RDT&E)	4	4	4
Procurement	1217	1217	1217
Total	1221	1221	1221

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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UH-60M Recap/Upgrade, December 31, 2002

**12. Unit Cost Summary:**

	UCR Baseline (FEB 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	10663.0	11277.0	
(2) Quantity	1221	1221	
(3) Unit Cost	8.733	9.236	+5.76
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	10388.8	10993.9	
(2) Quantity	1217	1217	
(3) Unit Cost	8.536	9.034	+5.83

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	286.7	14375.3	-	14662.0
Previous Changes:				
Economic	-0.3	-232.9	-	-233.2
Quantity	-	-	-	-
Schedule	-	-1190.8	-	-1190.8
Engineering	-5.6	-	-	-5.6
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-48.9	-	-48.9
Subtotal	-5.9	-1472.6	-	-1478.5
Current Changes:				
Economic	-4.1	-381.2	-	-385.3
Quantity	-	-	-	-
Schedule	-	+593.4	-	+593.4
Engineering	+15.0	+867.9	-	+882.9
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	+63.3	-	+63.3
Subtotal	+10.9	+1143.4	-	+1154.3
Total Changes	+5.0	-329.2	-	-324.2
Current Estimate	291.7	14046.1	-	14337.8

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UH-60M Recap/Upgrade, December 31, 2002

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

Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	274.2	10388.8	-	10663.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-243.2	-	-243.2
Engineering	-5.5	-	-	-5.5
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-5.0	-	-5.0
Subtotal	-5.5	-248.2	-	-253.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+139.9	-	+139.9
Engineering	+14.4	+669.4	-	+683.8
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	+44.0	-	+44.0
Subtotal	+14.4	+853.3	-	+867.7
Total Changes	+8.9	+605.1	-	+614.0
Current Estimate	283.1	10993.9	-	11277.0

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-4.1
Added Dual Digital Flight Controls which provide significant improvements in handling and safety in tactical and degraded environments. (Engineering)	+5.3	+5.5
Included 701D engine vs. 701C engine. 701D engine provides a significant improvement in the external and internal lift capability of the UH-60M. (Engineering)	+2.0	+2.1
Included 4 multifunctional displays (MFD) vs. 2 MFDs. (Engineering)	+7.1	+7.4
RDT&E Subtotal	+14.4	+10.9
(2) <u>Procurement</u>		
Revised Escalation indices. (Economic)	N/A	-381.2
Change in procurement schedule results in less quantities procured in each fiscal year. Program schedule stretches from FY2022 to FY2026. (Schedule)	+139.9	+593.4

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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>
Added Dual Digital Flight Controls which provide significant improvements in handling and safety in tactical and degraded visual environments. (Engineering)	+255.2	+330.9
Included 701D engine vs. 701C engine. The 701D engine provides a significant improvement in the external and internal lift capability of the UH-60M. (Engineering)	+76.3	+98.9
Included 4 multifunctional displays (MFD) vs. 2 MFDs. (Engineering)	+337.9	+438.1
Aviation Combined Arms Tactical Trainer (AVCATT) additional costs added to training requirement over and above APB. (Support)	+9.3	+10.0
Added support requirements due to A/C procurement over a longer period of time. (Support)	+34.7	+53.3
Procurement Subtotal	<u>+853.3</u>	<u>+1143.4</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	
12.01	-0.507	-0.001	-0.489	+0.719	--	--	+0.012	-0.266	11.74

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	
11.81	-0.505	--	-0.491	+0.713	--	--	+0.012	-0.271	11.54



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

into the FY04 timeframe to maintain FY03 budget will have further adverse schedule impacts.

Cost Variance: The unfavorable cost variance is a result of a higher than expected effort associated with: increased number of High Speed Machining (HSM) designs, the complexities of interfacing HSM designs into the surrounding aircraft structure, loads/structures requirements, and additional DMU interface definition. Other main contributors are cost overruns due to poor estimating of planned work in the original baseline. The bottoms up EAC was provided for review during December. Current funding increments are not consistent with the proposed EAC and some FY03 efforts had to be deferred to maintain funding levels. Sikorsky is implementing corrective actions to address EVMS noncompliance issues. The proposed program restructure requires the reprogramming of APA funds to RDTE in the FY04-07 timeframe.

**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> (FY00-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-26)	<u>Total</u>
RDT&E	191.0	70.2	23.1	7.4	291.7
Procurement	-	113.5	158.5	13774.1	14046.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
<b>Total</b>	<b>191.0</b>	<b>183.7</b>	<b>181.6</b>	<b>13781.5</b>	<b>14337.8</b>

b. Annual Summary -- BLACK HAWK Upgrade

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2001 Dollars Nonrec</u>	<u>Flyaway FY 2001 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2000				9.6	9.5
2001				28.6	28.8
2002				55.0	55.9
2003				94.0	96.8
2004				67.2	70.2
2005				21.8	23.1
2006				6.9	7.4
<b>Subtotal</b>	<b>4</b>			<b>283.1</b>	<b>291.7</b>

During FY02 and FY03 respectively, \$13.5M and \$13.2M was added to the

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UH-60M Recap/Upgrade, December 31, 2002

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

BLACKHAWK Recapitalization/Modernization (273744). These funds are intended for COSSI HUMS program and are not included in the funds reflected in this SAR.

Funding in FY07-10 funds the Pre-Planned Product Improvements (P3I) which are essential to the UH-60M fleet and is not included in this SAR.

Additionally, \$7M of the FY06 funding is intended for the P3I Program and is not included in this SAR. P3I will have its own decision review.

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	7	0.8	86.0	107.9	113.5
2005	12	0.7	134.0	148.2	158.5
2006	31	2.3	339.3	374.1	406.9
2007	33	0.7	348.7	368.1	407.5
2008	55	2.9	549.3	579.3	652.8
2009	56	0.9	543.5	577.4	662.4
2010	56	0.8	551.9	585.9	684.2
2011	62	1.5	593.1	624.1	741.9
2012	66	1.3	613.5	649.2	785.7
2013	72	1.6	639.9	671.7	827.5
2014	70	1.0	621.6	659.1	826.6
2015	72	1.2	631.4	667.1	851.8
2016	73	1.2	635.7	667.1	867.0
2017	68	1.0	595.5	629.5	832.9
2018	67	1.0	585.5	618.4	833.0
2019	65	0.9	516.5	552.7	757.8
2020	65	0.9	507.4	532.9	743.9
2021	72	1.7	479.6	498.7	708.7
2022	72	1.0	478.2	496.6	718.4
2023	72	1.0	477.0	495.5	729.7
2024	71	1.0	469.7	488.0	731.6
2025				1.2	1.9
2026				1.2	1.9
Subtotal	1217	25.4	10397.3	10993.9	14046.1

APA funding (AA0492) is shared with other BLACKHAWK Modifications, such as Crashworthy External Fuel System, Medical Equipment Package, and other safety modifications.

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UH-60M Recap/Upgrade, December 31, 2002

**16b. Program Funding Summary (Cont'd):**

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1221	25.4	10397.3	11277.0	14337.8

**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): \$ 99.4

Percent Total Program Expended: 0.7%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The maintenance concept for the UH-60M is organic, three-level maintenance with the exception of the training base. The training base will continue Contractor Logistics Support. The Active Army OPTEMPO for each aircraft is 216 annual flight hours. The Reserve Component OPTEMPO for each aircraft is 141.6 annual flight hours. Replenishment Repairables per flight hour include turn in credit for serviceable parts. The estimated service life for each aircraft is 20 years. Induction will begin in FY04, with deployment scheduled to begin 18 months later. No scheduled depot overhaul is projected.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

Cost Element	BLACK HAWK Upgrade Av Annual Cost per 1,000 Flying Hours	UH-60L Av Annual Cost per 1,000 Flying Hours
Mission Pay & Allowances	2.7	N/A
Unit Level Consumption	0.2	N/A
Intermediate Maintenance	0.1	N/A
Depot Maintenance	0.9	24.9
Contractor Support	0.1	N/A
Sustaining Support	0.1	N/A
Indirect Costs	N/A	N/A
	N/A	N/A
Total	4.1	24.9

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UH-60M Recap/Upgrade, December 31, 2002

18b. Operating and Support Costs (Cont'd):

Total O&S Cost	BLACK HAWK Upgrade	UH-60L
BY\$ (In Millions)	15999.4	N/A
TY\$ (In Millions)	34159.8	N/A

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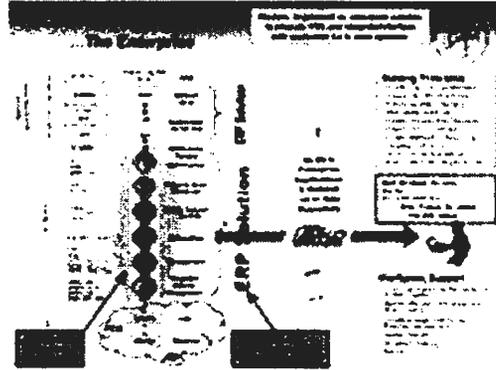
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: GCSS Army

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Global Combat Support System Army

2. DoD Component: Army

3. Responsible Office and Telephone Number:

800 Lee Avenue	COL Stephen Broughall
Fort Lee, VA 23801-1718	Assigned: August 9, 1999
	DSN 687-7665; COMM (804) 734-7665
	broughalls@lee.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0303141A

PROCUREMENT:  
APPN 2035 ICN W00800 (Army) (Shared) AHRS

AHRS = Army Human Resource System

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**5. References:**

SAR Baseline (Development Estimate):  
FY 2004 President's Budget, dated February 3, 2003

Approved Program:  
None.

**6. Mission and Description:**

Global Combat Support System Army (GCSS Army) is the prime enabler for Army's Combat Service Support (CSS) Transformation. GCSS Army will enable a seamless, integrated, and interactive CSS information management and operations system for users at all echelons. It will satisfy the Army's Automated Information System (AIS) and logistics modernization requirements by providing a technologically advanced, Enterprise Resource Planning (ERP) system, capable of managing the flow of CSS resources and information. The system will use an architecture comprised of the user and a centralized national-level database and ERP application software with interfaces to other systems as required.

**7. Executive Summary:**

The GCSS Army program entered the Engineering and Manufacturing Development (Post Milestone II) Phase of its acquisition in May 1997 utilizing a custom developed, modular technical approach. From May 1997 to present, a Business Process Reengineering effort was conducted on all property book, unit supply, maintenance, and management requirements and a web-based enhancement was developed, tested and is being fielded to replace two legacy systems.

In April 2002, the Army changed the technical approach for this program. As a result, the project is moving from a custom software development strategy to an acquisition strategy calling for a Commercial-Off-The-Shelf (COTS) Enterprise Resource Planning (ERP) based implementation. Army has selected the SAP Company ERP as the software for GCSS Army based on SAP's record as a commercially proven solution. Current plans are to obtain approval of the Acquisition Program Baseline (APB) and commence implementation efforts in third quarter FY 2003.

In December 2002, a contract was let to review the Army's Enterprise Logistics Processes and complete a high level architecture which would support the GCSS Army acquisition. This product will be delivered in April 2003 and will serve as the basis for the GCSS Army operational architecture that will guide the GCSS Army implementation.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MII,CON	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 O/I/II	MAY 1997	N/A	MAY 1997
ERP Implementation			
Evaluation, Preparation, & Blueprinting			
Start	MAY 2003	N/A	MAY 2003
Complete	NOV 2004	N/A	NOV 2004
Realization & Final Preparation			
Start	DEC 2004	N/A	DEC 2004
Complete	APR 2006	N/A	APR 2006
Operational Evaluation			
Start	NOV 2005	N/A	NOV 2005
Complete	JAN 2006	N/A	JAN 2006
Limited Deployment, Milestone C	FEB 2006	N/A	FEB 2006
Full Deployment Decision Review	MAY 2006	N/A	MAY 2006
Fielding			
Start	JUN 2006	N/A	JUN 2006
Complete	NOV 2008	N/A	NOV 2008
Initial Operational Capability (IOC)	DEC 2006	N/A	DEC 2006

Acronyms:

ERP - Enterprise Resource Planning

9b. Schedule (Cont'd):

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Development	Approved		Demon-	Current
	Estimate (SAR)	Program (APB)		strated	Estimate
	GO/NO GO	Obj/Threshold	/	Perf	GO/NO GO
Mission Critical Functions		N/A	/	TBD	
Joint Interoperability (IERS)	100%	N/A	/	TBD	100%
Information Technology (DII COE Level)	>= 8	N/A	/	TBD	>= 8
Security	Secure systems for all transactions	N/A	/	TBD	Secure systems for all transactions

Key Performance Characteristics are from the Army approved Operational Requirements Document (ORD) which is currently undergoing a joint review. The Joint Requirements Oversight Council ORD approval is expected in May 2003.

Acronyms:

COE - Common Operational Environment  
 IER - Information Exchange Requirements  
 DII - Defense Information Infrastructure

b. Current Change Explanations -- None

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	468.3		468.3
Procurement	1047.9		1047.9
Flyaway	(878.7)		(878.7)
Total Other Wpn Sys			(0.0)
Peculiar Support	(169.2)		(169.2)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Acquisition O&M	0.0		0.0
Total FY 2003 Base-Year \$	<u>1516.2</u>	_____	<u>1516.2</u>
 Escalation	 173.2		 173.2
Development (RDT&E)	(27.1)		(27.1)
Procurement	(146.1)		(146.1)
Construction (MILCON)	(0.0)		(0.0)
Acquisition O&M	(0.0)		(0.0)
Total Then Year \$	<u>1689.4</u>	_____	<u>1689.4</u>
 b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>1</u>	<u>N/A</u>	<u>1</u>
Total	1	N/A	1

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	<u>UCR Baseline (N/A)</u>	<u>Current Estimate (Dec 2002 SAR)</u>	<u>Percent Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	0.0	1516.2	
(2) Quantity	0	1	
(3) Unit Cost	N/A	1516.200	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	0.0	1047.9	
(2) Quantity	0	1	
(3) Unit Cost	N/A	1047.900	N/A

**13. Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	495.4	1194.0	-	1689.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	495.4	1194.0	-	1689.4

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	468.3	1047.9	-	1516.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	468.3	1047.9	-	1516.2

b. Current Change Explanations -- None

**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 Cur Est
PAUC Dev Est	Changes								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1689.40	--	--	--	--	--	--	--	--	1689.40

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									PUC Cur Est
PUC Dev Est	Changes								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1194.00	--	--	--	--	--	--	--	--	1194.00

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 1997	N/A	MAY 1997
Milestone II	N/A	MAY 1997	N/A	MAY 1997
Milestone C	N/A	FEB 2006	N/A	FEB 2006
IOC	N/A	DEC 2006	N/A	DEC 2006
Total Cost	N/A	1689.4	N/A	1689.4
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	1689.4	N/A	1689.4

**15. Contract Information (Then-Year Dollars in Millions):**

None

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-18)	<u>Total</u>
RDT&E	49.4	59.0	65.2	321.8	495.4
Procurement	45.9	34.8	64.6	1048.7	1194.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	95.3	93.8	129.8	1370.5	1689.4

b. Annual Summary -- GCSS Army

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2003 Dollars Nonrec</u>	<u>Flyaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2003				49.4	49.4
2004				58.1	59.0
2005				63.3	65.2
2006				66.0	69.1
2007				70.6	75.2
2008				72.7	78.8
2009				73.1	80.6
2010				1.7	1.9
2011				1.7	1.9
2012				1.6	1.9
2013				1.7	2.0
2014				1.7	2.0
2015				1.6	2.0
2016				1.7	2.1
2017				1.7	2.1
2018				1.7	2.2
Subtotal				468.3	495.4

Appropriation: 2035 - Other Procurement, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2003 Dollars Nonrec</u>	<u>Flyaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2003			31.5	45.9	45.9
2004			20.5	34.3	34.8
2005			43.8	62.7	64.6
2006			64.3	88.2	92.3
2007			58.5	90.2	96.0

16b. Program Funding Summary (Cont'd):

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008	1		59.3	93.1	100.9
2009			58.1	90.8	100.2
2010			31.6	31.6	35.5
2011			19.4	19.4	22.2
2012			95.5	95.5	111.1
2013			106.6	106.6	126.3
2014			60.4	60.4	72.9
2015			43.4	43.4	53.3
2016			28.2	28.2	35.2
2017			55.6	55.6	70.7
2018			102.0	102.0	132.1
Subtotal	1		878.7	1047.9	1194.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		878.7	1516.2	1689.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 0.2

Percent Total Program Expended: 0.0%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Project Management in FY09 and beyond is an O&S cost. Sustainment Engineering in FY09 beyond is an O&S cost. Phase out costs for 13 legacy Combat Service Support (CSS) Automated Information Systems (AIS) are included in O&S costs. Non-warranty Hardware Maintenance is an O&S cost. ERP Functional Software maintenance is an O&S cost. O&S costs are from Army Cost Position approved February 12, 2003.

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18a. Operating and Support Costs (Cont'd):

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)

Cost Element	GCSS Army	Antecedent System
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

Total O&S Cost	GCSS Army	Antecedent System
BYS (In Millions)	857.8	N/A
TYS (In Millions)	1020.1	N/A

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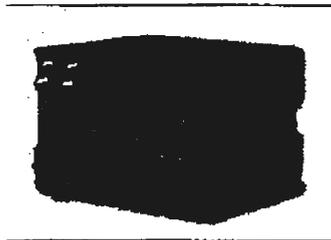
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: JTRS Cluster 1**

**AS OF DATE:** December 31, 2002

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**1. Designation and Nomenclature (Popular Name):** Joint Tactical Radio System (JTRS) Cluster 1

**2. DoD Component:** Army

Joint Participants:

Army (Joint Program Office/PEO Aviation/PEO C3T), US Marine Corps, US Air Force

**3. Responsible Office and Telephone Number:**

Tactical Radio Communications Systems (TRCS) Program Office	Fort Monmouth, NJ 07703-5505	Mr. Gary Martin Assigned: September 2, 2002 DSN 987-3063; COMM (732)427-3063 gary.martin@c3smail.monmouth.army.mil
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**4. Program Elements/Procurement Line Items:**

RDT&E:

- PE 0206313M (Shared) Project C2275
- PE 0207423F (Shared)
- PE 0604201A (Shared) Project C97
- PE 0604805A (Shared) Project D615

PROCUREMENT:

- APPN 3080 ICN 0207423F (Air Force)
- APPN 1109 ICN 463300 (Navy) (Shared) USMC
- APPN 2031 ICN AA0702 (Army)
- APPN 2035 ICN BU1400 (Army) (Shared) EPLRS
- APPN 2035 ICN G86100 (Army) (Shared)

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**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated June 24, 2002.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 24, 2002.

**6. Mission and Description:**

The requirement for the Joint Tactical Radio System (JTRS) is documented in the Mission Needs Statement (MNS) for the Joint Tactical Radio, dated August 21, 1997 and the JTRS Operational Requirements Document (ORD), dated April 24, 2002. Defense planning guidance directs consolidation of service programs into an interoperable, joint program for the development and acquisition of affordable, high capacity tactical radios to meet the bandwidth needs of operational users at various levels of command. Individual JTR set efforts will be based on the convergence or "Clustering" of requirements across the Services in like domains.

The JTRS Cluster 1 Program Management Office (PMO) and the JTRS Joint Program Office (JPO) will aggressively manage concurrent waveform and radio set development to deliver certified interoperable, secure radios. The JTRS JPO Waveform Development effort has also been designated as a separate ACAT 1D program and is reporting status of waveform development. The Cluster 1 development program will support the acquisition and fielding of a family of affordable, scaleable, high capacity, interoperable radio sets based on a common JTRS Software Communications Architecture (SCA). The JTRS is a key enabler of the DOD and Army Transformation and will provide critical communications capabilities across the full spectrum of operations in a Joint environment. It is a Joint program encompassing the specific requirements of the JTRS JPO, US Army Ground Vehicular and Rotary Wing Aircraft, US Air Force Tactical Control Party (TAC-P) Ground Vehicular and US Marine Corps Ground Vehicular applications and PEO Aviation A-Kit integration. The project supports RDT&E efforts for the JTRS Cluster 1 program while each Service provides funding for its unique RDT&E and Procurement requirements. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

The JTRS Waveform and Cluster 1 Program Milestone B Defense Acquisition Boards were conducted concurrently on June 3, 2002. The June 24 Acquisition Decision Memorandum (ADM) approved both programs to proceed into the System Development and Demonstration (SDD) phase.

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JTRS Cluster 1, December 31, 2002

## **7. Executive Summary:**

This is the first annual Selected Acquisition Report (SAR) submission for the JTRS Cluster 1 program. It follows the initial SAR submitted for the program dated September 30, 2002.

JTRS Cluster 1 is a materiel solution for the JTRS ORD mandated, multi-channel, Software Communications Architecture (SCA) compliant hardware system housing SCA compliant waveforms. Program goals include: Joint and coalition interoperability, independently developed hardware and software, SCA compliant multi-mode, multi-channel software defined radios, SCA compliant portable waveforms, long term growth through Technology Insertion and long term competition. The acquisition strategy calls for a Prime System Contractor (PSC). The PSC is required to select and qualify two sources for Cluster 1 radios. These two sources will develop and build Cluster 1 radios to meet the requirements of the JTRS Operational Requirements Document(ORD). The PSC must provide required SCA compliant waveforms. Collectively, the radios and waveforms will provide networking and gateway functionality. The PSC must ensure that core waveforms are ported to both JTRS radios and to a third independent SCA compliant radio designated by the JTRS Joint Program Office. The PSC will provide for ancillary equipment and installation kits for the ground vehicles that will be used in program testing. The PSC will develop installation kits for ground vehicular configurations as directed. The JTRS JPO will test the waveforms and JTRS Sets for SCA compliance. Cluster 1 currently addresses specific requirements for the Army Vehicular and Aviation Rotary Wing Platforms, US Air Force Tactical Air Control Party (TACP) and the US Marine Corps (USMC).

After a successful Milestone B Review, a Cost Plus Award Fee (CPAF) contract was awarded to the Boeing Company of Anaheim, CA on June 24, 2002 to initiate the System Development and Demonstration (SDD) Phase. This award also includes LRIP options using a Fixed Price Incentive(FPI) with successive targets contract approach.

The JTRS Cluster 1 Capstone System Requirements Review (SRR) was conducted on August 27-29, 2002 at the Boeing facility, establishing the systems functional requirement definition and the allocated functional baseline. The initial System Requirements Specification (SRS) was delivered to the government. Acceptance of the SRS will constitute establishment of the baseline system requirements. Final acceptance is anticipated 2nd quarter 2003. Changes in scope are being assessed for cost, schedule, performance or risk impacts. An Integrated Baseline Review was conducted on November 5-7, 2002, at the contractor's facility. A successful System Preliminary Design Review was held November 13-14, 2002, and a successful Wideband Networking Waveform System Design Review was held on January 14, 2003. The Hardware Preliminary Design Review occurred February 3-14, 2003.

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**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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:

A Schedule Breach is the result of Not Applicable (N/A) being entered into the Current Estimate. The N/A in the current estimate is a result of the removal of Long Lead Item language. The current approved schedule milestone, "Long Lead Item Procurement Option 1 Approval OIPT" will be replaced with "OIPT Approval to Exercise Option 1 and Option 1 Exercise." Also, the schedule milestone "LRIP Option 1 Exercise" will be deleted and replaced with schedule milestone "LRIP Option 1 Deliveries Begin." A Program Deviation Report (PDR) and a revised APB are in process to reflect the changes noted herein.

**9. Schedule:**

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone B Decision	JUN 2002	JUN 2002	JUN 2002
Contract Award	JUN 2002	JUN 2002	JUN 2002
Early Operational Assessment			
Start	APR 2004	APR 2004	AUG 2004 (Ch-1)
Complete	JUN 2004	JUN 2004	NOV 2004 (Ch-1)
Long Lead Item Procurement Option 1 Approval OIPT	SEP 2004	SEP 2004	N/A (Ch-2)
Delivery of Airborne B Kits to Aviation for Airworthiness Certification and Integration	AUG 2004	AUG 2004	NOV 2004 (Ch-1)
Development Test/Operational Test/Limited User Test			
Start	FEB 2005	FEB 2005	MAY 2005 (Ch-1)

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9a. Schedule (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
Complete	JUL 2005	JUL 2005	NOV 2005 (Ch-1)
Milestone C Decision	AUG 2005	AUG 2005	JAN 2006 (Ch-1)
LRIP Option 1 Exercise	SEP 2005	SEP 2005	N/A (Ch-2)
First Article Test			
Start	JAN 2006	JAN 2006	APR 2006 (Ch-1)
Complete	APR 2006	APR 2006	JUL 2006 (Ch-1)
MOT&E			
Start	AUG 2006	AUG 2006	AUG 2006
Complete	OCT 2006	OCT 2006	DEC 2006 (Ch-1)
Full Rate Production Contract Award	JAN 2007	JAN 2007	APR 2007 (Ch-1)
First Unit Equipped (FUE)	JAN 2007	JAN 2007	JAN 2007
Full Rate Production In Process Review	FEB 2007	FEB 2007	MAR 2007 (Ch-1)
OIPT Approval to Exercise Option 1 and	N/A	N/A	JAN 2005 (Ch-3)
Option 1 Exercise			
LRIP Option 1 Deliveries Begin	N/A	N/A	APR 2006 (Ch-3)

Acronym List:

LRIP - Low Rate Initial Production  
MOT&E - Multi-Service Operational Test and Evaluation  
OIPT - Over-arching Integrated Product Team

b. Current Change Explanations --

{Ch-1} - The following Current Estimate changes are tied to the actual contract award:

Schedule Milestone:	Milestone Date From:	Milestone Date To:
Early Operational		
Assessment Start	Apr 2004	Aug 2004
Early Operational		
Assessment Complete	Jun 2004	Nov 2004
Delivery of Airborne B Kits		
to Aviation for Airworthiness		
Certification and Integration	Aug 2004	Nov 2004
Development Test/Operational		
Test/Limited User Test Start	Feb 2005	May 2005
Development Test/Operational		
Test/Limited User Test Complete	Jul 2005	Nov 2005
Milestone C Decision	Aug 2005	Jan 2006
First Article Test Start	Jan 2006	Apr 2006
First Article Test Complete	Apr 2006	Jul 2006
MOT&E Complete	Oct 2006	Dec 2006
Full Rate Production Contract		
Award	Jan 2007	Apr 2007
Full Rate Production In Process		

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Multi-channel routing and retransmission	ment Objec- tive wave- forms that are compat- ible in mode (voice, data, or video) and use compat- ible data rates	ment / ment Objec- / KPP tive / wave- wave- / forms forms / that that / are are / compat- compat- / ible in ible in / mode mode / (voice, {voice, / video, data, or/ and video) / data) and use / and use compat- / compat- ible / ible data / data rates / rates	TBD	ment KPP wave- forms that are compat- ible in mode (voice, video, and data) and use compat- ible data rates
Support time-critical waveforms	SINCGARS ESIP (MIL-STD 188-220) HAVE QUICK II UHF DAMA SATCOM (MIL-STD 188-181) w/EPLRS WNW (new, modified or existing wave- form) and non-KPP LINK-16 (-) for TACP	SINCGARS/ ESIP / ESIP (MIL STD/ (MIL-STD 188-220)/ 188-220) HAVE / HAVE QUICK II/ QUICK II UHF DAMA/ UHF DAMA SATCOM / SATCOM (MIL-STD/ (MIL-STD -188-181/ -188-181 182/183)/ 182/183) w/EPLRS / w/EPLRS WNW / WNW (new, / (new, modified/ modified or / or existing/ existing wave- / wave- form) / form) and / and non-KPP / non-KPP LINK-16 / LINK-16 (-) for / (-) for TACP / TACP	TBD	KPP WAVE- FORMS (ORD Tables 7-1 to 7-5) SINCGARS ESIP w/ MIL-STD 188-220 HAVE QUICK II UHF DAMA SATCOM (MIL-STD -188-181 /182/183 Com- pliant) EPLRS WNW (New, modified or existing waveform and non- KPP

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Operate on designated number of channels at the same time	GPS+8 (Vehicular), GPS+10 (Airborne)	GPS+8 / GPS+6 (Vehicular) / GPS+10 / GPS + 8 (Airborne) /	TBD	LINK-16 GPS + 6 (Vehicular), GPS + 8 (Airborne)
Scaleable networking services	Maritime /Fixed Domain	Maritime/ Ground /Fixed / and Domain / Airborne / Domains	TBD	Ground and Airborne Domains
Network extension/ coverage	Across Organizational boundaries	Across / Across Organizational/ boundaries /	TBD	Across organizational boundaries
JTR System network interoperability	Interoperate with Allied/ Coalition and commercial works; satisfy 100% of top-level IERS	Interoperate / Interoperate with / with Allied/ / Service Coalition / and and / Joint commer- / net- cial / works; works; / satisfy satisfy / 100% of 100% of / top- top- / level level / IERS IERS /	TBD	Interoperate with Service and Joint net works; satisfy 100% of top-level IERS
Operational Availability (Ao)	0.99 Channel/ 0.96 (Set)	0.99 / 0.96 Channel// Channel 0.96 / (Set) /	TBD	0.96 Channel

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)	845.1	845.1	825.4
Procurement	13592.1	13592.1	13530.2
Flyaway	(11855.4)		(11901.0)
PDSS/SDT for Airborne/I	(160.9)		(161.1)
Data	(54.8)		(54.5)
Training	(305.8)		(303.3)
Mods	(438.9)		(344.1)
Fielding	(126.9)		(128.4)
Total Other Wpn Sys	(1087.3)		(991.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(649.4)		(637.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	14437.2	14437.2	14355.6
Escalation	4675.7	4675.7	4646.5
Development (RDT&E)	(56.0)	(56.0)	(44.6)
Procurement	(4619.7)	(4619.7)	(4601.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	19112.9	19112.9	19002.1
b. Quantity --			
Development (RDT&E)	302	302	317
Procurement	108086	108086	108097
Total	108388	108388	108414

The unit of measure for this program is total Joint Tactical Radio Sets. A JTR set may consist of 2 through 9 channels for the Army Ground Vehicular configurations; 8 channels for the Army Aviation Rotary Wing configuration; 16 channels for the A2C2S configuration; 6 channels for TACP configuration; and 4 and 6 channel configuration requirements for the USMC.

On June 24, 2002, the total LRIP quantities approved at the Milestone B Decision Review for the JTRS Cluster 1 program are 10,641 and are not more than 10% of the program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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**12. Unit Cost Summary:**

	UCR Baseline (JUN 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	14437.2	14355.6	
(2) Quantity	108388	108414	
(3) Unit Cost	0.133	0.132	-0.75
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	13592.1	13530.2	
(2) Quantity	108086	108097	
(3) Unit Cost	0.126	0.125	-0.79

**13. Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	901.1	18211.8	-	19112.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-9.9	-475.5	-	-485.4
Quantity	+9.3	+2.8	-	+12.1
Schedule	-	+469.6	-	+469.6
Engineering	-25.5	+159.5	-	+134.0
Estimating	-5.0	-138.3	-	-143.3
Other	-	-	-	-
Support	-	-97.8	-	-97.8
Subtotal	-31.1	-79.7	-	-110.8
Total Changes	-31.1	-79.7	-	-110.8
Current Estimate	870.0	18132.1	-	19002.1

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	845.1	13592.1	-	14437.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	+8.8	+2.4	-	+11.2
Schedule	-	-	-	-
Engineering	-22.2	+124.7	-	+102.5
Estimating	-6.3	-81.5	-	-87.8
Other	-	-	-	-
Support	-	-107.5	-	-107.5
Subtotal	-19.7	-61.9	-	-81.6
Total Changes	-19.7	-61.9	-	-81.6
Current Estimate	825.4	13530.2	-	14355.6

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-10.5
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Increase in Non-Fully Configured RDTE End Items from 10 to 25. (Marine Corps) (Quantity)	+5.9	+6.2
Additional funding provided to procure Marine Corps test radios for MOT&E in FY06. (Marine Corps) (Quantity)	+2.9	+3.1
Refinement of APACHE Longbow multiyear I integration and spiral II software development scope to meet affordability targets. Additional effort for evolutionary enhancements to the Aviation A-kit. (Army Aviation) (Engineering)	-22.2	-25.5
Adjustment for Rounding Difference (Marine Corps) (Estimating)	-0.1	0.0
Adjustment for Current and Prior Inflation. (Army) (Estimating)	+0.8	+0.8
Adjustment for Current and Prior Inflation. (Army Aviation) (Estimating)	+0.3	+0.3

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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 Government Systems Engineering and Program Management costs. (Army Aviation) (Estimating)	-0.3	-0.3
Estimating reductions for Platform A-kits. (PM TRCS) (Estimating)	-5.7	-5.6
Estimating Variance due a change in the years of RDTE effort for the Air Force from FY02-FY06 to FY02-FY10. (Air Force) (Estimating)	-1.3	-0.2
RDT&E Subtotal	<u>-19.7</u>	<u>-31.1</u>
 (2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-481.5
Economic adjustment for negative program change. (Economic)	N/A	+6.0
Total Quantity Variance associated with increase of 11 units from 108,086 to 108,097. (Quantity)	+2.4	+2.8
Stretchout of annual procurement buy profile by 1 year. (Marine Corps) (Schedule)	0.0	+0.2
Change in the distribution of procurement quantities to satisfy funding requirements of the POM and EPP. (Army Ground) (Schedule)	0.0	+469.4
Additional effort for evolutionary enhancements to the JTRS Rotary Wing A-kit. (Army Aviation Rotary Wing) (Engineering)	+124.7	+159.5
Marine Corps requirement has decreased from 5-channels to 4-channels. This impacts unit cost. (Marine Corps) (Estimating)	-15.1	-17.7
Estimating Change due to rounding error from 3 decimal places to 1 decimal place. (Army Aviation Rotary Wing) (Estimating)	-0.3	-0.7
Estimate change due to a difference in the quantity spread. This has affected the unit cost projections from FY05-FY25. (Army Ground) (QR) (Estimating)	-65.3	-118.6
The estimating change is due to a change of distribution of quantities in the Army Ground configurations. Since the Air Force estimate is incorporated into the Army estimate, the unit cost is affected. (Air Force) (Estimating)	-0.8	-1.3
Change in Initial Spares due to additional quantity buy. (Marine Corps) (QR) (Support)	-0.6	-0.6
Change in Data due to additional quantity buy. (Marine Corps) (QR) (Support)	-0.3	-0.3

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in Training due to additional quantity buy. (Marine Corps) (QR)(Support)	-0.4	-0.4
Change in Mods due to additional quantity buy. (Marine Corps) (QR)(Support)	-1.1	-1.2
Change in Fielding due to additional quantity buy. (Marine Corps) (QR)(Support)	+0.3	+0.4
Quantity of Initial Spares reduced due to funding constraints. (Army Aviation Rotary Wing) (Support)	-2.3	-2.3
Change in Initial Spares due to a difference in the distribution of procurement quantities in from FY05 through FY25. (Army Ground) (Support)	-8.6	+14.4
Change in Data due to a difference in the distribution of procurement quantities in from FY05 through FY25. (Army Ground) (Support)	-1.0	+0.3
Change in Training due to a difference in the distribution of procurement quantities in from FY05 through FY25. (Army Ground) (Support)	-2.7	+8.9
Change in Mods due to a difference in the distribution of procurement quantities in from FY05 through FY25. (Army Ground) (Support)	-94.1	-126.8
Change in Fielding due to a difference in the distribution of procurement quantities in from FY05 through FY25. (Army Ground) (Support)	+3.1	+9.6
Change in Initial Spares due to a difference in the quantity spread of the Army configurations. (Air Force) (Support)	+0.2	+0.2
Procurement Subtotal	<u>-61.9</u>	<u>-79.7</u>

QR = Quantity related changes.

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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	
0.176	-0.004	--	+0.004	+0.001	-0.001	--	-0.001	-0.001	0.175

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	
0.168	-0.004	--	+0.004	+0.001	-0.001	--	-0.001	-0.001	0.168

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	JUN 2002	N/A	JUN 2002
Milestone C	N/A	AUG 2005	N/A	JAN 2006
FUE	N/A	JAN 2007	N/A	JAN 2007
Total Cost	N/A	19112.9	N/A	19002.1
Total Quantity	N/A	108388	N/A	108414
Prog Acq Unit Cost	N/A	0.2	N/A	0.2

**15. Contract Information (Then-Year Dollars in Millions):**

a. RDT&E --  
 JTRS CLUSTER 1:  
 THE BOEING COMPANY, ANAHEIM, CA  
 DAAB07-02-C-C403, CPAF  
 Award: June 24, 2002  
 Definitized: June 24, 2002

Initial Contract Price	Qty		
		Target	Ceiling
\$235.5	302	N/A	

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$236.1	N/A	302	\$236.1	\$285.4

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**15a. Contract Information (Cont'd):**

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.1	N/A
Cumulative Variances To Date (12/27/02)	<u>\$-3.7</u>	<u>\$-6.3</u>
Net Change	\$-3.6	\$-6.3

Explanation of Change:

Negative Cost and Schedule variances are due to the contractor's attempt to achieve an aggressive schedule and the movement of near term reviews to better prepare documentation.

Contract Comments:

The contract information reflected herein includes the ground and airborne hardware development efforts only. It does not include waveform development effort which is reported separately in the Joint Program Office SAR.

The difference between the Initial Contract Price and Current Contract Price is due to the exercise of the Benign Fill option.

The JTRS Cluster 1 Program is funded in accordance with Department of Defense (DoD) Acquisition Guidance. This Guidance directs that DoD shall strive to provide realistic cost estimates. As such, the Defense Acquisition Board decision recognized the aggressive JTRS Cluster 1 schedule and associated cost risk and directed the program to be funded to reflect Joint Cost Position and Cost Analysis Improvement Group recommendations. This cost position and current funding profile reflect cost realism and schedule risk higher than the contract price. The Earned Value Management Reporting contained in Section 15 reflects performance against the contract's baselined plan which is less than the Army's estimated requirements. When measured against the Joint Cost Position contract cost realism projections, the contract variance is well within the cost estimate and funding. The Program Office is taking aggressive steps to minimize cost and schedule variance wherever practical.

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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 (FY01-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-26)</u>	<u>Total</u>
RDT&E	201.0	244.3	141.9	282.8	870.0
Procurement	-	1.9	167.4	17962.8	18132.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	201.0	246.2	309.3	18245.6	19002.1

b. Annual Summary -- JTRS Cluster 1

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2004				5.3	5.5
2005				5.7	6.0
2006				2.8	3.0
Subtotal	25			13.8	14.5

This is a Marine Corps RDTE Requirement.

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2002 Dollars Nonrec</u>	<u>Flyaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2001				15.1	15.1
2002				55.3	55.7
2003				103.6	105.8
2004				225.5	233.6
2005				128.9	135.7
2006				84.2	90.1
2007				58.1	63.3
2008				41.7	46.2
2009				21.6	24.4
2010				9.8	11.3
2011				12.0	14.0
2012				5.3	6.3
2013				0.2	0.2
2014				0.3	0.4
2015				0.3	0.4

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16b. Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2016				0.5	0.6
2017				0.5	0.7
2018				0.6	0.8
Subtotal	264			763.5	804.6

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				5.0	5.0
2003				19.1	19.4
2004				5.0	5.2
2005				0.2	0.2
2006				1.8	1.9
2007					
2008				4.4	4.9
2009				4.8	5.4
2010				7.8	8.9
Subtotal	28			48.1	50.9

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006	75		17.6	20.5	22.5
2007	350		72.9	81.5	90.9
2008	310		61.9	71.0	80.7
2009	290		56.6	63.2	73.2
2010			0.4	0.4	0.5
Subtotal	1025		209.4	236.6	267.8

Marine Corps fielding and installation costs are included in the year after procurement. Recurring flyaway in years without quantities reflect those costs only.

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**16b. Program Funding Summary (Cont'd):**

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004		1.8		1.8	1.9
2005			25.7	21.4	22.7
2006			39.1	43.1	46.5
2007			44.3	56.5	62.1
2008			41.5	54.1	60.5
2009			46.4	58.0	66.0
2010			47.1	65.3	75.6
2011			50.2	64.7	76.3
2012			48.6	68.2	81.9
2013			49.5	68.3	83.5
2014			52.9	68.4	85.1
2015			48.0	64.3	81.5
2016			48.8	54.8	70.7
2017			53.2	54.9	72.0
2018			53.2	54.9	73.4
2019			12.6	19.9	27.1
2020			2.8	3.8	5.3
Subtotal		1.8	663.9	822.4	992.1

The Army Aviation Rotary Wing portion of the Cluster 1 program is to develop and procure installation kits for the AH64, CH47, UH60, and SOA aircraft. Total Army Aviation A-Kit procurement is 2123. The Army Aviation Rotary Wing A-Kit (APA end item) is not the unit of measure, therefore no quantities are associated with the recurring flyaway costs for this appropriation.

Aviation fielding and installation costs are included in the year after procurement. Recurring flyaway in years without quantities reflect those costs only.

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005	338	9.5	107.3	130.7	138.1
2006	446		114.8	131.9	141.8
2007	1015		179.3	206.2	225.5
2008	1996		281.9	316.0	351.8
2009	2905		376.4	420.9	477.1
2010	3808		445.6	498.8	575.5
2011	3602		442.3	494.0	580.3
2012	3679		436.7	489.7	585.6

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16b. Program Funding Summary (Cont'd):

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2013	1219		213.3	239.0	290.9
2014	1217		155.6	179.1	222.0
2015	1316		156.1	180.5	227.7
2016	1335		157.2	182.0	233.7
2017	1329		157.5	182.7	238.9
2018	1336		157.3	183.1	243.7
2019	11577		871.6	991.4	1343.2
2020	11564		1086.7	1216.9	1678.3
2021	11564		1074.5	1208.2	1696.3
2022	11564		1064.5	1202.1	1718.2
2023	11564		1052.2	1194.0	1737.2
2024	11564		1041.0	1187.1	1758.4
2025	11574		1031.3	1183.5	1784.6
2026			261.7	270.3	414.9
Subtotal	106512	9.5	10864.8	12288.1	16663.7

Representative of B-Kit quantities for Army Aviation Rotary Wing, A2C2S, and Army Ground vehicular configurations. Army Ground fielding and installation costs are included in the year after procurement. Recurring flyaway in years without quantities reflect those costs only.

The funding source for Future Combat System quantities of 10,800 and associated Special Operations Forces/Table of Distribution and Allowance (SOF/TDA) quantities of 1581 may be split between FCS and another Army source in the future.

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005	7		2.8	6.2	6.6
2006	39		12.0	16.3	17.7
2007	25		8.8	12.6	14.0
2008	167		41.4	48.0	54.2
2009	160		41.4	48.0	55.1
2010	162		39.2	45.6	53.3
2011			6.0	6.4	7.6
Subtotal	560		151.6	183.1	208.5

Air Force fielding and installation costs are included in the year after

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**16b. Program Funding Summary (Cont'd):**

procurement. Recurring flyaway in years without quantities reflect those costs only.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	1050		209.4	250.4	282.3
Army	106776	11.3	11528.7	13874.0	18460.4
USAF	588		151.6	231.2	259.4
Grand Total	108414	11.3	11889.7	14355.6	19002.1

**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): \$ 57.5

Percent Total Program Expended: 0.3%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Ground Rules and Assumptions include:

1. Costs estimated IAW DA Cost Analysis Manual, USACEAC, May 2001.
2. System life is estimated at 20 years.
3. FY01 and prior year costs are considered sunk.
4. Army quantities for Cluster 1 based on February 28, 2002 G-3 Memo and aviation quantity update.
5. Estimates based on the April 9, 2002 Cluster 1 CARD and the JPO CARD.
6. JPO certification of Waveforms is required prior to vendor integration and test.
7. No changes in operator/maintainer personnel from Legacy Systems.
8. The JPO funds and manages development and maintenance of waveform software, validates HW and SW for Software Communications Architecture(SCA) compliance, and develops software emulations of crypto equipment.
9. Cluster 1 manager (PM TRCS) is responsible for:
  - Hardware design, development, acquisition, testing, fielding, sustainment, and disposal.
  - Non-waveform software development, testing and integration.
  - Waveform-to-radio integration, testing, and certification.
  - Army Vehicular Platform integration, installation, and test.

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JTRS Cluster 1, December 31, 2002

**18a. Operating and Support Costs (Cont'd):**

10. PEO Aviation is responsible for Rotary Wing Platform integration, installation and funding of A-kits.
11. Ground Vehicular PMS are responsible for integration, installation, and funding for A-kits.
12. Operating and Support Costs in 18 b. reflect 0.0 due to rounding. Costs are reflected on a per unit, per year basis.
13. There is no antecedent program to this system.

**b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Thousands)**

Cost Element	JTRS Cluster 1 Av Annual Cost Per Set	No Antecedent System
Mission Pay & Allowances	0.0	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
Operations	0.0	N/A
Depot Level Repairables	0.0	N/A
Consumable Material/Repa Maintenance	0.0	N/A
Software Maintenance/Sup	0.0	N/A
Personnel Support	0.0	N/A
Other	0.0	N/A
Total	0.0	N/A

Total O&S Cost	JTRS Cluster 1	No Antecedent System
BY\$ (In Millions)	8788.7	N/A
TY\$ (In Millions)	14739.6	N/A

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SELECTED ACQUISITION REPORT  
PROGRAM: BMDS

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Ballistic Missile Defense System (BMDS)

2. (U) DoD Component: Missile Defense Agency (MDA)

3. (U) Responsible Office and Telephone Number:

Missile Defense Agency	LtGen RONALD KADISH
7100 Defense Pentagon	Assigned: June 14, 1999
Washington, DC 20301-7100	DSN N/A; COMM 703 695-6344
	ronald.kadish@mda.osd.mil

4. (U) Program Elements/Procurement Line Items:

- RDT&E:
- (U) PE 0603175C (FY02-09)
  - (U) PE 0603869C (FY03)
  - (U) PE 0603879C (Adv Concepts) (Classified)
  - (U) PE 0603880C (FY02-FY03)
  - (U) PE 0603881C (FY02-09)
  - (U) PE 0603882C (FY02-09)
  - (U) PE 0603883C (FY02-09)
  - (U) PE 0603884C (FY02-09)
  - (U) PE 0603886C (FY04-09)
  - (U) PE 0603888C (FY04-09)
  - (U) PE 0603889C (FY04-09)
  - (U) PE 0603890C (FY04-09)
  - (U) PE 0604861C (FY02-03)
  - (U) PE 0604865C (FY02-03)
  - (U) PE 0604867C (FY02)
  - (U) PE 0901585C (FY02-09)
  - (U) PE 0901598C (FY02-09)

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**5. (U) SAR References and Organization:**

(U) SAR Baseline (Revised Planning Estimate):

(U) Secretary of Defense Memorandum dated January 2, 2002 established MDA and the BMDS. Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) Memorandum dated February 13, 2002 provided guidance to implement the direction of the January 2, 2002 memorandum. The President's Budget (PB) FY 2004, "Revised Planning Estimate," reflects current planned activities. The National Security Presidential Directive/NSPD-23 dated December 16, 2002 directed the Secretary of Defense to execute his approach to missile defense and deploy a set of initial missile defense capabilities beginning in 2004.

(U) This Selected Acquisition Report (SAR) is Research, Development, Test, and Evaluation (RDT&E) only and is intended to meet the statutory requirements for a limited SAR.

**6. (U) Mission and Description:**

(U) The goal of the MDA is to defend the United States, and our allies, friends, and deployed forces from ballistic missiles of all ranges in all phases of flight. Today, the US faces a range of threats, including terrorism, weapons of mass destruction (WMD) in the hands of hostile states and non-state actors, and ballistic missiles intended to intimidate and coerce the US and its allies. In light of this new security environment and progress made in missile defense development efforts, in December 2002 the President directed the Department of Defense (DOD) to begin fielding an integrated and evolutionary BMDS capable of providing a layered defense of the US homeland, of forward deployed forces, and of allies and friends, against ballistic missiles of all ranges. This initial capability will build on the planned BMDS and serve as a starting point for fielding improved, layered missile defense capabilities.

(U) MDA is employing an evolutionary approach to missile defense development that is straightforward:

- Field an initial capability in 2004-2005 in accordance with the President's direction;
- Add networked, forward-deployed ground-, sea-, and space-based sensors to make the interceptors more effective in 2006-07;
- Add interceptors;
- Add layers of increasingly capable weapons and sensors, made possible by emerging technologies.

(U) This means there is no final or fixed missile defense architecture. Rather, the composition of missile defenses, including the number, type, and location of systems will change over time to meet the changing threat and take advantage of technological developments. This approach includes the use of prototype and test assets to provide early capability, while improving the effectiveness of defensive capabilities over time. The goal is to field an integrated, layered BMDS capable of engaging enemy ballistic missiles during the boost, midcourse, and terminal phases of flight using ground, sea, and air basing modes to deliver kinetic and/or directed energy defenses within each phase.

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**7. (U) Executive Summary:**

(U) The MDA has organized the BMDS program into two-year time windows, or Blocks, consisting of packages of capabilities that have been developed over several years. A capability's specification as part of a particular Block means that it would be ready during the two-year window to be inserted into the BMDS Test Bed for system integration and testing. For example, Block 2004 represents 2004-2005, Block 2006 represents 2006-2007, and so on.

(U) To align program activities by Block, we have implemented a product-oriented Work Breakdown Structure (WBS). This new WBS framework enables us to organize and manage more effectively the BMDS scope, schedule and budget.

(U) The 2002 and 2003 Defense Authorization Acts require us to specify cost, schedule, testing and performance goals and developmental baselines in the FY2004 President's Budget justification materials. Our goals are expressed in terms required by the President's Management Agenda clearly linking budget (inputs) and performance (outputs and outcomes) measures. We intend to review program progress relative to these planning measures annually with the General Accounting Office, also called for in the statute.

**(U) Block 2004**

(U) In December 2002, the President directed the initial fielding of a limited Ballistic Missile Defense (BMD) defensive operational capability beginning in 2004. The Office of the Secretary of Defense added \$1.5B to our budget to meet this goal.

(U) This 2004 Block program of work continues development and integration of components and facilities in the BMDS Test Bed to demonstrate layered missile defense capabilities against all ranges of threat. Block 2004 RDT&E funding is focused on those capabilities directed by the President for operational use in FY2004-2005. The capabilities planned for operational use in 2004 and 2005 will include ground-based interceptors, sea-based interceptors, additional PATRIOT units, sensors based on land, at sea, and in space, and command and control interface suites at key Combatant Commander locations.

(U) The capability planned for the BMDS Test Bed will be augmented by up to 15 ground-based interceptors (GBI) at Fort Greely, AK and Vandenberg AFB, CA, for a total of up to 20 GBIs, and an additional upgraded early warning radar. Design and development of a fully tactical BMD capable weapon system will be completed and logistic support elements added to permit sustained operations at sea with up to 20 Standard Missile-3 (SM-3) missiles loaded onboard three Aegis cruisers by the end of 2005. Fifteen (15) Aegis warships will be modified with improved SPY-1 radar for surveillance and tracking capability. Aegis BMD Block 2004 development includes the conduct of a Short Range Ballistic Missile (SRBM) low exo-atmospheric flight test to define the lower bounds of the Aegis BMD element battle space against short range ballistic missiles. This budget request also funds the personnel and equipment to operate these initial capabilities in the 2004-2005 time frame. This initial capability would be added to point defense capabilities provided by the PATRIOT Advanced Capability-3 (PAC-3) system currently being fielded. FY2004 funding for PATRIOT is in the Army's budget request.

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(U)The BMDS Command, Control, Battle Management and Communications (C2BMC) Element provides the planning, control, monitoring and execution of the BMDS; the connectivity and information exchange between elements and components of the BMDS; the capability to operate the elements in an integrated and layered fashion; and Human in Control (HIC) interface.

(U)The Block 2004 budget request also funds major RDT&E capability demonstrations, integration tests, and experiments. The products and findings of these activities not only add robustness and confidence to the initial Block 2004 capabilities, but also serve to refine designs, improve capabilities, and establish confidence for subsequent Block developments and fielding opportunities:

- Boost: Ground testing of the first Airborne Laser (ABL) aircraft, the first flight of the complete ABL Block 2004 weapons system, a successful track and high-energy laser engagement of an instrumented missile alternative, culminating with a lethality demonstration.
- Midcourse: Sea-based X-band Radar introduction into the BMDS Test Bed to increase test capacity and realism against stressing long-range targets and countermeasure suites.
- Terminal: Improved Theater High Altitude Area Defense (THAAD) radar and missile flight-tests against short and medium range threats, to include THAAD Battle Management, Command, Control, and Communications (BM/C3) with interactive defense planning and interoperability. A total of four exo-atmospheric flight tests are planned for FY 2004-2005.

### **(U)Block 2006**

(U)This Block program of work continues development to improve existing capabilities and to provide new capabilities, which could be added to those fielded in Block 2004. For existing capability, the focus will be on evolving and integrating the capability such that we can achieve the first integrated and layered BMDS. For new capabilities, the focus will be on attaining a level of maturity such that these new capabilities may undergo comprehensive and operationally realistic system integration and testing in the BMDS Test Bed.

(U)By developing and integrating additional weapons, sensors, and Command and Control Battle Management (C2BM) tools, we will demonstrate greater protection for the U.S., as well as deployed forces, friends, and allies. We will maintain the straightforward method for improving defenses in Block 2006: add a new radar that can be deployed, at sea or on land, close to the threat; add initial space-based sensors; add THAAD interceptors for endo-atmospheric and exo-atmospheric layering against short and medium range threats as they transition from the midcourse to the terminal phase; network these capabilities by focusing on a C2BMC "backbone" for more accurate and reliable target fragment and debris discrimination; and improve existing capabilities. Also, more C2BMC suites will be integrated into additional Combatant Commander locations, providing dynamic replanning and other C2 enhancements. Throughout this block, our demonstration and validation efforts will focus on integrated flight tests, with added realism and more stressing threat countermeasures. Included in this Block are software and limited hardware improvements to enhance the integration of the ABL Block

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2004 aircraft into the BMDS Test Bed. Of note, Block 2006 is the first time we have significant investment in the Space Tracking and Surveillance System (STSS), formerly Space-Based Infrared System-Low (SBIRS-Low) and the BMDS Forward-Based Radar.

**(U)Block 2008**

(U)The Block 2008 program of work represents a major step in the BMDS evolution. In this BMDS configuration, we plan to complete multiple layers of weapons and sensors, based on both fixed ground and mobile platforms, to counter the full spectrum of ballistic missile threats. This configuration will include C2BMC components that enable truly integrated control of all system assets throughout the battle space. BMDS C2 will see faster Dynamic Replanning, and Simultaneous Current and Future Planning. Improved BMDS BM will feature Distributed Coordinated Engagement and Engage On Remote capability. Additional BMDS C2BMC Suites will be fielded to Combatant Commanders. Primary development projects include (1) improving the BMDS performance by adding Boost phase weapons, to include the ABL and the kinetic energy BMDS Interceptor to the Test Bed; (2) improving the performance of all weapons by integrating space sensor platforms, including STSS, and fusing multi-sensor discrimination products; and (3) demonstrating (through flight testing) increased system effectiveness against evolving threat countermeasures.

**(U)Block 2010**

(U)Although the technical details of Block 2010 are less defined than near-term Block efforts, the Block 2010 program of work will continue spiral development projects for BMDS weapon and sensor improvements as well as platform integration and command center initiatives. A major initiative is an advanced satellite configuration for STSS for precise threat tracking and discrimination support for the BMDS, and implementing the C2BMC improvements to assimilate and exchange this highly resolved sensor data with all BMDS elements and users.

**(U)Mission Area Investments**

(U)The remaining components of the WBS, which allow us to implement the BMDS across Blocks, enable expansion of capabilities in future Blocks, and develop capabilities not yet foreseen as part of a current or future Block, are collectively referred to as Mission Area Investments. Mission Area Investments provide a common foundation for the entire integrated BMDS. This terminology recognizes and affirms their inherent importance, as their collective progress will be critical to the success of the BMDS. These Mission Area Investments account for about \$11.3 billion, or just over 20% of the total funding request across the current FY04-09 FYDP.

(U)The following are several significant program objectives underpinning the budget request for the Mission Area Investments:

(U)System Engineering: Our core Systems Engineering team (National Team, including government, industry, Federally Funded Research and Development Centers (FFRDCs), and Scientific Engineering

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and Technical Assistance (SETA) personnel) defines, manages, and integrates all engineering development for the BMDS.

(U)C2BMC: Provides centralized technical and administrative management of the Command, Control, Battle Management, and Communications (C2BMC) engineering effort, the Hercules project personnel providing expanded algorithm suites, the Joint Warfighter Support team and the Joint National Integration Center (JNIC). C2BMC is a key effort because of the need to create interoperability between a wide variety of legacy and emerging systems over joint and coalition networks.

(U)BMD Tests & Targets: Provides resources to define, integrate, test, demonstrate and evolve a multi-layered BMDS, comprising two primary projects: Test & Evaluation (T&E) and Targets and Countermeasures. Both projects maintain divisions of Core and Block-Specific efforts. Core functions provide the implementation of test and target capabilities for: the BMDS across multiple Blocks; expand the capabilities of the BMDS in future Blocks beyond the FYDP; maintain a core infrastructure that supports development and testing efforts; and develop capabilities not yet foreseen as part of a current or future block.

(U)International Programs: The President has underscored the importance of working with other countries to develop missile defenses and defend against the ballistic missile threat. This investment area sustains cooperative R&D programs with Israel by continuing support for the Arrow program and with the Russians for the Russian American Observation Satellite (RAMOS) project. Also the Japanese Cooperative Research project plans to flight test the Standard Missile 3 lightweight nosecone in Joint Control Test Vehicle-1 and Joint Flight Mission-1. Our international work is consistent with our vision, and supports the achievement of our goals.

(U)Advanced Concepts: Continues several S&T initiatives to increase BMD system firepower and sensor capability, and to extend the footprint of terminal systems. In FY2004, Advanced Technology efforts will continue improvements in the Miniature Kill Vehicle (MKV) Program working toward a hover test in FY2005, and will develop and test new Early Launch Detection and Tracking (ELDT) capabilities. MDA is managing the High Altitude Airship Advanced Concept Technology Demonstration in cooperation with NORAD, Army, and OSD. The Airship is scheduled to fly in 2006. We are also focusing on Laser/Laser Detection and Ranging (LADAR) technologies, tracking, weapon guidance, and imaging, as well as investing in technologies that may lead to a far-term space-based high-power laser demonstration. This funding will support research into highly advanced solid-state and chemical laser concepts, remote laser kinetic weapon guidance, and new detector concepts for laser radars.

(U)Program Operations: Our Program Operations expenses are primarily for government personnel performing management support activities, contractors that assist in performing these activities, and operations and maintenance costs associated with facilities operations.

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supplies and equipment, communications and printing, travel and training, and information technology management. The activities are performed at the MDA, the Army Space and Missile Defense Command, the Army Program Executive Office (PEO) for Air and Missile Defense, the Navy PEO for Integrated Warfare Systems, and Program Management, Sea 452 (PMS 452), and several major Air Force System Commands and Laboratories.

**8. (U) Total Program BMDS Funding Summary**

(U) Annual Summary - Total Program BMDS Funding Summary

(U) Appropriation: RDT&E (FY02-09)

Fiscal Year	Total Program Base-Year \$M	Total Program Then-Year \$M
Block 2004	10756.5	11065.1
Block 2006	15509.1	16224.7
Block 2008	15250.1	16669.3
Block 2010	4509.8	4973.6
Mission Area Investments	13104.5	13963.8
Subtotal	59130.0	62896.5

Note: RDT&E funds only, does not include \$72.8M MILCON Appropriation.

(U) BMDS SAR Changes \$M (December 2001 compared to December 2002):

December 31, 2001 Selected Acquisition Report (PB03)		\$47,217.1
<b>Changes:</b>		
Revised escalation indices (Economic)	-\$436.2	
DoD inflation adjustment (Estimating)	-\$757.9	
Refinement of program estimate (Estimating)	\$51.6	
Realign PAC-3/MEADS funding to Army (Engineering)	-\$2,324.7	
Realign PAC-3/MEADS funding from Army (Engineering)	\$298.5	
Additional BMD capability primarily for Blocks 8 and 10 and associated Mission Area Inv. (Engineering)	\$17,997.4	
Increase to achieve Block 2004 Initial Defensive Capability (IDC) (Engineering)	\$1,451.5	
Funds transferred to National Guard for operations (Engineering)	-\$46.6	
Various DoD and Congressional adjustments (Engineering)	-\$554.2	
<b>Total Changes</b>	<b>\$15,679.4</b>	
December 31, 2002 Selected Acquisition Report (PB04) (FY02-FY09)		<b>\$62,896.5</b>

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9. (U) Block 2004:

(U) Schedule (Block 2004):

a. Milestones --

	<u>Revised Planning Estimate</u>	<u>Current Estimate</u>
Set Block BMDS Configuration		
Definition	2003	2003
Stand Up Block 2004 BMDS Test Bed	2004	2004
Complete System Integration/ Verification Testing	2005	2005
Complete 1st GBI Installation in Alaska, GBI in California	2004	2004
Complete Surveillance and Tracking Upgrade of up to 9 Aegis BMD Destroyers	2004	2004
Deliver initial C2BMC suite(s)	2004	2004
Complete C2BMC Operational Suite(s)	2005	2005
Deliver up to 20 SM-3 Missiles	2005	2005
Complete Upgrade of 3 Aegis BMD Cruisers with SM-3 Missile Capability	2005	2005
Complete Surveillance and Tracking Upgrade of up to 6 Additional Aegis BMD Destroyers	2005	2005
Complete 2nd GBI Installation in Alaska	2005	2005
Complete Sea-Based X-Band Radar	2005	2005
Complete Upgrade of Early Warning Radar	2005	2005

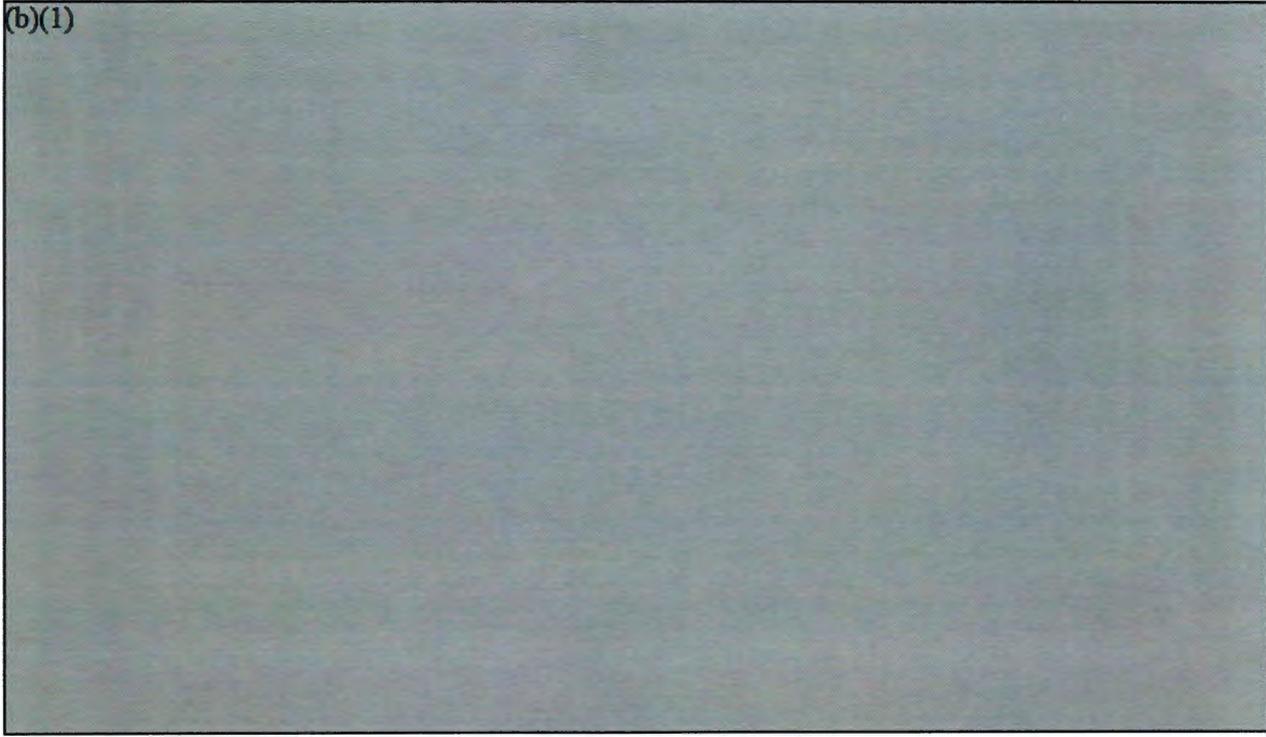
b. Current Change Explanations - None

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~~(S)~~ Performance Characteristics (Block 2004):

~~SECRET~~

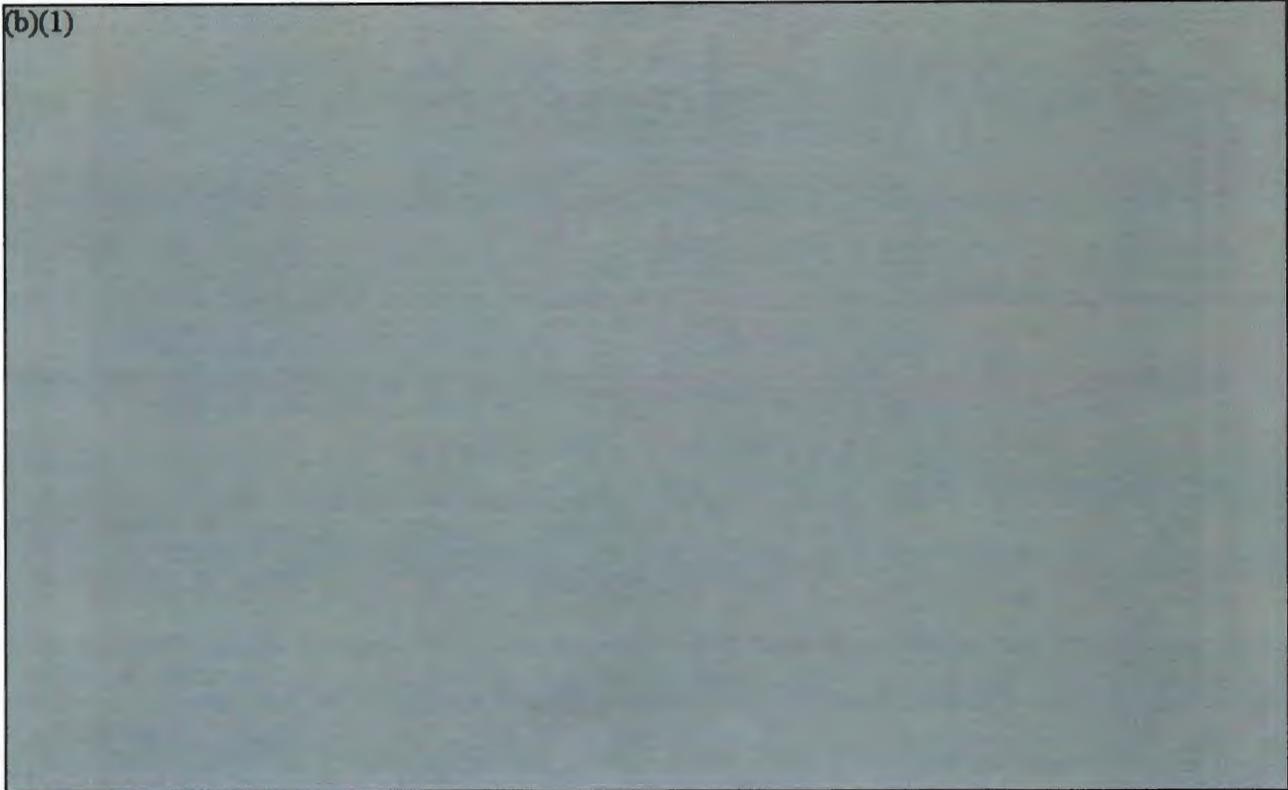
(b)(1)



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~~(S)~~ Performance Characteristics (End of Block 2004):

~~SECRET~~



~~SECRET~~

(U) Block 2004 Recent Accomplishments and Highlights:

- System Capability Specification (SCS) completed and under Configuration Control Board (CCB) control. The SCS establishes the performance capability, design, development, and verification requirements for the BMDS Block 2004.
- Draft Interface Control Specification (ICS) completed and undergoing staff review. The ICS and Interface Design Document describe the requirements of the characteristics that must exist at a common boundary between two or more element components.
- Completed development of Block 2004 System Test Objectives. Now undergoing further refinement to verify and ensure performance of Block 2004 BMDS.
- Draft Master Test Plan (MTP) completed and undergoing staff review. The MTP provides the framework for Block 2004 BMDS testing in order to collect credible test data for Block characterization, verification, and assessment.

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- Draft System Integrated Flight Test (SIFT)-3 scenario developed to stress and assess performance of BMDS by supporting simultaneous element tests.
- Block 2004 V1.3 Toolbox and Architecture CCB-approved December 2002. Block 2004 V1.4 Toolbox and Architecture anticipated approval 2<sup>nd</sup> Quarter 2003. The toolbox and architecture provide the element components (tools) and quantities developed in the block. Construction of interceptor field and associated support facilities at Fort Greely, Alaska site progressing well to support initial defensive capability requirements outlined in President Bush's December 2002 statement on missile defense.
- GMD Integrated Flight Test (IFT)-9 achieved its fifth of seven test successes and fourth in a row with a successful Hit-to-Kill intercept to demonstrate the BMDS elements working together as an integrated system. The tests involved successful integrated operation of space and ground based sensors and radars as well as the BMC3 function to detect the launch of the target missile. IFT-9 involved the participation of an Aegis destroyer and the SPY-1 radar, which tracked the target missile. IFT-10 intercept failed because the EKV and the booster rocket failed to separate. However, three separate sensors successfully collected data to assess potential as an integrated BMDS. Additionally, during IFT-10, the Hercules project demonstrated discrimination and sensor fusion algorithms. Additionally during IFT-10, the Hercules Project demonstrated discrimination and sensor fusion algorithms.
- Aegis BMD achieved three successful intercepts in a row and demonstrated the Aegis Lightweight Exo-atmospheric Projectile Intercept (ALI) fire control system solution can operate without external sensors. All test successes demonstrated the robustness of the Sea-Based Midcourse element of BMDS.
- ABL successfully completed the first flight and 13 additional flight tests including the first missile surveillance flight in conjunction with IFT-10. All hardware has been delivered to the System Integration Laboratory (SIL). Beam control integration progressed with the installation of a surrogate turret, illuminator laser delivery, and coating of the primary mirror.
- THAAD completed missile and system Preliminary Design Reviews (PDR) and accomplished major ground tests required for incremental improvements through spiral developments and evolutionary acquisition.
- PAC-3 completed fielding of PATRIOT configuration 3 ground equipment to the fourth battalion and obtained FY2003/04 production decision. PAC-3 missiles are fielded to the first battalion. The Initial Operational Test and Evaluation (IOT&E) test program commenced for the PAC-3 with four tests completed. All four IOT&E were considered partial successes since not all test objectives were met. However, the PAC-3 is successfully demonstrating the system's operational capabilities against various targets and the interaction of all system elements including radar, command and control and target identification systems. In October 2002, the Defense Acquisition Board (DAB) approved the transfer of responsibility for all aspects of the PAC-3 Program, including development and production, from MDA to the Army, who will be the single manager of the program. Also approved was the production decision of 100 missiles in FY03 and 108 missiles in FY04.

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- C2BMC created the C2BMC-eXperimental (C2BMC-X) laboratory at the JNIC, and is preparing for Spring 03 evaluation of existing BMC3 functionalities and Warfighter BMDS operations concept experimentation.

**(U) Cost (Block 2004):**

a. Total Cost -

	Revised Planning <u>Estimate</u>	Current <u>Estimate</u>
Development (RDT&E)	10756.5	10756.5
Total FY 2002 Base-Year \$M	10756.5	10756.5
Escalation	308.6	308.6
Development (RDT&E)	(308.6)	(308.6)
Total Then Year \$M	11065.1	11065.1

**Notes:** (1) Figures shown above reflect RDT&E funding for FY02-06 only.  
 (2) RDT&E funds only, does not include \$24.2M MILCON Appropriation.

b. (U) Annual Summary - **Block 2004**

(U) Appropriation: RDT&E (FY02-06)

Fiscal Year	Total Program Base-Year \$M	Total Program Then-Year \$M
2002	2438.6	2454.2
2003	2326.5	2368.8
2004	3107.2	3211.6
2005	2731.9	2868.0
2006	152.3	162.5
Subtotal	10756.5	11065.1

**9. (U) Block 2006:**

**(U) Schedule (Block 2006):**

a. Milestones --

	<u>Revised Planning Estimate</u>	<u>Current Estimate</u>
Set Preliminary Block BMDS Configuration Definition	2003	2003
Set Block BMDS Configuration Definition	2006	2006
Complete Block Integration/Verification Testing	2007	2007
Complete Addition of Block 2006 Elements into Test Bed	2007	2007

b. Current Change Explanations - None

~~(S)~~ Performance Characteristics (Block 2006 Initial Planning Document):

(b)(1)



(U) Block 2006 Recent Accomplishments and Highlights:

- Block 2006 Statement of Goals (SOG) has been defined and the preliminary engineering review of capabilities alternatives has been completed.
- Block 2006 System Test Objectives has been developed and integrated into block management planning.
- The BMDS Sensors Program was established to leverage existing sensors, define sensor upgrade requirements and take advantage of uses previously prohibited by the Anti-Ballistic Missile (ABM) Treaty to evolve a network of sensors at the BMDS level.
- In CY 2002, SBIRS Low was restructured from a traditional acquisition program into a capabilities based, spiral development effort and renamed the Space Tracking and Surveillance System (STSS). A new contract for two Block 2006 satellites - based on existing Flight Demonstration System (FDS) hardware was signed with Northrop Grumman Space Technologies (NGST) in April 2002, and definitized in August 2002. Inventory and initial checkout of FDS Hardware for Block 2006 satellites was completed in December 2002.
- THAAD continued design development and review of future requirements and capabilities.
- Aegis BMD conducted technology assessment to establish options for spiral development from the Block 2004 capability to Block 2006 capability; options assessed included missile and weapons

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system technologies, specifically: two color Kinetic Warhead (KW) Infrared (IR) seeker, IR sealed optics, synthetic narrow band/wide band radar processing, open-loop discrimination algorithms. Other activity included the successful execution of an Advanced S-Band Radar Linear Array Demonstration to support the Navy lead on possible Block 2006 S-Band enhancements.

- C2BMC expanded the Sensor Network SPT to include new Sensors Directorate and hired additional expertise to address Block 2006 sensor fusion and integration techniques with existing platforms.

**(U) Cost (Block 2006):**

a. Total Cost -

	Revised Planning <u>Estimate</u>	Current <u>Estimate</u>
Development (RDT&E)	15509.1	15509.1
Total FY 2002 Base-Year \$M	15509.1	15509.1
Escalation	715.6	715.6
Development (RDT&E)	(715.6)	(715.6)
Total Then Year \$M	16224.7	16224.7

**Note - Figures shown above reflect RDT&E funding for FY02-09 only.**

b. (U) Annual Summary - **Block 2006**

(U) Appropriation: RDT&E (FY02-09)

Fiscal Year	Total Program Base-Year \$M	Total Program Then-Year \$M
2002	2504.2	2520.2
2003	2329.3	2371.7
2004	2159.3	2231.9
2005	2689.3	2823.2
2006	3124.7	3335.0
2007	2378.3	2582.8
2008	243.9	269.7
2009	80.1	90.2
Subtotal	15509.1	16224.7

**9. (U) Block 2008:**

**(U) Schedule (Block 2008):**

a. Milestones - To Be Developed.

**(U) Performance Characteristics (Block 2008):** To Be Developed.

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(U) **Cost (Block 2008):**

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	15250.1	15250.1
Total FY 2002 Base-Year \$M	15250.1	15250.1
Escalation	1419.2	1419.2
Development (RDT&E)	(1419.2)	(1419.2)
Total Then Year \$M	16669.3	16669.3

**Note - Figures shown above reflect RDT&E funding for FY02-09 only.**

b. (U) Annual Summary - **Block 2008**

(U) Appropriation: RDT&E (FY02-09)

Fiscal Year	Total Program Base-Year \$M	Total Program Then-Year \$M
2002	64.6	65.0
2003	330.7	336.7
2004	553.0	571.6
2005	1080.2	1134.0
2006	2009.4	2144.6
2007	2897.1	3146.3
2008	4398.1	4862.5
2009	3917.0	4408.6
Subtotal	15250.1	16669.3

9. (U) **Block 2010:**

(U) **Schedule (Block 2010):**

Milestones - To be developed.

(U) **Performance Characteristics (Block 2010):** To be developed.

(U) **Cost (Block 2010):**

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	4509.8	4509.8
Total FY 2002 Base-Year \$M	4509.8	4509.8
Escalation	463.8	463.8
Development (RDT&E)	(463.8)	(463.8)
Total Then Year \$M	4973.6	4973.6

**Note - Figures shown above reflect RDT&E funding for FY02-09 only.**

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b. (U) Annual Summary - **Block 2010**  
 (U) Appropriation: RDT&E (FY02-09)

Fiscal Year	Total Program Base-Year \$M	Total Program Then-Year \$M
2002	177.9	179.0
2003	53.6	54.6
2004	23.5	24.3
2005	42.0	44.1
2006	308.6	329.4
2007	662.3	719.3
2008	1301.9	1439.4
2009	1940.0	2183.5
Subtotal	4509.8	4973.6

9. (U) Mission Area Investments

(U) Cost (Mission Area Investments):

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	13104.5	13104.5
Total FY 2002 Base-Year \$M	13104.5	13104.5
Escalation	859.3	859.3
Development (RDT&E)	(859.3)	(859.3)
Total Then Year \$M	13963.8	13963.8

**Note - Figures shown above reflect RDT&E funding for FY02-09 only.**

(U) Mission Area Investments are other weapons systems support cost for the BMDS program that are not a part of Block costs shown. These costs are presented to allow the full presentation of the FY 2004 President's Budget. Above costs do not include MILCON Appropriation.

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(U) Mission Area Investments

b. (U) Annual Summary - Mission Area Investments  
 (U) Appropriation: RDT&E (FY02-09)

Fiscal Year	Total Program Base-Year \$M	Total Program Then-Year \$M
2002	1391.7	1400.6
2003	1272.7	1295.9
2004	1634.6	1689.5
2005	1723.9	1809.7
2006	1663.1	1775.0
2007	1746.4	1896.6
2008	1828.0	2021.0
2009	1844.1	2075.5
Subtotal	13104.5	13963.8

10. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) ABL BLOCK 04:

The Boeing Company, Seattle, WA  
 F29601-97-C-0001, CPAF/CPFF/FFP  
 Award: November 12, 1996  
 Definitized: November 12, 1996

Initial Contract Price  
Target      Ceiling      Qty  
 \$723.0      N/A

Current Contract Price  
Target      Ceiling      Qty  
 \$1877.2      N/A

Estimated Price At Completion  
Contractor      Program Manager  
 \$1877.2      \$1877.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-19.5	\$-12.1
Cumulative Variances To Date (12/02/02)	\$-77.4	\$-16.5
Net Change	\$-57.9	\$-4.4

(U) Explanation of Change:

(U) Contract was restructured in 2002. Cost variance is due to engineering costs incurred in excess of plan, aircraft modification and advanced leading edge technologies related to laser beam control/laser fire control. Schedule variance is due to turret and beam transfer assembly electrical design and optical coatings. Delays in laser software to systems integration labs (SIL) at Edwards AFB and vendor supplied BILL/TILL laser tech hardware.

(U) Contract Comments: None

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(U) GMD Prime:

The Boeing Company, Anaheim, CA  
 HQ0006-01-C-0001, CPAF  
 Award: December 22, 2000  
 Definitized: December 22, 2000

Initial Contract Price  
Target      Ceiling      Qty  
 \$7393.5      N/A

Current Contract Price  
Target      Ceiling      Qty  
 \$9691.1      N/A

Estimated Price At Completion  
Contractor      Program Manager  
 \$9691.1      \$9691.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$ 3.0	\$-85.2
Cumulative Variances To Date (12/31/02)	<u>\$-5.6</u>	<u>\$-67.2</u>
Net Change	\$-8.6	\$ 18.0

(U) Explanation of Change:

(U)The current contract price includes authorized unpriced work of approximately \$1B to cover additional contract effort for the GMD Communication Network, Sea-Based Radar, Combined Test Facility Development, and Land-Based Relocation. Proposals are being evaluated for negotiation and contract award.

(U)Cost Variance overruns in Boost Vehicle (BV)-5, and 6; Interceptor Integration, Assembly, Test and Checkout (IAT&C), Integration Phase (IP)-3 Integrated Assessment Review (IAR) and Integrated Flight Test (IFT)-15. Cumulative Schedule Variance is the result of delays in delivery of material, sub-assemblies and software required for tests of the two Booster Vehicles. These flight tests are designated as Flight Test BV-5 and 6. BV-5 has a baseline date of 2<sup>nd</sup> quarter, FY 2003 but has been tentatively scheduled for 4<sup>th</sup> quarter, FY 2003. BV-6 has a baseline start date of 3<sup>rd</sup> quarter, FY 2003 but has been tentatively scheduled for 4<sup>th</sup> quarter, FY 2003. This delay also impacted Integrated Flight Test 13-A, which had a baseline start date of 3rd quarter, FY 2003 but has been rescheduled for 4<sup>th</sup> quarter, FY 2003. Workaround plans include adding personnel to coordinate material deliveries and highlight problems to management when necessary; authorizing overtime and additional shifts; increased coordination between Boeing and their suppliers.

(U) Contract Comments:

(U)The date of last restructure was December 27, 2002. This restructure added the Test Bed, moved from a development-based to a capability-based approach, and implemented the Block approach. The contract modification formalizing these changes was signed on December 30, 2002. The December 2002 Cost Performance Report (CPR) contains a preliminary Performance Measurement Baseline (PMB); the final PMB is delayed due to extended discussions with Lockheed Martin, TRW, and Raytheon-SBX contractors.

(U) Space Tracking and Surveillance System (STSS): Initial Contract Price

	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	868.7	N/A	N/A

Northrop Grumman Space Technology,  
 Redondo Beach, CA  
 F04701-02-C-0009, CPAF  
 Award: April 18, 2002  
 Definitized: August 16, 2002

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$ 868.9	N/A	N/A	\$ 868.9	\$ 868.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$ 0.0	\$ 0.0
Cumulative Variances To Date (12/27/02)	<u>\$ 0.1</u>	<u>\$ -0.2</u>
Net Change	\$ 0.1	\$ -0.2

(U) Explanation of Change:

(U) Cost and Schedule Variances are insignificant. However, Northrop Grumman Space Technology (NGST) is working to a baseline schedule that is six months ahead of contracted schedule.

(U) Contract Comments:

(U) Previous SBIRS-LOW contracts (Spectrum Astro and TRW) were completed in FY02. STSS is a space based infrared system to assist detection and tracking of ICBMs. Northrop Grumman purchased TRW in January 2003, resulting in TRW S&E name change to NGST.

~~(FOUO)~~ THAAD DEV :

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$3780.7	N/A	

Lockheed Martin Space Systems, Sunnyvale CA  
 DASG60-00-C-0072, CPAF/CPFF  
 Award: June 28, 2000 (effective date August 4, 2000)  
 Definitized: August 30, 2000

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$4178.2	N/A		\$4461.0	\$4461.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$21.6	\$13.7
Cumulative Variances To Date (12/29/02)	<u>\$15.0</u>	<u>\$23.0</u>
Net Change	\$-6.6	\$9.3

(U) Explanation of Change:

(U) Lockheed's slight degradation of the favorable cost variance is mainly due to challenges in the missile efforts. The improvement in the

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schedule variance continues due to efficiencies in the radar efforts resulting from better than expected transition from PDRR to System Development.

(U) Contract comments:

(U)The date of last restructure was March 27, 2002. Contract is undergoing a refocus due to funding changes. Expect to receive impact proposal June 2003.

(U) SM-3 Block 2004:

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Company, Tucson, AZ	\$371.4	N/A	
N00024-98-C-5364, CPAF/CPIF			
Award: January 9, 1998			
Definitized: January 9, 1998			

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$712.9	N/A		\$605.7*	\$623.1*

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-41.5*	\$-11.4*
Cumulative Variances To Date (12/20/02)	\$-43.9*	\$ -4.2*
Net Change	\$ -2.4*	\$ 7.2*

(U) Explanation of Change:

(U)Net cost variance is insignificant. Net schedule variance is due to 12-month extension of Flight Test Schedule in February 2002 and the descoping of the Solid Divert and Altitude Control System (SDACS) in March 2002.

(U) Contract Comments:

(U)The existing Aegis BMD Contracts with both Raytheon (SM-3) and Lockheed Martin (Aegis Technical Instructions) are going to be restructured with issuance of letter contracts in late April 2003. These new letter contracts will reflect the December 2002 program redefinition based on the current budget.

\*Note - The CPR does not include Contract Line Item Numbers (CLINs) 0006 (Cost \$44.6M, Price \$49.9M) or 0008 (Cost \$44.6M, Price \$49.9M), since they are Level of Effort. However, these CLINs are part of Block 2004.

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(U) Space-Based Laser:  
 JV/Lockheed Boeing TRW,  
 F04701-99-C-0026, CPAF  
 Award: November 1, 1999  
 Definitized: November 1, 1999  
 (U) Contract comments:

(U) This effort was terminated in 2002. 2002 activity involved program closeout.

(U) JNIC:  
 NG, Colorado Springs, CO  
 FO5604-95-D-9001, CPAF/IDIQ  
 Award: October 27, 1994  
 Definitized: October 27, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$269.1	N/A	

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$528.9	N/A	

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$522.0	\$526.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$ 9.5	\$ 0.0
Cumulative Variances To Date (12/27/02)	\$ 8.6	\$-0.4
Net Change	\$-0.9	\$-0.4

(U) Explanation of Change:

(U) Net cost and schedule variances are insignificant.

(U) Contract Comments:

(U) The date of the last restructure was February 1999.

(U) JNIC ICRDC:  
 NG, Colorado Springs, CO  
 H95001-02-D-0001, CPAF/IDIQ  
 Award: September 01, 2002  
 Definitized: September 01, 2002

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$200.0	N/A	N/A

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$600.0	N/A	

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$600.0	\$600.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/27/02)	\$1.8	\$0.0
Net Change	\$1.8	\$0.0

(U) Explanation of Change:

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(U) Net cost and schedule variances are insignificant.

(U) Contract comments:

(U) The total not-to-exceed (NTE) price for the ICRDC effort is \$600.0. The basic contract award was for a NTE price of \$200.0, with two one-year options at a NTE price of \$200.0 for each option.

(U) SE&I:  
Missile Defense National Team  
Boeing, Huntsville, AL  
HQ0006-02-9-0001, CPAF OTA  
Award: February 15, 2002  
Definitized: August 29, 2002

Initial Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$149.0	N/A	N/A

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$148.3	N/A	

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$148.3	\$148.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/02)	\$0.2	\$0.0
Net Change	\$0.2	\$0.0

(U) Explanation of Change:

(U) Net cost and schedule variances are insignificant.

(U) Contract comments:

(U) To bring about the transition to a BMDS, MDA created a Missile Defense National Team (MDNT). The MDNT is composed of Government Federally Funded Research and Development Centers (FFRDCs), Scientific Engineering and Technical Assistance (SETA) providers and an industry team focused on System Engineering and Integration. This particular agreement is for the industry part of the team, composed of major defense contractors that are experienced in development, integration and production of defense systems. Period of Performance ends December 31, 2003.

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(U) C2BMC:  
 Missile Defense National Team  
 Lockheed Martin, Rosslyn, VA  
 HQ0006-02-9-0002, CPAF OTA  
 Award: January 4, 2002  
 Definitized: August 29, 2002

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$131.7	N/A	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>
\$135.5	N/A		\$135.5	\$135.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/02)	\$2.0	\$-2.2
Net Change	\$2.0	\$-2.2

(U) Explanation of Change:

(U)The cost variance is due to delayed billings from subcontractors, material purchases billed and not yet delivered, development activity delayed due to temporary staffing slow-down, and initial C2BMC architecture development was more process intensive than anticipated. The schedule variance is due to hardware/software scheduled in Bill of Materials (BOM) not yet purchased or received, some installation and test events rescheduled due to temporary hiring slow-down, and initial Block 2006 C2BMC architecture and systems engineering rescheduled.

(U) Contract comments:

(U)The period of performance ends December 31, 2003. Currently the program priorities are being reevaluated to ensure delivery of a BMDS C2BMC to field an initial defensive operations (IDO) capability as planned.

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ACRONYM LIST

ABL	AIRBORNE LASER
AC	ACCOMPLISHMENT CRITERIA
ALI SM-3	AEGIS LEAP INTERCEPT STANDARD MISSILE-3
BM	BATTLE MANAGEMENT: BALLISTIC MISSILE
BM/C2	BATTLE MANAGEMENT, COMMAND AND CONTROL
BM/C3	BATTLE MANAGEMENT, COMMAND, CONTROL, AND COMMUNICATIONS
BM/C4I	BATTLE MANAGEMENT, COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, AND INTELLIGENCE
BMDS	BALLISTIC MISSILE DEFENSE SYSTEM
BOM	BILL OF MATERIALS
C2/BM	COMMAND AND CONTROL / BATTLE MANAGEMENT
C2BMC	COMMAND, CONTROL, BATTLE MANAGEMENT, AND COMMUNICATIONS
CCB	CONFIGURATION CONTROL BOARD
CLE	COMMAND AND LAUNCH EQUIPMENT
COCOM	COMBATANT COMMAND
CPAF	COST PLUS AWARD FEE
CPFF	COST PLUS FIXED FEE
CPR	COST PERFORMANCE REPORT
DAB	DEFENSE ACQUISITION BOARD
DSP	DEFENSE SUPPORT PROGRAM
ECS	ELEMENT CAPABILITY SPECIFICATION
ELDT	EARLY LAUNCH DETECTION AND TRACKING
FFRDC	FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER
GBI	GROUND BASED INTERCEPTOR
GMD	GROUND-BASED MIDCOURSE DEFENSE
HIC	HUMAN IN CONTROL
IAT	INTEGRATED ASSESSMENT AND TEST
IAR	INTEGRATED ASSESSMENT REVIEW
ICC	INFORMATION AND COORDINATION CENTER
IDIQ	INDEFINITE DELIVERY, INDEFINITE QUANTITY
IDO	INITIAL DEFENSIVE OPERATIONS
IFT	INTEGRATED FLIGHT TEST
IOT&E	INITIAL OPERATIONAL TEST AND EVALUATION
IRBM	INTERMEDIATE RANGE BALLISTIC MISSILE
JNIC	JOINT NATIONAL INTEGRATION CENTER, SHRIEVER AFB, CO
JNICRDC	JOINT NATIONAL INTEGRATION CENTER RESEARCH AND DEVELOPMENT CENTER
LADAR	LASAR DETECTION AND RANGING
LRBM	LONG RANGE BALLISTIC MISSILE
MDA	MISSILE DEFENSE AGENCY
MDNT	MISSILE DEFENSE NATIONAL TEAM
MEADS	MEDIUM EXTENDED AIR DEFENSE SYSTEM
MRBM	MEDIUM RANGE BALLISTIC MISSILE
MTP	MASTER TEST PLAN
NTE	NOT TO EXCEED
O&M	OPERATIONS AND MAINTENANCE
OTA	OTHER TRANSACTION AGREEMENT
PAC-3	PATRIOT ADVANCED CAPABILITY - 3
PDRR	PROGRAM DEFINITION AND RISK REDUCTION
PEO	PROGRAM EXECUTIVE OFFICER
PMB	PERFORMANCE MEASUREMENT BASELINE
PMS	PROGRAM MANAGEMENT, SEA SYSTEMS COMMAND
RAMOS	RUSSIAN-AMERICAN OBSERVATION SATELLITE
S&T	SCIENCE AND TECHNOLOGY
SBIRS	SPACE BASED INFRARED SYSTEM
SDACS	SOLID DIVERT AND ATTITUDE CONTROL SYSTEM
SDR	SYSTEM DESIGN REVIEW
SETA	SCIENTIFIC ENGINEERING AND TECHNICAL ASSISTANCE
SIFT	SYSTEM INTEGRATED FLIGHT TEST
SIL	SYSTEM INTEGRATED LABORATORY
SM	STANDARD MISSILE
SOG	STATEMENT OF GOALS
SRBM	SHORT RANGE BALLISTIC MISSILE
STSS	SPACE TRACKING AND SURVEILLANCE SYSTEM
T&E	TEST AND EVALUATION
THAAD	THEATER HIGH ALTITUDE AREA DEFENSE
TJ	TECHNICAL INSTRUCTIONS

# A-8 EXCALIBUR

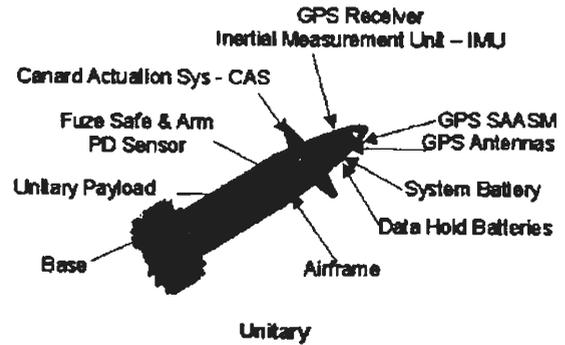
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: Excalibur (XM982)

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): XM982 155mm Precision Guided Extended Range Artillery Projectile (Excalibur)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-AMO-CAS-EX	LTC Jeffrey Wilson
Bldg. 171A	Assigned: July 30, 2001
Picatinny Arsenal, NJ 07806-5000	DSN 880-3152; COMM 973 724-3152
	jwilson@pica.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0604814A Project D708  
PROCUREMENT:  
APPN ICN E80103

Excalibur's RDTE funding line develops all Excalibur variants and future technology upgrades. This Funding line is also shared with Spin Stabilized Sensor Fuzed Munition, non-lethal munitions, and an program to evaluate smart submunitions for potential cannon, missile, and rocket applications.

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DIRECTORATE FOR POLICY AND PROGRAMS  
AND SUPPORT  
DEPARTMENT OF DEFENSE

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Excalibur (XM982), December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):  
FY 2004 President's Budget, dated February 3, 2003

Approved Program:  
None.

**6. Mission and Description:**

The Excalibur provides improved fire support through a Precision Guided Extended Range family of 155mm artillery projectiles with greatly increased accuracy and reduced collateral damage in support of Current, Stryker and Objective Forces. The Excalibur will be compatible with the Future Combat System 155mm Non Line of Sight Cannon (NL0S-C). The Excalibur will allow greater standoff and faster defeat of potential threats, increased soldier survivability and reduced ammunition handling and logistic footprint. This system supports the Transformation Campaign Plan (TCP). This SAR addresses the Excalibur Unitary variant currently in System Development and Demonstration.

**7. Executive Summary:**

This is the initial SAR for the Excalibur program. The XM982 Excalibur is a family of Precision Guided 155mm Artillery Munitions. This Excalibur Unitary variant is currently in System Development and Demonstration and is funded to field to the Future Combat System's 155mm Non-Line of Sight Cannon system in Fiscal Year (FY) 2008.

The current program has evolved greatly from its inception in 1995 as an Advanced Development program. The Advanced Development program demonstrated an unguided rocket-assisted, Dual Purpose Improved Conventional Munition (DPICM) projectile, with an integral fuze and Self Locating System. In 1997, the program obtained an approved Operational Requirements Document, established an ACAT III Acquisition Program Baseline, conducted a Milestone I/II review (now referred to as Milestone B), and initiated a full and open source selection for the Engineering and Manufacturing Development contract, with options to begin production in FY 2002 and fielding by the end of FY 2003.

A full and open, competitive selection of a system contractor was based on a precision guided, extended range projectile performance specification and was evaluated with consideration of lowest life cycle cost for a given number of target kills, technical performance and level of program risk. The award was made to Raytheon for their technologically advanced GPS guided concept offering precision strike capability achieving Operational Requirements Document effectiveness with 60% fewer projectiles and a resulting lower cost per kill. Because the selected approach significantly differed from the advanced development design, the contract funding requirements were not aligned with the programmed funding. The Acquisition Program Baseline required revision, but that action was deferred due to requirements and funding instability. In November 2001, the Army Acquisition Executive directed the 1997 Milestone I/II

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**7. Executive Summary (Cont'd):**

decision be accepted as Milestone B, that the Project Manager conduct an In-Process Review in the fourth quarter FY 2002 and that an Acquisition Program Baseline be re-established (because there was no baseline representative of the newly designated ACAT IC program).

The program has evolved significantly since 1997 and is now an ACAT IC program, with the Unitary warhead variant as the first to be fielded. The current concept is Global Positioning System (GPS) guided and incorporates technology from the joint U.S./Sweden Trajectory Correctable Munitions program. Programmatically, an International partnership has been established with the Kingdom of Sweden. There are a number of reasons behind Excalibur's evolution, the most influential being establishment of the Future Combat System and resulting redefinition of Excalibur's requirements in a new Operational Requirements Document. The program is also in pursuit of a "Spiral Development" acquisition strategy which would field to the M777E1 Joint Light Weight 155mm Towed Howitzer with Towed Artillery Digitization System by the end of FY 2006.

**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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Excalibur (XM982), December 31, 2002

9. Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone B	MAY 1997	N/A	MAY 1997
Milestone C	JUN 2006	N/A	JUN 2006
IOT&E	DEC 2008	N/A	DEC 2008
FRP IPR	JUN 2008	N/A	JUN 2008
Fielding	SEP 2006	N/A	SEP 2008
IOC	SEP 2008	N/A	SEP 2008

Acronym List:

FRP - Full Rate Production

IOTE - Initial Operational Test and Evaluation

IPR - In-Process review

b. Current Change Explanations -- None

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>
Accuracy (CEP)	< 10m	N/A / N/A	TBD	
Interoperability	All top- level IERS	N/A / N/A	TBD	

Acronym List:

CEP - Circular Error Probability

IER - Information Exchange Requirement

TBD - To Be Determined

b. Current Change Explanations -- None

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Excalibur (XM982), December 31, 2002

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	640.7		640.7
Procurement	3357.0		3357.0
Recurring flyaway	(3341.6)		(3341.6)
Nonrecurring flyaway	(15.4)		(15.4)
Total Flyaway	(3357.0)		(3357.0)
Other Weapon Systems Cost			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0		0.0
Acquisition O&M	0.0		0.0
Total FY 2003 Base-Year \$	<u>3997.7</u>	---	<u>3997.7</u>
Escalation	801.0		801.0
Development (RDT&E)	(22.1)		(22.1)
Procurement	(778.9)		(778.9)
Construction (MILCON)	(0.0)		(0.0)
Acquisition O&M	(0.0)		(0.0)
Total Then Year \$	<u>4798.7</u>	---	<u>4798.7</u>
b. Quantity --			
Development (RDT&E)	269	N/A	269
Procurement	<u>76408</u>	<u>N/A</u>	<u>76408</u>
Total	<u>76677</u>	<u>N/A</u>	<u>76677</u>

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Excalibur (XM982), December 31, 2002

12. Unit Cost Summary:

	UCR Baseline (N/A)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	N/A	3997.1	
(2) Quantity	N/A	76677	
(3) Unit Cost	N/A	0.052	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	N/A	3357.0	
(2) Quantity	N/A	76408	
(3) Unit Cost	N/A	0.044	N/A

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	662.8	4135.9	-	4798.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	662.8	4135.9	-	4798.7

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Excalibur (XM982), December 31, 2002

**13a. Cost Variance Analysis (Cont'd):**

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	640.7	3357.0	-	3997.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes				
Current Estimate	640.7	3357.0	-	3997.7

b. Current Change Explanations -- None

**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
PAUC	Changes									Cur Est
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.063	--	--	--	--	--	--	--	--	--	0.063

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate										PUC
PUC	Changes									Cur Est
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.054	--	--	--	--	--	--	--	--	--	0.054

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Excalibur (XM982), December 31, 2002

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 B	N/A	MAY 1997	N/A	MAY 1997
Milestone C	N/A	JUN 2006	N/A	JUN 2006
IOC	N/A	SEP 2008	N/A	SEP 2008
Total Cost	N/A	4798.1	N/A	4798.1
Total Quantity	N/A	76408	N/A	76677
Prog Acq Unit Cost	N/A	0.1	N/A	0.1

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --  
 XM982 ER Projectile: Initial Contract Price  
Target      Ceiling      Qty  
 Raytheon, Tucson, AZ      \$51.2      \$30.0  
 DAAE30-98-C-103, CPIF W/AF  
 Award: January 23, 1998  
 Definitized: December 17, 2002

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$453.4	\$432.2		\$453.4	\$453.4
Previous Cumulative Variances			\$0.0	\$0.0
Cumulative Variances To Date			\$-3.8	\$-2.7
Net Change			\$-3.8	\$-2.7

Explanation of Change:

Major contributors to the cost and schedule variance were the Guidance, Navigation and Control and the Canard Actuator System. The contract was rebaselined in February 2003, resetting all variances to zero.

Contract Comments:

The current program has evolved greatly from its inception in 1995 as an Advanced Development program. The contract price has also grown significantly as a result of the dramatic increase in the scope of the development effort to address changing requirements. The initial development contract price of \$51.2 million in 1997 for an unguided rocket-assisted, Dual Purpose Improved Conventional Munition (DPICM) projectile has increased to \$453.4 million for development of a precision guided projectile incorporating GPS and Micro Electro-Mechanical Systems (MEMS) Inertial Measurement Unit (IMU) technology.

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Excalibur (XM982), December 31, 2002

15. Contract Information (Cont'd):

(Note: Current contract TARGET price includes \$21.2 million contractor share.)

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> (FY97-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-18)	<u>Total</u>
RDT&E	221.4	124.2	120.2	197.0	662.8
Procurement	-	-	-	4135.9	4135.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	221.4	124.2	120.2	4332.9	4798.7

b. Annual Summary -- Excalibur (XM982)

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2003 Dollars Nonrec</u>	<u>Flyaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997				5.1	4.8
1998				9.3	8.9
1999				7.9	7.6
2000				10.2	10.0
2001				28.9	28.6
2002				59.3	59.3
2003				100.9	102.2
2004				120.8	124.2
2005				115.1	120.2
2006				86.9	92.3
2007				65.6	70.9
2008				30.7	33.8
Subtotal	269			640.7	662.8

Appropriation: 2034 - Procurement of Ammunition, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2003 Dollars Nonrec</u>	<u>Flyaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2006	154	2.9	17.2	20.1	21.5
2007	212	2.7	23.2	25.9	28.2
2008	746	3.7	52.1	55.8	61.9

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Excalibur (XM982), December 31, 2002

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	Excalibur (XM982)	Antecedent System
	Projectiles Each	Each
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

Total O&S Cost	Excalibur (XM982)	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/21/2003 12:21:53 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: HIMARS

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): High Mobility Artillery Rocket System (HIMARS)
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:  
 Project Manager COL James C. Naudain  
 Precision Fires Rocket & Missile Sys Assigned: June 8, 2001  
 ATTN: SFAE-MSL-PF DSN 746-1195; COMM 256-876-1195  
 Redstone Arsenal, AL 35898-8000 craig.naudain@msl.army.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0673778 Project D090  
 PROCUREMENT:  
 (U) APPN 2032 ICN C03000 (Army)  
 (U) APPN 2032 ICN CA0288 (Army)

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FOR OPEN PUBLICATION

**MAR 17 2003 15**

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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5. (U) References:

SAR Baseline (Development Estimate):

(U) FY 2004 President's Budget, dated February 3, 2003.

Approved Program:

(U) None.

6. (U) Mission and Description:

(U) HIMARS is a wheeled, indirect fire, rocket/missile system that is capable of firing all rockets and missiles in the current and future Multiple Launch Rocket System Family of Munitions (MFOM). The HIMARS launcher is mounted on a Family of Medium Tactical Vehicles (FMTV) 6X6 all-wheel drive 5-ton truck. HIMARS will provide rocket/missile capability in support of heavy, light, airborne, air assault divisions and forced/early entry contingency force operations. The HIMARS mission, as part of the Multiple Launch Rocket System (MLRS) fleet of launchers, is to provide field artillery medium and long-range rocket and long-range missile fires in support of Army, theater, corps, joint/coalition forces and future Objective Force Unit of Action (UA)/Unit of Employment (UE) support. HIMARS as part of the Objective Force will provide fires that shape the battlefield, isolate the UA, and shield the force. HIMARS will replace all MLRS M-270 launchers not upgraded to M-270A1s and most M198 Howitzers organic to Light Corps Artilleries.

7. (U) Executive Summary:

(U) This is the initial HIMARS SAR. In the late 1980s, the Army recognized a need for a C-130 deployable rocket/missile system. This need increased following the Gulf War. The HIMARS concept gained funding in 1995 when it was nominated as a Technology Demonstration under the Army's Rapid Force Projection Initiative (RFPI) Advanced Concept Demonstration (ACTD). A platoon of three launchers was assigned to the XVIII Airborne Corps Artillery, Fort Bragg, NC. The unit successfully completed the ACTD field experiment (4QFY98), and a 2-year Extended User Evaluation (4QFY00). HIMARS' excellent performance prompted the Army leadership to extend retention of the prototype system at Ft. Bragg until formal fielding. Congress and the Army also accelerated the system's Milestone B (1QFY00) by several years. The program's preliminary Engineering and Manufacturing Development (EMD) Developmental and Operational Test results have been good and the system has met all Low Rate Initial Production (LRIP) entrance criteria and demonstrated all Key Performance Parameters (KPPs). HIMARS is a Legacy-to-Objective Force Weapon System and a Section 912C pilot program for Product Support and Total Ownership Cost Reduction.

HIMARS has leveraged technology from both the MLRS M270A1 and FMTV M1096A1 programs and has experienced no major technical problems. An LRIP decision (Milestone C) is scheduled for 2QFY03. A Long Lead Item (LLI) contract, to support the LRIP, was awarded in 1QFY03. HIMARS First Unit Equipped (FUE) is

7. (U) Executive Summary (Cont'd):

scheduled for 2QFY05, which is 18 months earlier than originally planned. The Army Acquisition Objective for this low risk program is 888 units.

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 B	DEC 1999	N/A	DEC 1999
Milestone C	MAR 2003	N/A	MAR 2003
LRIP Contract Award	APR 2003	N/A	APR 2003
FUE	MAR 2005	N/A	MAR 2005

b. Current Change Explanations --

(U) Acronym List:

FUE - First Unit Equipped

LRIP - Low Rate Initial Production

10. (U) Performance Characteristics:

a. Performance --

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	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
(a) Reaction Time Total Mission Cycle (Rockets) (Min)	(b)(1)			
(c) Reload Cycle Time (min)				
Transportability (fully combat loaded)				
C130 Load (min)	25	N/A / N/A	25	25
C130 Off-Load (min)	5	N/A / N/A	15	15
Fire All Current and Future MFOM	No degradation in MFOM effectiveness	N/A / N/A	Effectiveness equivalent to M270/M27 OA1 demonstrated performance	No degradation in MFOM effectiveness
Interoperability w/FA Voice and Digital Systems	Use AFATDS	N/A / N/A	AFATDS used	Use AFATDS

(U) Demonstrated performance during System Development and Demonstration (SDD) testing.

Acronym List:

AFATDS - Advanced Field Artillery Tactical Data System

FA - Field Artillery

MFOM - Multiple Launch Rocket System Family of Munitions

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	202.2		202.2
Procurement	3448.1		3448.1
Nonrecurring			(0.0)
Recurring Rollaway	(3122.8)		(3122.8)
Nonrecurring Rollaway	(26.4)		(26.4)
Total Rollaway	(3149.2)		(3149.2)
Other Weapon Systems	(99.4)		(99.4)
Peculiar Support	(33.8)		(33.8)
Initial Spares	(165.7)		(165.7)
Construction (MILCON)	0.0		0.0
Acquisition O&M	0.0		0.0
Total FY 2003 Base-Year \$	<u>3650.3</u>	-----	<u>3650.3</u>
 Escalation	 662.6		 662.6
Development (RDT&E)	(0.0)		(0.0)
Procurement	(662.6)		(662.6)
Construction (MILCON)	(0.0)		(0.0)
Acquisition O&M	(0.0)		(0.0)
Total Then Year \$	<u>4312.9</u>	-----	<u>4312.9</u>

(U) On March 14, 2003, the Army Acquisition Executive authorized an LRIP quantity of 89 HIMARS launchers which does not exceed the 10% guideline established in 10 U.S.C. 2400, Federal Acquisition Streamlining Act (FASTA).

b. (U) Quantity --

Development (RDT&E)	6	N/A	6
Procurement	<u>888</u>	<u>N/A</u>	<u>888</u>
Total	894	N/A	894

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (N/A)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	0.0	3650.3	
(2) Quantity	0	894	
(3) Unit Cost	N/A	4.083	N/A
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	0.0	3448.1	
(2) Quantity	0	888	
(3) Unit Cost	N/A	3.883	N/A

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	202.2	4110.7	-	4312.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	202.2	4110.7	-	4312.9

13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	202.2	3448.1	-	3650.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	202.2	3448.1	-	3650.3

b. Current Change Explanations -- None

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	
4.82	--	--	--	--	--	--	--	--	4.82

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	
4.63	--	--	--	--	--	--	--	--	4.63

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 A	N/A	N/A	N/A	N/A
Milestone B	N/A	DEC 1999	N/A	DEC 1999
Milestone C	N/A	MAR 2003	N/A	MAR 2003
FUE	N/A	MAR 2005	N/A	MAR 2005
Total Cost	N/A	4312.9	0.0	4312.9
Total Quantity	N/A	894	0	894
Prog Acq Unit Cost	N/A	4.8	0.0	4.8

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --  
 (U) HIMARS Maturation:  
 Lockheed Martin Missiles, Grand Prairie TX  
 DAAH0100C0002, CPAF  
 Award: December 22, 1999  
 Definitized: December 22, 1999

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$103.5	N/A	8	\$120.2	\$120.3
Previous Cumulative Variances			\$0.0	\$0.0
Cumulative Variances To Date (12/31/02)			\$0.6	\$-3.0
Net Change			\$0.6	\$-3.0

Explanation of Change:

(U) The positive cost variance is due to favorable adjustments in contractor rates and factors. The unfavorable schedule variance is due to time taken to repair pumps and an azimuth motor, upgrade elevation cylinders and redesign reload manifolds. These activities are not expected to impact the program as work arounds are in place to preserve the schedule.

(U) Contract Comments:  
 The quantity of 8 under Current Contract Price reflects 6 Army and 2 Marine Corps HIMARS launchers.

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 (FY99-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-21)</u>	<u>Total</u>
RDT&E	170.7	20.9	10.6	-	202.2
Procurement	128.6	131.7	173.8	3676.6	4110.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	299.3	152.6	184.4	3676.6	4312.9

b. Annual Summary -- HIMARS

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2003 Dollars Nonrec</u>	<u>Rollaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1999				5.5	5.3
2000				35.6	34.8
2001				46.6	46.2
2002				53.8	53.8
2003				30.2	30.6
2004				20.3	20.9
2005				10.2	10.6
Subtotal	6			202.2	202.2

Appropriation: 2032 - Missile Procurement, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2003 Dollars Nonrec</u>	<u>Rollaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2003	28	9.0	115.2	125.4	128.6
2004	24	5.5	106.3	126.5	131.7
2005	37		147.7	164.2	173.8
2006	48	4.5	183.8	203.8	219.5
2007	51	6.2	197.7	216.6	237.4
2008	58	1.2	201.7	219.2	244.6
2009	60		203.3	222.2	252.4
2010	65		213.5	229.6	265.5
2011	64		210.0	230.1	270.9
2012	63		208.1	224.0	268.5
2013	63		207.1	222.4	271.4
2014	58		184.6	208.5	259.0
2015	58		183.3	208.1	263.1
2016	58		190.2	206.6	265.9

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Rollaway FY 2003 Dollars Nonrec	Rollaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2017	58		191.1	206.8	271.0
2018	58		191.3	207.1	276.2
2019	37		187.9	141.9	192.7
2020				50.0	69.1
2021				35.1	49.4
Subtotal	888	26.4	3122.8	3448.1	4110.7

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	894	26.4	3122.8	3650.3	4312.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	6	6
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 136.6

(U) Percent Total Program Expended: 3.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
 The unit for tracking O&S costs is a Battalion (BN). Each BN consists of three firing batteries of six launchers plus one float, for a total of 19 launchers. The estimated cost assumes 45 tactical BNs. The reflected O&S costs were estimated in the January 2003 Program Office Estimate (POE). The POE includes operating tempo, reliability/maintainability, maintenance concept, manning and logistics policies. The O&S costs are based on the Level of Repair Analysis (LORA) and the associated Economic Analysis. Life Cycle Contractor Support (LCCS) is planned for HIMARS. The M270 Basic Launcher was the antecedent system for the HIMARS.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)

Cost Element	HIMARS Avg Annual Cost Per BN	MLRS M270 Avg Annual Cost Per Battery
Mission Pay & Allowances	4.0	5.9
Unit Level Consumption	0.7	0.1
Intermediate Maintenance	0.0	0.1
Depot Maintenance	0.0	0.5
Contractor Support	0.1	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.4	0.4
Total	5.2	7.0

Total O&S Cost	HIMARS	MLRS M270
BY\$ (In Millions)	8739.2	7.1
TY\$ (In Millions)	15170.3	7.8

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AF-14 JDAM

\*\*\* UNCLASSIFIED \*\*\*

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: JDAM

AS OF DATE: December 31, 2002

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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:

AAC/YU, Bldg 11	GM-15 Brian S. Rutledge
Joint Direct Attack Munition JPO	Assigned: December 29, 2002
102 West D Ave First Floor	DSN 872-3525 x3311
Eglin AFB, FL 32542-6807	COMM 850-882-3525 x3311
	brian.rutledge@eglin.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
 PE 0604618F (Shared)  
 PE 0604618N (Shared)

PROCUREMENT:  
 APPN 1507 ICN 0550 (Navy)  
 APPN 3011 ICN 353620 (Air Force)

Air Force RDT&E funding includes the Product Improvement Program (PIP). The Navy RDT&E Dollars do not include PIP or Hornet Autonomous Real Time Targeting (HART) funding.

Navy Procurement funding includes BLU-109 warheads but not Joint Programmable Fuze (JPF).

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CONGRESSIONAL

03-C-0284

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**5. References:**

SAR Baseline (Production Estimate):

DAE Approved Acquisition Program Baseline (APB) dated March 23, 2001.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 7, 2002.

**6. Mission and Description:**

The Joint Direct Attack Munition (JDAM) is a joint Air Force/Navy program with the Air Force as the lead service. Designated ACAT 1C, this program upgrades the existing inventory of general purpose bombs (MK-84, BLU-109, MK-83/BLU-110 and MK-82/BLU-111) by integrating the bombs with a guidance kit consisting of a Global Positioning System aided Inertial Navigation System (GPS/INS). JDAM provides an accurate, adverse weather capability. JDAM is integrated with the B-52H, B-2A, B-1B, F-15E, F-16C/D, F-14B, F-14D, F/A-18C/D and F/A-18E/F aircraft. Follow-on integration will be on the F/A-22 and other aircraft. JDAM Low Rate Initial Production (LRIP) began in FY97 and Full Rate Production (MK-82 and BLU-109) began in FY01. A development effort to integrate the JDAM guidance kits on the MK-82 began in September 2000 with production to start in FY03. JDAM GPS Selective Availability Anti-Spoofing Module (SAASM) integration and anti-jam development efforts will begin in FY03. A redesign effort for the Joint Programmable Fuze (JPF) began March 2001 to improve high altitude bomber capability. This fuze is a multi-function unitary fuze developed for JDAM and other conventional inventory weapons.

**7. Executive Summary:**

**Baseline Transition**

This SAR is Phase II of a baseline transition (Dev Est to Prod Est).

**JDAM 2000 1b/1000 lb Variants**

JDAM development was a two-phased Engineering and Manufacturing Development (EMD) effort. Phase I emphasized competitive design and manufacturing processes and was completed in October 1995. Phase II emphasized full scale hardware build and flight test to verify system performance and supported OT&E. Phase II ended December 2000.

JDAM Low Rate Initial Production (LRIP) began in April 1997.

The JDAM program received approval for Full Rate Production at the Milestone III Defense Acquisition Board (DAB) Review on March 12, 2001. This was officially documented in the Acquisition Decision Memorandum signed by USD (AT&L) on March 23, 2001. The first Full Rate Production lot was awarded on March 29, 2001.

On October 11, 2001, the Principal Deputy Assistant Secretary (Acquisition and

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**7. Executive Summary (Cont'd):**

Management) approved initial production for the MK-83 JDAM program. On October 26, 2001, a contract was awarded for the initial buy of MK-83 JDAMs for the US Navy.

In March 2002, Mk-83s (1000 lb) were delivered to the fleet for operational use by the US Navy and Marines.

**JDAM MK-82 (500 lb) Variant**

Congress approved a reprogramming action for development of the MK-82 JDAM on July 31, 2000. On September 8, 2000, the program office received approval for MK-82 JDAM development from the Assistant Secretary of the Air Force (Acquisition), and a contract was awarded September 22, 2000.

Developmental testing on the F-16 aircraft, a Functional Configuration Audit (FCA), and Production Readiness Review (PRR) were successfully completed in December 2002.

Development delays in the BRU-55 carriage program have caused a six month schedule slip to the Mk-82 flight test effort on the FA-18C/D. The B-2 Force Development Evaluation (FDE) flight test program remains on schedule.

Mk-82 tail kits will be procured in the Lot 7 contract award planned for the second quarter FY 2003.

**Operation Enduring Freedom**

In support of Operation Enduring Freedom, a contract modification was awarded for 6,374 JDAMs on March 13, 2002.

On September 20, 2002, after receipt of FY02 Supplemental funding, an additional award was made to the Boeing Company for 18,840 tail kits. Based on this award, the production ramp to 2800 tail kits per month will be achieved with the July 2003 deliveries.

Boeing delivered the 30,000th tail kit on November 2, 2002.

**Foreign Military Sales (FMS)**

On February 9, 2000, a contract was awarded to the Boeing Company to procure 432 JDAMs with an option for 228 additional JDAMs for the Government of Israel. The option for the additional quantity was exercised on April 5, 2002. An additional buy of 1,000 kits was awarded on September 30, 2002.

JDAM flight tests were completed on June 17, 2002 for the Israeli Air Force's Peace Marble II and III.

Letters of Offer and Acceptance (LOAs) were signed by the Kingdom of Oman in May 2002, the Republic of Korea in June 2002, the United Arab Emirates in June 2002, and Denmark in June 2002.

7. Executive Summary (Cont'd):

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 0	JUN 1992	JUN 1992	JUN 1992
Milestone I	OCT 1993	OCT 1993	OCT 1993
Dem/Val Contract Award	APR 1994	APR 1994	APR 1994
Critical Design Review Complete	AUG 1995	AUG 1995	AUG 1995
Milestone II	SEP 1995	SEP 1995	SEP 1995
Exercise EMD Contract Option	OCT 1995	OCT 1995	OCT 1995
DT&E/TECHEVAL			
Start (Flight Tests)	OCT 1995	OCT 1995	DEC 1995
Complete (2000 lb Kit)	DEC 1997	DEC 1997	JUN 1998
Complete (1000 lb Kit) - Weapon Only	FEB 1998	FEB 1998	AUG 1998
Operational Assessment			
Start	OCT 1995	OCT 1995	OCT 1995
Complete	MAR 1997	MAR 1997	JAN 1997
Exercise Lot 1 Option	APR 1997	APR 1997	APR 1997
Lot 1 Production First Delivery	APR 1998	APR 1998	MAY 1998
Required Assets Availability (AF)	MAR 1999	MAR 1999	MAR 1999
Initial Operational Capability (FA-18)	NOV 2000	NOV 2000	FEB 2001
Milestone III (2000 lb)	NOV 2000	NOV 2000	MAR 2001
Exercise Lot 2 Option (LRIP)	APR 1998	APR 1998	JUN 1998
IOT&E/OPEVAL (Dedicated 2000 lb Kit)	SEP 2000	SEP 2000	SEP 2000
Complete			

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9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
Award Lot 3 (LRIP)	JUN 1999	JUN 1999	JUN 1999	
OT&E/OPEVAL Complete (1000 lb Kit/FA-18C/D)	N/A	JAN 2003	MAY 2003	(Ch-1)
Initial Production (500 lb kit)	N/A	MAR 2003	MAR 2003	(Ch-2)
Initial Operational Capability (IOC) (500 lb kit on FA-18C/D)	N/A	DEC 2004	DEC 2004	(Ch-2)
Required Assets Availability (RAA) (500 lb on B-2)	N/A	JAN 2005	JAN 2005	(Ch-2)
Selective Availability Anti-Spoofing Module (SAASM)/GPS Anti-Jam Production Award	N/A	MAR 2005	MAR 2005	(Ch-2)
Milestone III (1000 lb on FA-18C/D)	FEB 2002	N/A	N/A	(Ch-3)
Milestone I JDAM PIP	SEP 2002	N/A	N/A	(Ch-3)
OT&E/OPEVAL Complete (1000 lb Kit/FA-18C/D)	JUL 2001	N/A	N/A	(Ch-3)

ACRONYMS: AUR - All Up Round  
 LRIP - Low Rate Initial Production  
 RAA - Required Assets Availability

b. Current Change Explanations --

(Ch-1) OT&E/OPEVAL Complete (1000 lb kit/FA-18C/D) changed from January 2003 to May 2003. Flight testing is complete but awaiting the final report.

(Ch-2) New schedule milestones were added in the October 2002 APB update to incorporate the Mk-82 (500 lb) variant and the Selective Availability Anti-Spoofing Module (SAASM)/GPS Anti-Jam schedule activity. The following are the schedule milestones added:

(U) Initial Production Award (500 lb kit) was added with a threshold date of September 2003.

(U) Initial Operational Capability (IOC) (500 lb kit on FA-18C/D) was added with a threshold date of June 2005.

(U) Required Assets Availability (RAA) (500 lb on B-2) was added with a threshold date of July 2005.

(U) Selective Availability Anti-Spoofing Module (SAASM)/GPS Anti-Jam Production Award was added with a threshold date of September 2005.

(Ch-3) The following schedule milestones were deleted in the October 2002 APB update to better reflect program activities:

(U) Milestone I JDAM PIP, Milestone III (1000 lb on FA-18C/D), and OT&E/OPEVAL Complete (1000 lb Kit/FA-18C/D).

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u> Adverse	<u>Approved Program (APB)</u> <u>Obj/Threshold</u>		<u>Demonstrated Perf</u> Adverse	<u>Current Estimate</u> Adverse	
		Adverse	/			
Weather Capability Accuracy (CEP) (Meters)						
GPS Available,	13	5	/ 13	7.68	13	
Impact Angles > 60 Deg	Horizontal Targets	Horizontal targets	/		Horizontal Targets	
Inflight Re-targeting Capability (captive carry)	Yes	Yes	/ Yes	Yes	Yes	
Carrier Operability	Yes	Yes	/ Yes	Yes	Yes	
Warhead Compatibility	MK-82/BLU-111, MK-83, Improved 1000-1b, BLU-113/116/117	MK-82/BLU-111, MK-83, Improved 1000-1b, BLU-113//116/117 /	BLU-109, MK-84, MK-83 (F-22)	BLU-109, MK-84, MK-83	BLU-109, MK-84, MK-83	
Aircraft Compatibility						
Bomber	B-1B, B-2	B-1B, B-2 /	B-52H	Yes	B-52H	
Fighter Attack	F-16C/D, F/A-18E/F, F-117A, F-15E, F-14A/B/D, P-3, S-3, JSF, A-10	F-16C/D, F/A-18E// F, F-117A, F-15E, F-14A/B// D, P-3, / (MK-83) S-3, / JSF, / A-10 /	F/A-18C/ D, F-22 (MK-83), AV-8B & F/A-18C/ D (MK-83)	Yes	FA-18C/ D, F-22A, AV-8B	
Mission Reliability	.90	.90	/ .90	.947	.90	
JDAM PIP Accuracy (CEP) (Meters)	3	N/A	/ N/A	N/A	N/A	(Ch-1)
JDAM PIP Weather Capability	Adverse	N/A	/ N/A	N/A	N/A	(Ch-1)
JDAM PIP Warhead Compatibility	MK-82, MK-83	N/A	/ N/A	N/A	N/A	(Ch-1)
Interoperability	N/A	Satisfy 100% of critical IERS	/ Satisfy 100% of critical IERS	Satisfied	Satisfied	(Ch-2)

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10a. Performance Characteristics (Cont'd):

Notes:

(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, F/A-18C/D, AV-8B and B-52H were successfully demonstrated during actual fit test in EMD Phase 1. F/A-22A physical compatibility was also demonstrated using computerized physical fit analysis during this phase. During EMD Phase II, we successfully completed full JDAM integration on: B-1B, B-2, F/A-18C/D, and B-52H. Post EMD, follow-on integration has been completed on: F-14B, F-14D, F-15E, F-16C/D, and F/A-18E/F. Follow-on integration efforts are planned for: F-35, A-10, and UCAV. The A-6E aircraft was deleted by Chief of Naval Operations (CNO) Letter, Serial Number N880D5/4UG59112, dated 2 February 1994. The F-111F has been deleted (Reference AF/XOR Message 260111Z January 1994).

(6) F-22 compatibility will be limited to internal carriage of the MK-83/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.

ACRONYMS: CEP - Circular Error Probable  
DEG - Degree  
GPS - Global Positioning System  
MSL - Mean Sea Level  
PIP - Product Improvement Program  
TBD - To Be Determined

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --

(Ch-1) The following performance milestones were deleted in the October 2002 APB update to better reflect program activities:  
JDAM PIP Accuracy, JDAM PIP Weather, and JDAM PIP Warhead Compatibility.

(Ch-2) Interoperability was added as a performance characteristic since the last SAR. JDAM has met the JROC interoperability criteria.

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)	490.3	575.1	571.6
Procurement	1810.0	4307.5	4463.4
Hardware	(1555.7)		(4091.7)
Tooling & Test Equipmen			(0.0)
System Engineering & Pr			(0.0)
Containers			(0.0)
Warranty			(0.0)
Engineering Change Orde	(37.9)		(90.1)
Lot Acceptance Test	(3.3)		(4.0)
Nonrecurring Flyaway	(76.5)		(115.4)
Total Flyaway	(1673.4)		(4301.2)
Warhead	(34.0)		(26.0)
Product Support Cost	(68.6)		(73.9)
Total Other Wpn Sys	(102.6)		(99.9)
Peculiar Support	(34.0)		(62.3)
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 1995 Base-Year \$	<u>2300.3</u>	<u>4882.6</u>	<u>5035.0</u>
Escalation	306.4	748.2	720.4
Development (RDT&E)	(27.0)	(29.2)	(27.0)
Procurement	(279.4)	(719.0)	(693.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2606.7</u>	<u>5630.8</u>	<u>5755.4</u>

This baseline does not include AF and Navy funding for the Joint Programmable Fuze (JPF). Navy Procurement funding includes BLU-109 warhead costs.

Air Force RDT&E funding includes the Product Improvement Program (PIP). Navy RDT&E dollars exclude PIP and Hornet Autonomous Real Time Targeting (HART) funds. Air Force procurement funding does not include PIP funding.

Defense Emergency Response Funds (DERF) received in FY2001 and FY2002 are not included.

**11b. Total Program Cost and Quantity (Cont'd):**

b. Quantity --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	630	778	778
Procurement	<u>88435</u>	<u>221091</u>	<u>226177</u>
Total	<u>89065</u>	<u>221869</u>	<u>226955</u>

Note: Excludes 81 RDT&E prototypes from the SAR Baseline and 81 from the Current Estimate that are not considered fully configured.

NOTE: The Low Rate Initial Production (LRIP) quantities approved in the Acquisition Decision Memorandum (ADM) at Milestone II were 425 units 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 were 937 for Lot 1. A second LRIP lot (Lot 2) was approved in December 1997 for 2,202 tailkits. In December 1998, LRIP Lot 2A was approved. Lot 2A quantities were 2,527 tailkits. On June 22, 1999, the AFPEO/WP provided authorization to procure additional quantities to fill the production gap created from acceleration of Lots 1, 2 and 2A. Lot 3 was awarded on June 24, 1999, for 1,308 tailkits and Lot 3A was awarded on November 9, 1999, for 861 tailkits. On December 2, 1999, written notification was sent to the four Congressional Defense committees notifying them of the Air Force's intent to exceed the ten percent limit on LRIP with award of Lot 4. This LRIP was required to replenish weapons inventories depleted during Operation Allied Force. During the week of February 14, 2000, the plan was briefed to professional staff members of the House Armed Services Committee, the Defense Subcommittee of the House Appropriations Committee, and the Defense Subcommittee of the Senate Appropriations Committee. All of the staff members concurred with the plan to award LRIP Lot 4 as briefed. Additionally, the professional staff of the Senate Armed Services Committee reviewed and concurred with the Air Force request. Lot 4 was awarded on February 24, 2000, for 8,163 tailkits.

Quantities procured with Defense Emergency Response Funds received in FY2001 and FY2002 are not included.

c. Foreign Military Sales --

Israel (IS-D-YEQ) Case signed February 9, 2000, \$35.2M  
Purpose: Procure 432 JDAMs and support

Israel (IS-D-YET) Case signed September 9, 2002, \$25M  
Purpose: Procure 1000 JDAMs

Kingdom of Oman (MU-D-YEI) Case signed May 2, 2002, \$7.9M.  
Purpose: Procure 80 JDAMs and support

**11c. Total Program Cost and Quantity (Cont'd):**

Republic of Korea (KS-D-SIR) Case signed June 12, 2002, \$2.1M.  
Purpose: Procure 14 JDAMs and support

Denmark (DE-D-QBF) Case signed June 28, 2002, \$1.7M.  
Purpose: Integration support

Denmark (DE-D-YME) Case signed December 20, 2002, \$14.2M  
Purpose: Procure 245 JDAMs and support.

United Arab Emirates (AE-D-SAA) Case signed August 8, 2000, \$2.5M.  
Purpose: Procure JDAM test assets and support

United Arab Emirates (AE-D-YAB) Case signed August 20, 2002, \$6.9M.  
Purpose: Procure 200 JDAMs and support

d. Nuclear Costs --  
None.

**12. Unit Cost Summary:**

	UCR Baseline (Oct 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	4882.6	5035.0	
(2) Quantity	221869	226955	
(3) Unit Cost	0.022	0.022	0.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	4307.5	4463.4	
(2) Quantity	221091	226177	
(3) Unit Cost	0.019	0.020	+5.26

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	517.3	2089.4	-	2606.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+222.8	+1036.5	-	+1259.3
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	+222.8	+1035.9	-	+1258.7
Current Changes:				
Economic	+3.5	-21.2	-	-17.7
Quantity	-	+2022.5	-	+2022.5
Schedule	-	-90.5	-	-90.5
Engineering	-	-	-	-
Estimating	-145.0	+88.8	-	-56.2
Other	-	-	-	-
Support	-	+31.9	-	+31.9
Subtotal	-141.5	+2031.5	-	+1890.0
Total Changes	+81.3	+3067.4	-	+3148.7
Current Estimate	598.6	5156.8	-	5755.4

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	490.3	1810.0	-	2300.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+203.7	+887.2	-	+1090.9
Other	-	-	-	-
Support	-	-0.5	-	-0.5
Subtotal	+203.7	+886.7	-	+1090.4
Current Changes:				
Quantity	-	+1674.2	-	+1674.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-122.4	+66.4	-	-56.0
Other	-	-	-	-
Support	-	+26.1	-	+26.1
Subtotal	-122.4	+1766.7	-	+1644.3
Total Changes	+81.3	+2653.4	-	+2734.7
Current Estimate	571.6	4463.4	-	5035.0

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	+3.5
	Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+2.1
	Funding for PIP and HART deleted from APB (Navy) (Estimating)	-122.9	-145.8
	Funding decreased in FY02-FY04 years. (Estimating)	-1.3	-1.3
	RDT&E Subtotal	<u>-122.4</u>	<u>-141.5</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-21.2
	Total Quantity Variance associated with an increase of 30,874 kits from 43,292 to 74,166 kits(Navy) (Quantity)	+572.0	+691.0
	Total Quantity Variance associated with an increase of 59,332 kits from 92,679 to 152,011 kits(AF) (Quantity)	+1102.2	+1331.5
	Acceleration of annual procurement buy profile. (Navy) (Schedule)	0.0	-51.4
	Acceleration of annual procurement buy profile (AF) (Schedule)	0.0	-39.1
	Adjustment for Current and Prior Inflation. (Estimating)	+11.7	+13.1
	Additional non-recurring for two year extension to production profile (Navy) (QR) (Estimating)	+28.6	+36.7
	Additional non-recurring for two year extension to production profile (AF) (QR) (Estimating)	+26.1	+39.0
	Change in Peculiar Support (Navy) (Support)	+0.1	+0.1
	Change in Warhead costs (Navy) (Support)	+0.1	+0.1
	Additional Product Support Cost for two year extension to production profile (Navy) (QR) (Support)	+1.4	+1.8
	Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
	Additional Peculiar Support for two year extension to production profile (AF) (QR) (Support)	+14.2	+17.4
	Additional Product Support Cost for two year extension to production profile (AF) (QR) (Support)	+9.9	+12.1
	Procurement Subtotal	<u>+1766.7</u>	<u>+2031.5</u>

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

QR = Quantity 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	
0.038	-0.002	-0.005	+0.002	+0.001	-0.005	--	--	-0.009	0.029

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	
0.029	--	-0.009	--	--	+0.005	--	--	-0.004	0.025

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	
0.033	-0.002	-0.003	+0.002	--	-0.006	--	--	-0.009	0.024

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	
0.024	--	-0.006	--	--	+0.005	--	--	-0.001	0.023

(U) NOTE: SAR Planning Estimate (PE) total cost and total quantity only reflect RDT&E values.

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	OCT 1993	OCT 1993	OCT 1993	OCT 1993
Milestone II	OCT 1995	SEP 1995	SEP 1995	SEP 1995
Milestone III	JUL 1999	APR 1998	APR 1998	MAR 2001
IOC	SEP 1999	SEP 1999	SEP 1999	FEB 2001
Total Cost	681.5	3392.3	2606.7	5755.4
Total Quantity	378	88126	89065	226955
Prog Acq Unit Cost	1.8	0.0	0.0	0.0

(U) NOTE: SAR Planning Estimate (PE) total cost and total quantity only reflect RDT&E values.

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
JDAM Lots 5 & 6:  
 Boeing, St. Louis, MO  
 F08635-01-C-0027, FFP  
 Award: March 29, 2001  
 Definitized: N/A

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$235.6	N/A	12204

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1266.5	N/A	55888	\$1266.5	\$1266.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

Includes additional quantities procured with Defense Emergency Response Funds (DERF). Contract also includes acceleration and facilitization costs in support of Operation Enduring Freedom.

Previously reported contracts the Mk-82 Development Contract, F08626-00-C-0101, and the Lot 4 Production contract, F08635-00-C-0032, are over 90 percent complete and will no longer be reported.

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> (FY93-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-09)	<u>Total</u>
RDT&E	561.3	35.4	1.2	0.7	598.6
Procurement	2033.4	689.8	775.4	1658.2	5156.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
<b>Total</b>	<b>2594.7</b>	<b>725.2</b>	<b>776.6</b>	<b>1658.9</b>	<b>5755.4</b>

b. Annual Summary -- JDAM

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1995 Dollars Nonrec</u>	<u>Flyaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1993				23.7	23.2
1994				7.8	7.8
1995				22.7	23.0
1996				24.6	25.4
1997				21.1	22.1
1998				11.0	11.6
1999				5.7	6.1
2000				6.7	7.2
2001				21.0	23.0
2002				30.2	33.4
2003				18.2	20.4
2004				1.1	1.3
2005				1.0	1.2
2006				0.6	0.7
<b>Subtotal</b>	<b>114</b>			<b>195.4</b>	<b>206.4</b>

Appropriation: 3600 - Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1995 Dollars Nonrec</u>	<u>Flyaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1993				21.9	21.5
1994				62.1	61.9
1995				62.0	62.9
1996				74.0	76.4
1997				31.2	32.7
1998				20.0	21.1
1999				26.9	28.7

16b. Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				10.5	11.3
2001				9.8	10.7
2002				13.3	14.7
2003				14.5	16.2
2004				30.0	34.1
Subtotal	664			376.2	392.2

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	547	7.5	9.4	19.7	21.0
1999	745	7.0	13.5	33.1	35.8
2000	916	2.8	17.7	32.1	35.0
2001	2325	6.1	45.5	59.5	65.6
2002	14551	7.4	262.0	270.4	301.8
2003	12280	11.3	218.7	231.4	261.7
2004	12326	9.3	217.7	228.1	262.1
2005	11014	9.0	205.9	216.0	252.1
2006	5380	6.6	101.7	109.5	130.0
2007	5166	5.8	99.9	106.3	128.4
2008	4536	6.7	89.3	96.7	118.9
2009	4380	6.5	87.9	95.0	119.0
Subtotal	74166	86.0	1369.2	1497.8	1731.4

Navy Procurement funding is actually provided under Appropriation 1508 - Procurement of Ammunition, Navy/Marine Corps, but software limitations preclude the SAR from correctly reflecting this fact.

Defense Emergency Response Funds (DERF) are not included in the funds or quantities listed. In support of Operation Enduring Freedom, the Navy received a total of \$162.5M in DERF funds for procurement of 7,890 JDAM tailkits.

Appropriation: 3011 - Procurement of Ammunition, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	937	0.7	16.3	21.8	23.0
1998	1828	0.8	31.6	36.7	39.2

16b. Program Funding Summary (Cont'd):

Appropriation: 3011 - Procurement of Ammunition, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	3778	1.5	67.3	73.6	79.5
2000	8725	1.3	164.9	173.3	189.2
2001	8904	2.0	172.4	184.7	203.5
2002	14392	2.5	256.4	269.7	301.0
2003	22873	4.0	406.7	421.8	477.1
2004	20244	3.5	357.9	372.2	427.7
2005	23137	4.2	432.9	448.4	523.3
2006	22039	4.1	417.4	433.0	514.0
2007	15389	2.9	298.0	312.3	377.3
2008	4993	1.0	98.6	110.4	135.8
2009	4772	0.9	96.2	107.7	134.8
Subtotal	152011	29.4	2816.6	2965.6	3425.4

Defense Emergency Response Funds (DERF) are not included in the funds or quantities listed. In support of Operation Enduring Freedom, the AF received a total of \$253.3M in DERF funds for delivery acceleration, facilitation for a production capacity of 3000 tailkits per month, and procurement of 6,348 JDAM tailkits.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	74280	86.0	1369.2	1693.2	1937.8
USAF	152675	29.4	2816.6	3341.8	3817.6
Grand Total	226955	115.4	4185.8	5035.0	5755.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	778	742
Procurement	226177	32079

Percent Total Program Quantities Delivered: 14.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1217.9

Percent Total Program Expended: 21.2%

Deliveries are as of December 31, 2002. Quantities procured with Defense Emergency Response Funds are not included in this total. Contractually, 620

**17. Delivery/Expenditure Information (Cont'd):**

baseline RDT&E Guided Test Vehicles (GTVs) have been delivered in addition to 122 out of 158 guided test vehicles (GTVs) for the MK-82 program.

Expenditures reflect program office records as of December 31, 2002.

**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 reflect the Milestone III Defense Acquisition Board (DAB) program position of March 2001.

The JDAM O&S cost estimate was based on the Joint Munitions O&S (JMOS) Model. This model estimated Air Force and Navy O&S costs for the JDAM tailkits only. Assumptions used in the O&S cost estimate are as follows: The total JDAM inventory used was 87,496 tailkits. The warranty assumed was a 20 year extended repair warranty to cover all tailkit repairs except for government induced failures. In the model, one half of a percent of the total JDAM failures were assumed to be induced out-of-warranty failures. The Milestone III estimate included calculations for 35 years. This was an increase of five years from the previous Milestone estimate. The model also included new assumptions to calculate unwarranted failures for 15 years after the warranty period ended and to include demilitarization costs.

There is no antecedent system for JDAM.

Note: "Other" costs are demilitarization costs.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	JDAM Avg Annual Costs for 87,496 JDAM units	No Antecedent System
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	1.9	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	2.0	N/A
Sustaining Support	0.6	N/A
Indirect Costs	0.3	N/A
Mission Personnel	0.4	N/A
Sustaining Engineering	0.0	N/A
System & Inventory Manag	0.0	N/A
Contractor Support	0.0	N/A
AFMSS	0.0	N/A
Other	1.5	N/A
Support Costs	0.0	N/A
Consumable Material	0.0	N/A

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JDAM, December 31, 2002

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	JDAM Avg Annual Costs for 87,496 JDAM units	No Antecedent System
TM/FTS	0.0	N/A
Range Support	0.0	N/A
Technical Data Managemen	0.0	N/A
Transportation	0.0	N/A
Non-Warranted Repair Cos	0.0	N/A
Total	6.7	N/A

Total O&S Cost	JDAM	No Antecedent
BY\$ (In Millions)	232.6	N/A
TY\$ (In Millions)	421.3	N/A

Report Creation Date: 03/20/2003 8:08:56 AM

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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, 2002

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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:  
Direct Reporting Program Manager AAA COL CLAYTON F. NANS  
DEPT. OF THE NAVY U.S. MARINE CORPS Assigned: June 28, 2001  
991 ANNAPOLIS WAY DSN N/A; COMM (703) 492-3300  
WOODBRIDGE, VA 22191-1215 nansc@aaav.usmc.mil
4. Program Elements/Procurement Line Items:  
RDT&E:  
PE 0603611M Project B0020  
PROCUREMENT:  
APPN 1109 ICN 202200 (Navy)  
MILCON:  
PE 0206496M

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PENTAGON  
WASHINGTON, DC

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03-C-0485

**5. References:**

SAR Baseline (Development Estimate):

Development Estimate Acquisition Program Baseline dated December 8, 2000.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 21, 2003.

**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 as part of the Navy and Marine Corps concepts within the Expeditionary Maneuver Warfare capstone. The AAAV 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 is a self deploying, high water-speed, amphibious, armored, tracked vehicle. The AAAV provides essential command, control, communications, and intelligence (C4I) functions for embarked personnel and AAAV units. The AAAV C4I systems are compatible with other Marine Corps systems as well as with Army, Air Force, Navy, and NATO C4I systems. Along with the Landing Craft Air Cushion (LCAC) and the MV-22 Osprey, the AAAV will provide Marine Corps Warfighters with the tactical mobility required to spearhead the concepts within the Expeditionary Maneuver Warfare capstone.

The AAAV is the Marine Corps' number one priority ground system acquisition program as well as the only ACAT-1D program managed by the Marine Corps. Acquisition of the AAAV is critical to the Marine Corps' transformation effort. AAAV transitioned to the SDD phase in November 2000 by successfully completing Milestone II. Low-Rate Initial Production (LRIP) Milestone C is scheduled for September 2005. Full Rate Production and Deployment Phase is scheduled for 2009 through 2018. A total of 1,013 AAAVs will be produced with Initial Operational Capability (IOC) scheduled for 2008 and Full Operational Capability (FOC) scheduled for 2018.

**7. Executive Summary:**

The Direct Reporting Program Manager, Advanced Amphibious Assault (DRPM AAA) held a series of meetings with USMC, Navy and OSD leadership in the 1st quarter of FY03 which have resulted in an agreement on a proposed AAAV program restructuring. The restructured program will provide additional developmental testing and more robust operational testing to support the Milestone C Low Rate Initial Production (LRIP) decision. This program restructuring has moved the Milestone C decision to September 2005, Initial Operational Capability to September 2008, and the start of Full Rate Production to November 2008. An update of the program documentation, to include the Acquisition Program

**7. Executive Summary (Cont'd):**

Baseline, Acquisition Master Plan and the AAAP Test and Evaluation Master Plan, is in process.

Testing of the three first-generation, Program Definition, Risk Reduction (PDRR) AAAP prototypes continued throughout FY02. Firepower Developmental Testing (DT) was performed during 2nd - 4th quarters FY02 and demonstrated that the prototype design met the ORD requirement for accuracy. In addition, the Firepower ECA was conducted in 3rd quarter FY02.

Two PDRR prototypes were prepared for open ocean and surf zone testing at Camp Pendleton, CA, in the 4th quarter FY02. AAAP(P) operations with the amphibious ship USS Anchorage (LSD 36) were conducted in September 2002. The AAAP prototype successfully executed static and underway launches and recoveries from the ship and demonstrated successful maneuvering within the well deck. Hydrodynamic performance characterization of the prototype in high water speed and transition modes is ongoing and is expected to continue through 2nd quarter FY03.

Production of the second-generation System Development and Demonstration (SDD) prototype vehicles is ongoing. The first SDD prototype completed assembly at the Worth Avenue Technology Annex (WATA) in Dale City, VA in 1st quarter FY03. Functional integration and test of this vehicle is ongoing. Four additional prototype hulls, including the first AAAP(C) hull, are in assembly at WATA. Three additional prototype hulls are undergoing fabrication and machining at the Lima Army Tank Plant and will be shipped to WATA for final assembly during FY03. The AAAP SDD prototypes are being built using production representative manufacturing processes and actual or prototype production tooling.

**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

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 --

Item	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I DAB Review	MAR 1995	MAR 1995	MAR 1995
Dem/Val Contract Award	JUN 1996	JUN 1996	JUN 1996
AAAV(P) Prototype Delivery	JAN 2000	JAN 2000	JAN 2000
Development Test (DTI)			
Start	JAN 2000	JAN 2000	JAN 2000
Complete	FEB 2001	FEB 2001	FEB 2001
Operational Test (OTI/EOA)			
Start	FEB 2001	FEB 2001	AUG 2001
Complete	MAY 2001	NOV 2002	DEC 2002 (Ch-1)
Milestone II DAB Review	DEC 2000	DEC 2000	DEC 2000
Award of EMD Contract	APR 2001	APR 2001	APR 2001
EMD Prototype Deliveries			
Start	JUN 2003	JUN 2003	JUN 2003
Complete	JUN 2004	JUN 2005	JUN 2005 (Ch-2)
Developmental Testing II			
Start	JUN 2003	JUN 2003	JUN 2003
Complete	AUG 2005	JUL 2008	JUL 2008 (Ch-2)
Milestone C QA			
Start	N/A	DEC 2004	DEC 2004 (Ch-3)
Complete	N/A	APR 2005	APR 2005 (Ch-3)
Milestone C	N/A	SEP 2005	SEP 2005 (Ch-3)
Award of LRIP	NOV 2003	N/A	NOV 2005 (Ch-2)
LRIP Vehicle #1 Delivery	MAY 2005	MAY 2007	MAY 2007 (Ch-2)
IOT&E			
Start	AUG 2005	AUG 2007	AUG 2007 (Ch-2)
Complete	MAR 2006	APR 2008	APR 2008 (Ch-2)
Live Fire (FUSL)			
Start	MAY 2004	NOV 2005	NOV 2005 (Ch-2)
Complete	DEC 2005	SEP 2007	SEP 2007 (Ch-2)
Full Rate Production Decision	AUG 2006	AUG 2008	AUG 2008 (Ch-2)
IOC	SEP 2006	SEP 2008	SEP 2008 (Ch-2)
Full Rate Production Deliveries Start	MAY 2008	MAY 2010	MAY 2010 (Ch-2)
Service Depot Support	FEB 2009	JUL 2012	JUL 2012 (Ch-2)
Organic Support Capability	FEB 2009	JUL 2012	JUL 2012 (Ch-2)
FOC	MAR 2016	APR 2018	APR 2018 (Ch-2)
Hot Weather Assessment			
Start	N/A	JUL 2005	JUL 2005 (Ch-3)
Complete	N/A	AUG 2005	AUG 2005 (Ch-3)
Cold Weather Assessment			

9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (AFB)	Current Estimate	
Start	N/A	FEB 2006	FEB 2006	(Ch-3)
Complete	N/A	MAR 2006	MAR 2006	(Ch-3)
Pre-LRIP #1 OA	N/A	N/A		
Start	FEB 2001	N/A	N/A	(Ch-4)
Complete	JUN 2003	N/A	N/A	(Ch-4)
EMD Prototype OA				
Start	N/A	N/A	N/A	(Ch-4)
Complete	N/A	N/A	N/A	(Ch-4)
Milestone III DAB Review	AUG 2006	N/A	N/A	(Ch-4)

Acronyms:

DAB	Defense Acquisition Board
Dem/Val	Demonstration/Validation
EMD	Engineering and Manufacturing Development
EOA	Early Operational Assessment
FOC	Full Operational Capability
FUSL	Full-up System Live Fire
IOC	Initial Operational Capability
IOT&E	Initial Operational Test & Evaluation
LFT&E	Live Fire Test & Evaluation
LRIP	Low Rate Initial Production
OA	Operational Assessment

b. Current Change Explanations --

(Ch-1) The Operational Test complete date is changed from NOV 2002 to DEC 2002 to reflect the completion of the amphibious testing phase of the FOA.

(Ch-2) The dates for the events listed below are the result of the program restructure schedule which adds a year of development and operational testing prior to the Low-Rate Initial Production decision:

	From	To
EMD Prototype Delivery Complete	JUN 2004	JUN 2005
Development Test II Complete	AUG 2006	JUL 2008
Award of LRIP	NOV 2004	NOV 2005
LRIP Vehicle #1 Delivery	MAY 2006	MAY 2007
IOT&E Start	AUG 2006	AUG 2007
IOT&E Complete	MAR 2007	APR 2008
Live Fire (FUSL) Start	MAY 2005	NOV 2005
Live Fire (FUSL) Complete	DEC 2006	SEP 2007
Full Rate Production Decision	AUG 2007	AUG 2008
IOC	SEP 2007	SEP 2008
Full Rate Prod. Deliveries Start	MAY 2009	MAY 2010
Service Depot Support	FEB 2010	JUL 2012
Organic Support Capability	FEB 2010	JUL 2012
FCC	MAR 2017	APR 2018

9b. Schedule (Cont'd):

(Ch-3) The following milestones were added in the Nov 2002 Acquisition Program Baseline (APB). The change is from the APB date to the Current Estimate date for the program restructure schedule.

	From	To
Milestone C OA Start	MAR 2004	DEC 2004
Milestone C OA Complete	APR 2004	APR 2005
Milestone C	SEP 2004	SEP 2005
Hot Weather Assess Start	JUL 2004	JUL 2005
Hot Weather Assess Complete	AUG 2004	AUG 2005
Cold Weather Assess Start	FEB 2005	FEB 2006
Cold Weather Assess Complete	APR 2005	MAR 2006

(Ch-4) The following milestones were deleted in the Nov 2002 APB.

Pre-LRIP #1 OA Start and Complete (replaced by Milestone C OA)  
 EMD Prototype OA Start and Complete (included in MS C OA)  
 Milestone III DAB Review (replaced by Full Rate Production Decision)

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
High Water Speed (kts) (SS-3, 36 in SWH)	25	25 / 20	30	24
Forward Speed on a Hard Surface Road (kph)	72	72 / 69	72	72
Armor Protection Against (mm/m)	30/1000	30/1000 / 14.5/300	14.5/300	14.5/300
Armor Protection Artillery Fragment (mm/m)	N/A	155/15 / 155/15	TBD	155/15 (Ch-1)
Carry Capacity (AAAV(P))(Marines)	18	18 / 17	17	17
Firepower (AAAV(P)) (m) (MER)	2000	2000 / 1500	2000	2000
Reliability (hrs) MTBOMF	95	95 / 70	TBD	70
Interoperability Objective-100% of Top Level IERs Threshold-100% of Critical Top Level IERs	100%	100% / 100%	TBD	100%

Acronyms:

10a. Performance Characteristics (Cont'd):

IER	Information Exchange Requirements
m	Meters
MER	Maximum Effective Range
MTBOMF	Mean Time Between Operational Mission Failure
SWH	Significant Wave Height

Notes:

The Performance Characteristics reflect Joint Requirements Oversight Council (JROC) approved key performance parameters, dated 27 February 1995.

Demonstrated Performance

-High Water Speed: The AAUV demonstrated an average speed of 28 knots in calm seas in the combat loaded weight condition in Nov 2001. An average speed of 33 knots was achieved in calm seas in the lightly loaded weight condition in Sep 2001. An average sustained speed of 30 knots was achieved in Sea State 2 in the lightly loaded condition in Oct 2000. Speeds with full combat loads in sea state 3 will be demonstrated in future testing.

-Forward Speed on a Hard Surface Road: The AAUV achieved an average speed of 73.6 kph (45 mph) in Oct 2000.

-Armor Protection Against: A full scale AAUV ballistic hull and turret underwent live fire testing in 2001. Results from the live fire testing correlate to AAUV armor validation data, which statistically demonstrated the required ballistic performance.

-Firepower (AAUV(P)): The AAUV demonstrated performance in excess of the objective range at Eglin, AFB in Jul 2001. The AAUV weapon station, installed on a PB 777 Navy Test Boat, hit targets at ranges in excess of 2000 meters.

b. Current Change Explanations --

(Ch-1) Armor Protection Artillery Fragment is a Key Performance Parameter added to correct an error that inadvertently excluded it from the acquisition program baseline previously.

Note:

Interoperability: PM's current estimate for the Threshold Interoperability is 100% of the critical top level IERS.

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	1199.9	1690.3	1690.3
Procurement	5381.4	6334.8	6334.8
Rollaway	(4959.1)		(5774.6)
Nonrecurring Rollaway			(130.2)
Total Rollaway	(4959.1)		(5904.8)
Other Weapon System	(252.4)		(179.3)
Peculiar Support	(10.4)		(18.5)
Initial Spares	(159.5)		(232.2)
Construction (MILCON)	69.1	64.8	63.9
Acquisition O&M	0.0	0.0	0.0
Total FY 1993 Base-Year \$	<u>6650.4</u>	<u>8089.9</u>	<u>8089.0</u>
 Escalation	 2074.8	 2536.2	 2533.8
Development (RDT&E)	(179.1)	(278.7)	(278.7)
Procurement	(1879.8)	(2237.3)	(2237.3)
Construction (MILCON)	(15.9)	(20.2)	(17.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>8725.2</u>	<u>10626.1</u>	<u>10622.8</u>
 b. Quantity --			
Development (RDT&E)	12	12	12
Procurement	1013	1013	1013
Total	<u>1025</u>	<u>1025</u>	<u>1025</u>

The Acquisition Decision Memorandum of 7 December 2000 contains approval for up to 101 Low-Rate Initial Production vehicles (10% of the approved acquisition objective).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	8089.9	8089.0	
(2) Quantity	1025	1025	
(3) Unit Cost	7.893	7.892	-0.01
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1993 BY\$)	6334.8	6334.8	
(2) Quantity	1013	1013	
(3) Unit Cost	6.254	6.254	0.00

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1379.0	7261.2	85.0	8725.2
Previous Changes:				
Economic	-3.0	-39.2	+0.3	-41.9
Quantity	-	-	-	-
Schedule	-1.3	+127.0	+4.4	+130.1
Engineering	-	+512.6	-	+512.6
Estimating	+244.9	+45.8	+1.8	-292.5
Other	-	-	-	-
Support	-	+21.8	-	+21.8
Subtotal	+240.6	+668.0	+6.5	+915.1
Current Changes:				
Economic	-18.9	-241.3	-1.7	-261.9
Quantity	-	-	-	-
Schedule	+0.2	+158.1	+5.8	+164.1
Engineering	-	+116.1	-	+116.1
Estimating	+368.1	+598.4	-13.9	+952.6
Other	-	-	-	-
Support	-	+11.6	-	+11.6
Subtotal	+349.4	+642.9	-9.8	+982.5
Total Changes	+590.0	+1310.9	-3.3	+1897.6
Current Estimate	1969.0	8572.1	81.7	10622.8

13a. Cost Variance Analysis (Cont'd):

Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1199.9	5381.4	69.1	6650.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-1.5	+0.9	-	-0.6
Engineering	-	+373.8	-	+373.8
Estimating	+191.2	+33.8	+2.2	+227.2
Other	-	-	-	-
Support	-	+8.6	-	+8.6
Subtotal	+189.7	+417.1	+2.2	+609.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-0.2	-	+2.7	+2.5
Engineering	-	+84.8	-	+84.8
Estimating	+300.9	+152.4	-10.1	+443.2
Other	-	-	-	-
Support	-	-0.9	-	-0.9
Subtotal	+300.7	+236.3	-7.4	+529.6
Total Changes	+490.4	+653.4	-5.2	+1138.6
Current Estimate	1690.3	6034.8	63.9	8089.0

b. Current Change Explanations --

(1)	RDT&E		(Dollars in Millions)	
	Base-Year	Then-Year		
	Revised escalation indices. (Economic)	N/A	-18.9	
	Full-Up System Live Fire (FUSL) and Initial Operational Test & Evaluation on program restructure schedule (Schedule)	-0.2	+0.2	
	Adjustment for Current and Prior Inflation. (Estimating)	-6.8	+7.9	
	Program Adjustments (Small Business Innovation Research, Marks) (Estimating)	-10.0	-11.9	
	System Development and Demonstration Contract additional estimates for 1 year program restructure (Estimating)	+265.8	+324.6	
	Training devices to be contractor effort (Estimating)	+4.4	+5.6	
	Increased testing costs (Developmental Test/Operational Test, FUSL, Force on Force) (Estimating)	+22.1	+27.1	
	Program Office Operations increase for restructure schedule (Estimating)	+12.4	+15.6	
	Revised program estimates (Estimating)	-0.6	-0.8	
	RDT&E Subtotal	+300.7	+349.4	

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-241.3
	Annual procurement buy profile moves 1 year later for the program restructure (Schedule)	0.0	+158.1
	Survivability materials and installation have been added to the vehicle (Engineering)	+84.8	+116.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.3	+0.3
	Live Fire Vehicle budget increase (compensate for loss of long lead dollars) (Estimating)	+1.6	+1.9
	Special Tooling and Special Test Equipment revised estimate (Estimating)	+42.9	+51.7
	Advance Procurement net changes for program restructure schedule (Estimating)	-0.1	0.0
	Revised Systems Engineering/Program Management estimate (Estimating)	+46.6	+62.8
	Mobility Systems (suspension, engine, drive train) revised estimates (Estimating)	+425.0	+573.2
	Hull Systems (hull structure, armor, appendages) revised estimates (Estimating)	+69.9	+89.2
	Weapons Station (turret, fire control, 30 mm gun) revised estimates (Estimating)	-136.1	-184.4
	Other revised estimates (Estimating)	+2.3	+3.7
	Change in Initial Spares (Support)	-4.1	+1.7
	Change in Peculiar Support (Support)	-0.3	+0.2
	Change in Other Weapon System costs (Training devices to be contractor effort) (Support)	+3.5	+9.7
	Procurement Subtotal	<u>+536.3</u>	<u>+642.9</u>
(3)	<u>MILCON</u>		
	Revised escalation indices. (Economic)	N/A	-2.0
	Economic adjustment for negative program change (Economic)	N/A	+0.3
	Future projects aligned to program restructure schedule (Schedule)	+2.7	+5.8
	Adjustment for Current and Prior Inflation (Estimating)	+0.4	+0.5
	Reduction in estimated project planning and design (P&D) costs (Estimating)	-5.3	-7.3
	Project P-042 (3rd Battalion) reduced in budget database (Estimating)	-5.2	-7.1
	MILCON Subtotal	<u>-7.4</u>	<u>-9.8</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 Cur Est
PAUC Changes									
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.51	-0.296	+0.004	+0.287	+0.613	+1.21	--	+0.033	-1.85	10.36

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									PUC Cur Est
PUC Changes									
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.17	-0.277	--	+0.281	+0.621	+0.636	--	+0.033	+1.29	8.46

c. Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PDE)	
Milestone I	MAR 1995	MAR 1995	N/A	MAR 1995
Milestone II	JAN 2002	DEC 2000	N/A	DEC 2000
Milestone C	OCT 2007	AUG 2006	N/A	SEP 2005
IOC	DEC 2007	SEP 2006	N/A	SEP 2008
Total Cost	934.1	8725.2	N/A	10622.8
Total Quantity	13	1025	N/A	1025
Prog Acq Unit Cost	71.9	8.5	N/A	10.4

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --  
 SDD:  
 GENERAL DYNAMICS, WOODBRIDGE, VA  
 M67854-01-C-0001, CFAF  
 Award: February 14, 2001  
 Definitized: July 3, 2001

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$743.6	N/A	0	\$747.6	\$765.7

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.6	\$-9.3
Cumulative Variances To Date (12/31/02)	\$-4.9	\$-11.5
Net Change	\$-0.3	\$-2.2

Explanation of Change:

The net cumulative cost variance has changed by \$-0.3M. The net cumulative schedule variance has changed by \$-2.2M. These changes are not significant relative to the total contract price.

Contract Comments:

The contract price has increased by \$29.6M due to scope increases for tooling, condition based maintenance, and other miscellaneous studies and tests.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY95-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-18)	<u>Total</u>
RDT&E	1055.5	240.7	237.8	435.0	1969.0
Procurement	17.0	97.9	67.9	8389.3	8572.1
MILCON	29.8	-	-	51.9	81.7
O&M	-	-	-	-	-
Total	1102.3	338.6	305.7	8876.2	10622.8

b. Annual Summary -- AAAV

Appropriation: 1319 - Research, Development, Test - Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1993 Dollars Nonrec</u>	<u>Flyaway FY 1993 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				22.4	23.6
1996				30.0	32.1
1997				51.4	55.7
1998				61.5	67.2
1999				91.0	100.6
2000				98.9	110.9
2001				125.4	142.5
2002				220.3	252.6
2003				273.1	270.3

16b. Program Funding Summary (Cont'd):

Appropriation: 1319 - Research, Development, Test & Eval, Navy

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				204.5	240.7
2005				198.9	237.8
2006				151.7	184.4
2007				132.6	164.0
2008				57.2	72.0
2009				11.4	14.6
Subtotal	12			1690.3	1969.0

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002					
2003	1		13.8	14.5	17.0
2004		82.5		82.5	97.9
2005		47.7		56.3	67.9
2006	18		191.4	203.3	249.4
2007	24		202.9	221.9	277.0
2008	54		400.1	444.6	565.0
2009	90		601.9	664.2	859.2
2010	120		759.5	806.5	1062.1
2011	120		659.6	702.6	941.9
2012	120		635.0	671.6	916.6
2013	120		614.0	649.9	902.9
2014	120		597.7	632.9	895.1
2015	120		585.8	620.4	893.3
2016	106		512.9	543.9	797.2
2017				11.5	17.1
2018				8.2	12.5
Subtotal	1013	130.2	5774.6	6334.8	8572.1

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				1.3	1.5
2003				24.1	28.3
2004					
2005					
2006					

16b. Program Funding Summary (Cont'd):

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				11.0	13.8
2008					
2009					
2010				5.3	7.0
2011				3.0	4.1
2012				3.1	4.3
2013				10.0	14.0
2014				5.6	8.0
2015				0.5	0.7
Subtotal				48.9	81.7
Grand Total	1025	130.2	5774.6	8089.0	10622.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	3	3
Procurement	0	0

Percent Total Program Quantities Delivered: 0.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 764.4

Percent Total Program Expended: 7.2%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The costs for a steady state year of operations and support are divided by the number of equivalent operating vehicles to provide an annual value.

The AAAV maintenance concept is for two levels of maintenance. Therefore Intermediate Maintenance costs are estimated as zero.

The date for this O&S cost estimate is January, 2003.

NOTE: There is no antecedent system.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	AAV Average Annual Cost Per Vehicle	AAV RAM/RS Data not Available
Mission Pay & Allowances	0.1	N/A
Unit Level Consumption	0.1	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.3	N/A
Indirect Costs	0.0	N/A
Total	0.5	N/A

Total O&S Cost	AAV	AAV RAM/RS
BY\$ (In Millions)	8553.6	N/A
TY\$ (In Millions)	17865.4	N/A

Report Creation Date: 03/24/2003 11:27:53 AM

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N-21 SSN 774 (VIRGINIA CLASS)

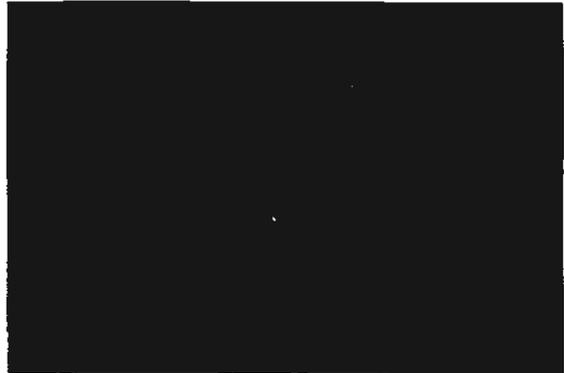
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: VIRGINIA CLASS SUB

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): VIRGINIA CLASS SUBMARINE (SSN 774)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

VIRGINIA SUBMARINE PROGRAM OFFICE	CAPT JOHN HEFFRON
PEO SUBMARINES	Assigned: August 17, 2001
614 SICARD STREET, SE	DSN 326-1294; COMM (202) 781-1294
WASHINGTON NAVY YD, DC 20376-7022	HEFFRONJS@NAVSEA.NAVY.MIL

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0603561N
- (U) PE 0603570N
- (U) PE 0604558N

PROCUREMENT:

- (U) APPN 1611 ICN 201300 (Navy)
- (U) APPN 1611 ICN 201310 (Navy)
- (U) APPN 1810 ICN 276200 (Navy) (Shared)
- (U) APPN 1810 ICN 902099 (Navy)

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AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

03-C-0482

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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 December 30, 2000.

6. (U) Mission and Description:

(U) The VIRGINIA Class (SSN 774) 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 VIRGINIA Class Submarine will satisfy any assigned role well into the Twenty-First Century. Intended to replace the fleet of SSN 688 Class submarines, the VIRGINIA Class 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 VIRGINIA Class Submarine maintains total undersea superiority at an affordable cost.

7. (U) Executive Summary:

(U) The period 2001 - 2002 was marked by significant design and construction progress for the VIRGINIA Class program. The submarine design is essentially complete, has supported all construction events, and has achieved a demonstrated level of quality and cost performance measurably superior to that of other submarine classes. As of December 2002, the lead ship of the class, VIRGINIA (SSN 774) is 80% complete while work on the TEXAS (SSN 775) is 73% complete, based on total shipbuilder contract dollars for labor hours and material. The third and fourth ships, HAWAII (SSN 776) and NORTH CAROLINA (SSN 777) are 36% and 18% complete, respectively.

Construction of all four ships under contract remains on schedule. Virginia achieved Pressure Hull Complete (PHC) on November 15, 2002, a major milestone for the program. With VIRGINIA 80% complete at PHC and over 19 months remaining until the June 2004 contract delivery date, Electric Boat is aggressively pursuing a construction schedule which will allow sea trials and delivery to be accomplished on time or potentially one month early. TEXAS will be delivered at Northrop Grumman Newport News in June 2005, one year after the lead ship.

Construction cost performance on all four ships has deteriorated over the last year and is caused by higher than anticipated labor/overhead costs and material component costs. However, current program funding and phasing, including cost-to-complete funding requirements identified in 2001, are sufficient to

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7. (U) Executive Summary (Cont'd):

support delivery of these ships, assuming the shipbuilders' labor cost performance deteriorates no further. The program office plans a formal contract rebaselining in concert with the integrated baseline review to be conducted following award of the construction contract for the next block of ships. Award of that contract is anticipated by the end of the second quarter or during the third quarter of FY03.

Consistent with the administration's direction to use realistic cost estimates in the budget formulation process, the VIRGINIA Program is using program-specific inflation rates to estimate the future cost of shipbuilder labor, overhead and material. Other components of cost (e.g., government furnished equipment) are still correctly and accurately inflated at OSD-approved rates. The VIRGINIA Class has experienced documented shipbuilder labor, overhead and material escalation rates in the 4.2 to 4.5% range and has used values in this range for estimating future shipbuilder costs. However, the OMB/OSD rate for deescalation is approximately 2%. The consequence of these differences when calculating Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) for the VIRGINIA Class Program is an increase in base-year cost estimates which has created a Nunn-McCurdy unit cost breach. In March 2003, in accordance with Title 10 U.S.C. Section 2433 (Nunn-McCurdy law), the Secretary of the Navy notified Congress that the program's PAUC and APUC had increased 24%. 11% is attributable to the large difference in indices used to calculate escalated then year costs and deescalated base year costs. 13% is due to the other factors listed in paragraph 12.g.

The President's budget includes a request for authority to transition to a multi-year contract in Fiscal Year 2004. This will provide industrial base stability and reduce costs through greater shipyard efficiency and authority to purchase material in economic order quantities. It also has requested an increase in the submarine build rate to two per year in FY 2007. The combination of a multi-year contract with economic order of quantity purchasing of material and increasing the build rate to two submarines per year/cost is the most effective and practical way of continuing the VIRGINIA Class construction program.

The program has submitted an Acquisition Program Baseline (APB) update. It has been approved through the Navy Chain of Command and is now in the office of the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) for final approval. This APB update captures all cost information to date and aligns the Milestone III full rate production decision with the completion of OPEVAL (September 2008).

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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	Yes
Average Procurement Unit Cost	Yes

c. (U) Explanation of Breach:

Summary of Breaches

The program is reporting five Acquisition Program Baseline (APB) breaches: Schedule, Research, Development, Test and Evaluation (RDT&E) costs, Procurement costs, Program Average Unit Cost (PAUC), and Average Procurement Unit Cost (APUC). The program has exceeded the 15% Nunn-McCurdy unit cost breach threshold in both PAUC and APUC.

The schedule breach is a result of Milestone III being revised from October 2007 to September 2008 to account for: a) Expansion of the time period between ship delivery and the start of the Post Shakedown Availability (PSA) from six to twelve months. A lesson learned from the SEAWOLF Program is that a longer shakedown period is needed to accommodate first of a class ship testing and type commander operational requirements. b) Expansion of PSA from six to nine months (to complete special hull treatment).

Growth in RDT&E is attributable to increased funding of requirements for Propulsion Systems, Full Ship Shock Tests (FSST), Logistics, Ship Control, Ship Signature Reduction and Test & Evaluation.

Growth in Procurement funding is attributable to 1.) Cost increases in the first four ships (SSN 774 - SSN 777) as detailed in section 12. 2.) Repricing the remaining 24 ships based on lessons learned from SSN 774-777 construction. 3.) Extension of the build profile to assume a build rate of 2 ships per year beyond FY07 rather than 3 per year. 4.) A significant difference between industry-specific inflation rates used to budget the program and OMB/OSD escalation rates used to calculate PAUC and APUC.

8c. (U) Threshold Breaches (Cont'd):

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0	AUG 1992	AUG 1992	AUG 1992
Milestone I	AUG 1994	AUG 1994	AUG 1994
Milestone II	JUN 1995	JUN 1995	JUN 1995
New Attack Submarine Integrated Product and Process Development Contract Award	OCT 1995	OCT 1995	JAN 1996
Program Review (LRIP)	SEP 1997	SEP 1997	JAN 1997
Organizational Support (by Fast Cruise)	APR 2004	APR 2004	APR 2004
Lead Ship Delivery	JUN 2004	JUN 2004	JUN 2004
LFT&E Shock Tests	OCT 2004	JUN 2006	MAY 2005
Initial Operational Test & Evaluation Start	JUL 2004	JUL 2004	JUL 2004
Complete	OCT 2004	JUN 2007	JUN 2007
IOC (Lead Ship)	OCT 2005	JAN 2006	JUN 2006
Intermediate Support (by IOC)	OCT 2005	JAN 2006	JAN 2006
Milestone III	OCT 2007	OCT 2007	SEP 2008 (Ch-1)
Depot Shipyard Support	AUG 2015	AUG 2015	AUG 2015
Related Programs			
NSSN COMMAND AND CONTROL SYSTEM			
FY95 Open Architecture Demo	OCT 1995	OCT 1995	SEP 1995
Complete			
C&CS Module Start Fabrication	JUN 1999	JUN 1999	JUN 1999
GFE C&CS Delivered to Shipyard	DEC 2000	DEC 2000	DEC 2000
LBTS Integration and Test Complete	APR 2002	APR 2002	APR 2002
C&CS Module delivered to ship	MAY 2002	MAY 2002	MAY 2002
NSSN Reactor Plant			
Reactor Vessel in Yard			
Start Pre-fill Testing			
Power Unit Landed			
Start Alpha Trials			
MK-48 ADCAP Torpedo Modification Program	N/A	N/A	
LRIP			
MS III			
IOC Block IV			

For MI



(U) \*The VIRGINIA Class 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.

LBTS = Land Based Test Site  
C&CS = Command and Control System

9b. (U) Schedule (Cont'd):

b. Current Change Explanations --

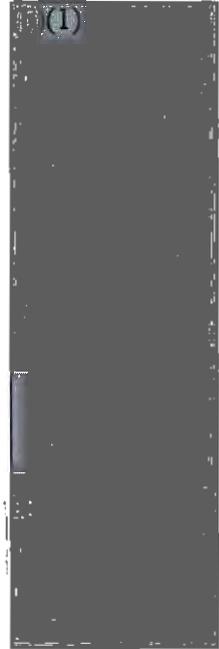
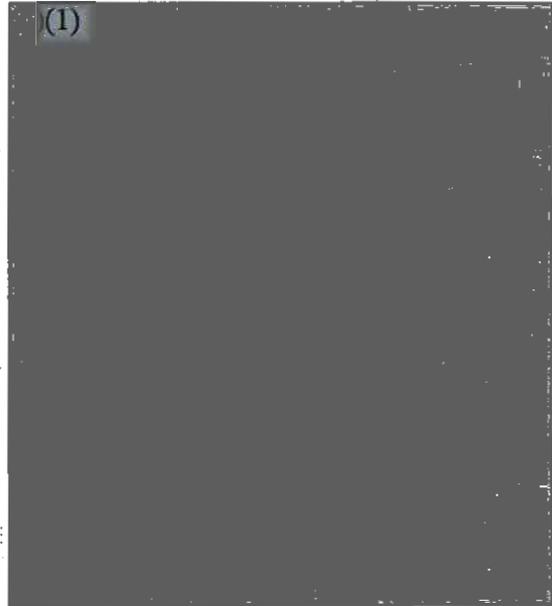
(U) (Ch-1) Milestone III changed from Oct 07 to Sep 08 to align the Milestone III full rate production decision with the completion of OPEVAL (Sep 08).

10. (U) Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
<b>Radiated Noise</b>				
<b>Broadband Noise</b>				
5 and 10 knots (prior to installation of hull coating)	Figure A.1 (Except in Port and casualty	Figure A.1 / Figure A.1 (Except in Port and casualty/ as noted / below)	TBD	Figure A.1
Greater than or equal to 15 knots	Figure A.1 (All horizontal aspects)	Figure A.1 (All horizontal aspects) / Figure A.1 (beam aspect only).	TBD	Figure A.1

(U) Narrowband Noise



(U) Transient Noise

Exceptions:

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
1 Weapons Launch	(1)		TBD	(b)(1)
Active Target Strength (less than or equal to)				
1 High Frequency (15-30 kHz) Stern Aspect (dB)			TBD	
1 Mid Frequency (2-15 kHz) Quarter Aspect (dB)			TBD	
1 Low Frequency, Bow/Stern (400Hz) (dB)			TBD	
Electromagnetic Quieting (less than or equal to)				
1 DC Electric (amp-meter)			TBD	
1 DC Magnetic (gamma-ft <sup>3</sup> ) (million)			TBD	
1 AC Electric (amp-meter)			TBD	
1 Flank Speed (knots) (greater than or equal to)			TBD	
1 Torpedo Launch Rate (Torpedoes in one minute)			TBD	
1 Payload (standard size weapons) (including weapons stored in torpedo tubes and vertical launch tubes)			TBD	
1 Vertical Launch Missiles Cells			TBD	
1 Test Depth (ft)			TBD	

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Endurance (days) (greater than or equal to)	[REDACTED]	[REDACTED]	TBD	[REDACTED]
Operational Availability (%)			TBD	[REDACTED]
Covert Strike Warfare (STW)			TBD	[REDACTED]
Covert Surveillance Intelligence Collection/Surveillance Covert Indication and Warning (ISW), and Electronic Warfare (EW)			TBD	[REDACTED]
Special Warfare (NSW)			TBD	[REDACTED]
Mine Warfare (MIW)			TBD	[REDACTED]
Anti-Submarine Warfare (ASW)			TBD	[REDACTED]
Anti-Surface Ship Warfare (ASUW)			TBD	[REDACTED]
Battle Group Support			TBD	[REDACTED]
90-Day Basic Functions			TBD	[REDACTED]

b. Current Change Explanations -- None

(U) The program will perform trade analyses to determine and obtain the proper balance between cost and performance throughout the life of the program.

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	3405.0	3408.1	4104.6
Procurement	42228.1	48774.1	60642.9
Salvage	(42130.9)		(59827.6)
Other Wpn System Costs	(16.5)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(615.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1995 Base-Year \$	45633.1	52182.2	64747.5
 Escalation	 25447.7	 13324.8	 17044.7
Development (RDT&E)	(409.0)	(299.1)	(322.1)
Procurement	(25038.7)	(13025.7)	(16722.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	71080.8	65507.0	81792.2

(U) The December 2002 SAR Current Estimate (CE) includes \$430.4M of FY04-06 Prior Year Completion funding. These SCN funds are separately authorized under Appropriation Budget Activity #5, Budget Line item 5300.

b. (U) quantity --

Development (RDT&E)	0	0	0
Procurement	<u>30</u>	<u>30</u>	<u>30</u>
Total	30	30	30

(U) Low Rate Initial Production (LRIP) quantity of 14 exceeds 10%, which is normal for shipbuilding programs. The LRIP quantity was approved June 30, 1995 by USD(Acquisition & Technology).

c. (U) Foreign Military Sales --  
None

d. (U) Nuclear Costs --  
\$12,940M (198).

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12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	52182.2	64747.5	
(2) Quantity	30	30	
(3) Unit Cost	1739.407	2158.250	+24.08
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	48774.1	60642.9	
(2) Quantity	30	30	
(3) Unit Cost	1625.803	2021.430	+24.33

(U) Note: The breach thresholds are determined by percent change in base year dollars. PAUC and APUC reported in sections 12a & 12b are used to determine Nunn-McCurdy breach.

	UCR Baseline (DEC 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
c. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	65507.0	81792.2	
(2) Unit Cost	2183.567	2726.407	+24.86
d. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	61799.8	77365.5	
(2) Unit Cost	2059.993	2578.850	+25.19
e. (U) Changes from Previous SAR (DEC 2001)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	209.263	+10.74	
(2) APUC (BY\$)	206.626	+11.39	
(3) PAUC Quantity	30	N/A	
(4) PAUC (TYS)	278.403	+11.37	
(5) APUC (TYS)	274.987	-11.94	

f. (U) Initial SAR Information

Initial SAR Date (JUL 1995):

(1) Program Acquisition Cost (BY\$)	1521.1
(2) Program Acquisition Cost (TYS)	2369.4

g. (U) Unit Cost PAUC Changes --

The PAUC increase is attributable to:

1.) Cost increases in the first four ships (SSN 774 - SSN 777) due to: Increased contractor furnished material costs and overhead rates; higher than expected costs for special hull treatment (SHT); delays in software development; changes in accounting for Engineering Services (services were previously mission funded and are now reimbursably funded by the program.); minor requirements growth such as the installation of Local Area Networks onboard the ships, berthing of Navy crews assigned to new construction, and

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12g. (U) Unit Cost Summary (Cont'd):

the development of robust interactive training curricula for the crews; and the need to restore earlier budget increments.

2.) Repricing the remaining 24 ships based on lessons learned from SSN 774-777 construction.

3.) Extension of the build profile to assume a build rate of 2 ships per year beyond FY07 rather than 3 per year.

4.) A significant difference between industry-specific inflation rates used to budget the program and CMB/OSD escalation rates used to calculate PAUC.

5.) RDT&E cost growth is attributable to funding of previously planned requirements for:

a. Propulsion Systems - planned manufacturing process upgrades to increase propulsor strength and improve characteristics;

b. Full Ship Shock Tests (FSST) - Scope and duration of test program increasing as FSST was reallocated from lead ship to first two ships;

c. Logistics - Continued efforts to deliver VIRGINIA Class-unique logistics products such as interactive electronic training manuals;

d. Ship Control - Continued efforts to design and qualify the ship control system;

e. Ship Signature Reduction - Planned efforts to reduce vulnerabilities from radiating signatures;

f. Test & Evaluation - Continued efforts to plan and support required testing.

(U) Unit Cost APUC Changes --

The APUC increase is attributable to the same factors described for the PAUC increases.

h. (U) Impact of Perf or Sched Changes --

Costs in then year dollars increase as the construction profile is extended. The extension in the construction profile (moving five ships to FY 15 to FY 17) has resulted in approximately a \$1.5B increase (then year) to the cost of the program relative to the December 2000 AEB update.

i. (U) Program Management & Control --

The Program Executive Officer, Submarines is RADM John D. Butler.  
The VIRGINIA Class Program Manager is CAPT John S. Heffron.

j. (U) Cost Control Actions --

The Navy is confident that the VIRGINIA Program's current estimates accurately reflect cost returns from the first four ships and capture all current and future program costs. Additionally, the Navy is pursuing the following strategies to achieve the lowest possible future costs: It is structuring the follow-on construction contract (for the next five to seven submarines) as a fixed-price-type contract to help control ship end costs. It has requested authority to transition to a multi-year contract in Fiscal Year 2004, which will reduce costs through greater shipyard efficiency and authority to purchase material in economic order quantities. Finally, it

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12j. (U) Unit Cost Summary (Cont'd):

has requested an increase in the submarine build rate to two per year in FY 2007 (as shown in the President's Budget) that will save money through reduced overhead costs. Multiyear contracting with economic order quantity purchasing of material provides the stability and the most cost effective construction environment for the VIRGINIA Class shipbuilders and their vendors.

k. (U) Contract Information (In Millions of Then-Year Dollars) --

- (U) (1) Contractor(s): Gen Dyn, EB Corp
- (2) Contract Title: FPPD96 Contract
- (3) Contract Number: N00024-96-C-2100
- (4) Actual Cost of Work Performed (ACWP) to date: 1374.0
- (5) Percent contract completed (BCWP/target cost): 78.49
- (6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$-44.8/	-7.73	\$-1.2/	-0.20
Previous SAR	\$-116.4/	-10.22	\$-11.4/	-0.99
Current Values	\$-114.6/	-9.22	\$-12.2/	-0.97
Change from the Baseline Report	\$-69.8/	-1.49	\$-11.0/	-0.77
Change from the Previous SAR	\$1.8/	+1.00	\$-0.8/	+0.02

(U) Explanation of Variances --

Net cumulative variances are considered insignificant relative to the current target price. With a \$-114.6M cost variance and a management reserve of \$70.1M, there is a \$-44.5M cost variance to the original Contract Budget Base (CBB). However, sufficient cost-to-complete funding exists to cover this variance. Also, design quality remains superior, with a very low change rate. Design performance has continuously supported construction at both shipbuilders.

(U) Impact of Variances on Contract --

With sufficient funding identified in the cost-to-complete funding line to cover the variance there is minimal impact to the contract.

(U) Impact of Variances on Unit Costs --

None

- (U) (1) Contractor(s): Gen Dyn, EB Corp
- (2) Contract Title: SSN 774
- (3) Contract Number: N00024-96-C2100A
- (4) Actual Cost of Work Performed (ACWP) to date: 865.3
- (5) Percent contract completed (BCWP/target cost): 76.90

12. (U) Unit Cost Summary (Cont'd):

(6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$-16.9/	-10.16	\$-6.3/	-3.64
Previous SAR	\$-88.3/	-15.53	\$-30.2/	-5.04
Current Values	\$-141.0/	-19.46	\$-36.6/	-4.56
Change from the Baseline Report	\$-124.1/	-9.30	\$-28.3/	-0.92
Change from the Previous SAR	\$-52.7/	-3.93	\$-4.4/	+0.48

(U) Explanation of Variances --

The unfavorable cost variance this period of \$-52.7M reflects higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Additionally, the cost variance is partially caused by Electric Boat trying to recover schedule by moving work from Quonset Point to Groton (costs more at Groton than budgeted at Quonset point). Construction man-hour performance has also degraded. The unfavorable schedule variance this period of \$-4.4M is a result of the late arrival of ship modules to Electric Boat.

(U) Impact of Variances on Contract --

Impacts of Variances on the contract are insignificant in that current funding and phasing appear to be adequate to support on time delivery of this ship.

(U) Impact of Variances on Unit Costs --

The variances described above account for, on average, 13% of the 24% unit cost increase described in the Executive Summary. The remaining 11% is due to the large difference in indices used to calculate escalated then year costs and deescalated base year costs.

(U) (1) Contractor(s): Gen Dyn, EB Corp

(2) Contract Title: SSN 775

(3) Contract Number: NC9024-96-C2100H

(4) Actual Cost of Work Performed (ACWP) to date: 847.0

(5) Percent contract completed (BCWP/target cost): 68.80

(6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$-14.8/	-13.41	\$-4.7/	-4.14
Previous SAR	\$-110.1/	-23.53	\$-13.8/	-2.85
Current Values	\$-173.9/	-25.85	\$-30.9/	-4.39
Change from the Baseline Report	\$-159.1/	-12.44	\$-26.2/	-0.25
Change from the Previous SAR	\$-63.8/	-2.32	\$-17.1/	-1.54

(U) Explanation of Variances --

The unfavorable cost variance this period of \$-63.8M reflects higher than

12. (U) Unit Cost Summary (Cont'd):

expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Additionally, the cost variance and the unfavorable schedule variance this period of \$-17.1M are due to lack of resources. Personnel have been assigned to other priorities. Manning is expected to increase shortly.

(U) Impact of Variances on Contract --

Impacts of Variances on the contract are insignificant in that current funding and phasing appear to be adequate to support on time delivery of this ship.

(S) Impact of Variances on Unit Costs --

The variances described above account for, on average, 13% of the 24% unit cost increase described in the Executive Summary. The remaining 11% is due to the large difference in indices used to calculate escalated then year costs and deescalated base year costs.

- (U) (1) Contractor(s): Gen Dyn, EB Corp
- (2) Contract Title: Lead Yard Services
- (3) Contract Number: N00024-00-C-2112
- (4) Actual Cost of Work Performed (ACWP) to date: 82.5
- (5) Percent contract completed (BCWP/target cost): 0.00
- (6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	N/A	N/A
Previous SAR	N/A	N/A
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

(U) Explanation of Variances --

Cost and Schedule variance reporting is not required on this CPFF Contract.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

- (U) (1) Contractor(s): Gen Dyn, EB Corp
- (2) Contract Title: SSN 776
- (3) Contract Number: N00024-96-C2100C
- (4) Actual Cost of Work Performed (ACWP) to date: 320.7
- (5) Percent contract completed (BCWP/target cost): 30.60

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12. (U) Unit Cost Summary (Cont'd):

(6) Variances:

	Cost Variance (\$%)	Schedule Variance (\$%)
Baseline Report	N/A	N/A
Previous SAR	\$-17.0/ -12.79	\$-16.1/ -11.16
Current Values	\$-25.8/ -8.76	\$-43.2/ -12.79
Change from the Baseline Report	\$-25.8/ -8.76	\$-43.2/ -12.79
Change from the Previous SAR	\$-8.8/ +4.03	\$-26.5/ -1.63

(U) Explanation of Variances --

The unfavorable cost variance this period of \$-8.8M and unfavorable schedule variance of \$-26.5M reflects higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits.

(U) Impact of Variances on Contract --

Impacts of Variances on the contract are insignificant in that current funding and phasing appear to be adequate to support on time delivery of this ship.

(U) Impact of Variances on Unit Costs --

The variances described above account for, on average, 13% of the 24% unit cost increase described in the Executive Summary. The remaining 11% is due to the large difference in indices used to calculate escalated then year costs and deescalated base year costs.

(U) (1) Contractor(s): Gen Dyn, EB Corp

(2) Contract Title: SSN 777

(3) Contract Number: N00024-96-22100D

(4) Actual Cost of Work Performed (ACWP) to date: 137.2

(5) Percent contract completed (BCWP/target cost): 13.90

(6) Variances:

	Cost Variance (\$%)	Schedule Variance (\$%)
Baseline Report	N/A/	N/A/
Previous SAR	N/A/	N/A/
Current Values	\$-16.1/ -13.29	\$-29.2/ -19.43
Change from the Baseline Report	\$-16.1/ -13.29	\$-29.2/ -19.43
Change from the Previous SAR	\$-16.1/ -13.29	\$-29.2/ -19.43

(U) Explanation of Variances --

The unfavorable cost variance this period of \$-16.1M and unfavorable schedule variance of \$-29.2M reflects higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits.

Additionally, the cost variance and the unfavorable schedule variance this period of \$-29.2M are due to lack of resources. Personnel have been assigned

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12. (U) Unit Cost Summary (Cont'd):

to other priorities. Manning is expected to increase shortly.

(U) Impact of Variances on Contract --

Impacts of Variances on the contract are insignificant in that current funding and phasing appear to be adequate to support on time delivery of this ship.

(U) Impact of Variances on Unit Costs --

The variances described above account for, on average, 13% of the 24% unit cost increase described in the Executive Summary. The remaining 11% is due to the large difference in indices used to calculate escalated then year costs and deescalated base year costs.

1. General Comments -- None.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDP&E	PROC	MILCON	TOTAL
Development Estimate	3814.0	67266.8	-	71080.8
Previous Changes:				
Economic	-226.3	-13305.7	-	-13532.0
Quantity	-	-	-	-
Schedule	-	+1353.1	-	+1353.1
Engineering	+181.5	+1090.8	-	+1272.3
Estimating	+555.0	+1190.6	-	+12545.6
Other	-	+280.0	-	+280.0
Support	-	+440.3	-	+440.3
Subtotal	+510.2	-2849.1	-	+2359.3
Current Changes:				
Economic	-26.0	-1158.3	-	-1184.3
Quantity	-	-	-	-
Schedule	-	+815.0	-	+815.0
Engineering	-	-	-	-
Estimating	+128.5	+8097.2	-	+8225.7
Other	-	-	-	-
Support	-	-495.7	-	+495.7
Subtotal	+102.5	+8249.6	-	+8352.1
Total Changes	-612.7	+10098.7	-	+10711.4
Current Estimate	4426.7	77366.5	-	81792.2

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	3405.0	42228.1	-	45633.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+88.6	-	+88.6
Engineering	+158.1	+797.9	-	+956.0
Estimating	+462.4	+10750.9	-	+11213.3
Other	-	-216.3	-	+216.3
Support	-	+362.4	-	+362.4
Subtotal	+620.5	+12216.1	-	+12836.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-79.1	+5843.0	-	+5922.1
Other	-	-	-	-
Support	-	+355.7	-	+355.7
Subtotal	-79.1	+6198.7	-	+6277.8
Total Changes	+699.6	+18414.8	-	+19114.4
Current Estimate	4104.6	60642.9	-	64747.5

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-26.0
Revised Estimate for Nuclear Reactor Funding (Estimating)	+19.7	+22.1
Congressional & OSD Adjustments (Estimating)	-10.9	-11.7
Adjustment for Current and Prior Inflation. (Estimating)	+7.3	-8.1
Removal of funding for Technical Insertion/Technical Refresh (Estimating)	-207.2	-244.5
Addition of RD&E program from FY 08 to FY 15 (Estimating)	+397.2	+504.4
Reduced Component development of Hull, Mechanical & Electrical (HM&E) and Command, Control & Communication & Intelligence (C3I) (Estimating)	-127.0	-149.9
RD&E Subtotal	+79.1	+102.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-1181.3
Economic adjustment for negative program change. (Economic)	N/A	+23.0

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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>
Stretchout of annual procurement buy profile form FY15 to FY17. (Schedule)	0.0	+815.0
Adjustment for Current and Prior Inflation. (Estimating)	-64.0	+70.0
Adjustment for Escalation of Material at 4.2% (Estimating)	+667.5	-720.1
Adjustment for Escalation of Labor at 4.5% (Estimating)	+2588.5	+3407.9
Program repricing for additional Special Hull Treatment (SHT) funding and increased construction cost based on actual returns from the first four ships. (Estimating)	+2194.3	+3569.5
Increased funding for Change Orders at 5% (Estimating)	+757.5	-954.8
Increased funding for Government Furnished Equipment (GFE). (Estimating)	+911.1	+1261.5
Realignment of previously reported Sailaway & Support Variances (Estimating)	-0.1	-2.6
Additional OPN Spares funding from FY07 to FY23. (Support)	+151.1	+204.3
Removal of OPN Peculiar Support funding which is not part of the VIRGINIA Class Submarine Acquisition Program budget. (Support)	-165.8	-220.6
Removal of OPN Other Wpn System Costs funding which is not part of the VIRGINIA Class Submarine Acquisition Program budget. (Support)	-129.6	-174.0
Estimating adjustment for Multiyear procurement savings from FY14 through FY17 at \$150M per ship. (Estimating)	-839.8	-1200.0
Correction to align Sailaway and Support Cost (Estimating)	0.0	0.0
(Support)	-500.0	-686.0
	+500.0	-686.0
Procurement Subtotal	+6198.7	+8249.6

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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	
2369.36	-490.54	-0.003	+72.27	+42.41	+692.38	-9.33	+31.20	+357.05	2726.41

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	-482.13	-0.003	+72.27	+36.36	+669.59	+9.33	-31.20	+336.62	2578.85

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	N/A	AUG 1994	N/A	AUG 1994
Milestone II	N/A	JUN 1995	N/A	JUN 1995
Milestone III	N/A	OCT 2007	N/A	SEP 2008
IOC	N/A	OCT 2005	N/A	JUN 2006
Total Cost	N/A	71080.8	N/A	81792.2
Total Quantity	N/A	30	N/A	30
Prog Acq Unit Cost	N/A	2369.4	N/A	2726.4

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --

(U) 1FPD96 Contract:  
 Gen Dyn, Eb Corp, Groton, CT  
 N00024-96-C-2100, CPFF w/PI  
 Award: January 29, 1996  
 Definitized: May 9, 1996

Initial Contract Price  
Target      Ceiling      Qty

\$1603.2      N/A      0

Current Contract Price

Target      Ceiling      Qty  
 \$1603.2      N/A      0

Estimated Price At Completion

Contractor      Program Manager  
 \$1523.5      \$1610.3

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VIRGINIA CLASS SUB, December 31, 2002

15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-116.4	\$-11.4
Cumulative Variances To Date (09/30/02)	<u>\$-114.6</u>	<u>\$-12.2</u>
Net Change	\$1.8	\$-0.8

Explanation of Change:

(U) This effort has experienced a slight favorable Cost Variance from the previous report and a slight unfavorable schedule variance. Net cumulative variances are considered insignificant relative to the current target price. With a \$-114.6M cost variance and a management reserve of \$70.1M, there is a \$-44.5M cost variance to the original Contract Budget Base (CBB). However, sufficient cost-to-complete funding exists to cover this variance. Also, design quality remains superior, with a very low change rate and the timely issue of high-quality drawings has supported construction schedules at both shipbuilders.

(U) SSN 774:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn, EB Corp, Groton, CT N00024-96-C2100A, CPFF Award: September 30, 1998 Definitized: September 30, 1998	\$1023.0	N/A	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1061.4	N/A	1	\$1232.1	\$1233.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-88.2	\$-30.2
Cumulative Variances To Date (09/30/02)	<u>\$-141.0</u>	<u>\$-34.6</u>
Net Change	\$-52.7	\$-4.4

Explanation of Change:

(U) The unfavorable cost variance this period of \$-52.7M reflects higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Additionally, the cost variance is partially caused by Electric Boat trying to recover schedule by moving work from Quonset Point to Groton (costs more at Groton than budgeted at Quonset). Construction man-hour performance has also degraded. The unfavorable schedule variance this period of \$-4.4M is a result of the late arrival of ship modules to Electric Boat. Current funding and phasing appear to be adequate to support on time delivery of this ship.

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15. (U) Contract Information (Cont'd):

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>SSN 775:</u>					
Gen Dyn, EB Corp, Groton, CT					
N00024-96-C2100B, CP1F			\$1083.7	N/A	1
Award: December 8, 1998					
Definitized: December 8, 1998					
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>			
\$1100.6	N/A	1	\$1325.2	\$1372.6	
			Cost Variance Schedule Variance		
Previous Cumulative Variances			\$-110.1	\$-13.8	
Cumulative Variances To Date (09/30/02)			<u>\$-173.9</u>	<u>\$-30.9</u>	
Net Change			\$-63.8	\$-17.1	

Explanation of Change:

(U) The unfavorable cost variance this period of \$-63.8M reflects higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Additionally, the cost variance and the unfavorable schedule variance this period of \$-17.1M are due to lack of resources. Personnel have been assigned to other priorities. Manning is expected to increase shortly. Current funding and phasing appear to be adequate to support on time delivery of this ship.

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>Lead Yard Services:</u>					
Gen Dyn, EB Corp, Groton, CT					
N00024-00-C-2112, CP1F			\$482.1	N/A	0
Award: September 30, 2000					
Definitized: September 30, 2000					
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>			
\$108.6	N/A	0	\$108.6	\$108.6	

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this CP1F contract.

15. (U) Contract Information (Cont'd):

(U) <u>SSN 776:</u>			Initial Contract Price		
Gen Dyn, EB Corp, Groton, CT	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-96-C2100C, CPFF	\$1065.0	N/A	1		
Award: September 30, 1998					
Definitized: September 30, 1998					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1085.6	N/A	1	\$1236.8	\$1198.6	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-17.0	\$-16.7	
Cumulative Variances To Date (09/30/02)			\$-25.8	\$-43.2	
Net Change			\$-8.8	\$-26.5	

Explanation of Change:

(U) The unfavorable cost variance this period of \$-8.8M and unfavorable schedule variance of \$-26.5M reflects higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Additionally, the cost variance and the unfavorable schedule variance this period of \$-26.5M are due to lack of resources. Personnel have been assigned to other priorities. Manning is expected to increase shortly. Current funding and phasing appear to be adequate to support on time delivery of this ship.

(U) <u>SSN 777:</u>			Initial Contract Price		
Gen Dyn, EB Corp, Groton, CT	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-96-C2100D, CPFF	\$1060.0	N/A	1		
Award: September 30, 1998					
Definitized: September 30, 1998					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1095.3	N/A	1	\$1171.9	\$1171.9	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$	\$	
Cumulative Variances To Date (09/30/02)			\$-16.1	\$-23.2	
Net Change			\$-16.1	\$-29.2	

Explanation of Change:

(U) The unfavorable cost variance this period of \$-16.1M and unfavorable schedule variance of \$-29.2M reflects higher than expected labor/overhead

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15. (U) Contract Information (Cont'd):

rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Additionally, the cost variance and the unfavorable schedule variance this period of \$-29.2M are due to lack of resources. Personnel have been assigned to other priorities. Manning is expected to increase shortly. Current funding and phasing appear to be adequate to support on time delivery of this ship.

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> (FY92-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-23)	<u>Total</u>
POT&K	3491.6	132.1	118.3	684.7	4426.7
Procurement	13427.2	2877.6	3066.8	57993.9	77365.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	16918.8	3009.7	3185.1	58678.6	81792.2

b. Annual Summary -- VIRGINIA CLASS SUBMARINE

Appropriation: 1219 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 1995 Dollars Nonrec</u>	<u>Sailaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1992				23.9	22.8
1993				68.0	66.7
1994				367.5	365.3
1995				449.8	455.7
1996				418.4	423.0
1997				435.5	454.2
1998				363.7	382.4
1999				289.9	308.3
2000				265.8	286.8
2001				217.1	257.4
2002				198.3	218.8
2003				237.1	264.6
2004				116.6	132.1
2005				102.8	119.3
2006				103.2	120.7
2007				94.0	111.8

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VIRGINIA CLASS SUB, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1319 - Research, Development, Test & Eval, Navy

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008				78.2	94.7
2009				68.4	84.3
2010				43.5	54.6
2011				30.4	38.8
2012				33.5	43.6
2013				34.6	45.8
2014				35.4	47.7
2015				31.1	42.7
Subtotal				4104.6	4426.7

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996		758.7		758.7	790.3
1997		735.1		735.5	775.7
1998	1	314.1	1987.0	2301.1	2464.2
1999	1		1797.1	1797.1	1944.3
2000		678.3		678.3	744.5
2001	1		1587.4	1587.4	1767.1
2002	1		2195.7	2209.7	2495.9
2003	1		2117.5	2132.2	2445.2
2004	1		2455.8	2468.6	2877.6
2005	1		2538.9	2543.5	3015.3
2006	1		2452.3	2467.8	2977.0
2007	2		3364.0	3370.1	4139.2
2008	2		3341.5	3347.9	4185.9
2009	2		4240.0	4261.6	5424.2
2010	2		3985.1	4040.6	5235.4
2011	2		3662.7	3686.7	4862.8
2012	2		3448.1	3485.3	4679.7
2013	2		3561.9	3610.6	4935.3
2014	2		3907.6	3946.9	5492.1
2015	2		4021.3	4054.8	5744.1
2016	2		3315.4	3349.3	4830.0
2017	2		2904.5	2936.0	4310.1
2018		140.1		168.1	251.2
2019		140.7		173.7	264.3
2020		126.3		150.6	233.5
2021		69.4		62.3	98.3
2022		1.2		3.7	5.9
Subtotal	30	2943.8	56883.8	60327.7	76989.5

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VIRGINIA CLASS SUB, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

(U) The current funding profile includes \$430.4M of FY04-06 Prior Year Completion funding. These SCN funds are separately authorized under Appropriation Budget Activity #5, Budget Line item 5300.

FY 14 through FY 17 SCN Funding differs from the "to complete" column of the President's Budget FY2004 FYDP due to incorporation of a multi-year procurement savings of \$150M per ship, totaling \$1.2B.

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Sailaway FY 1995 Dollars Nonrec	Sailaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				44.5	51.5
2006				182.2	219.6
2007				63.2	75.8
2008				10.2	12.5
2009				1.0	1.3
2010				1.0	1.3
2011				1.0	1.3
2012				1.0	1.3
2013				1.0	1.3
2014				1.0	1.4
2015				1.0	1.4
2016				1.1	1.5
2017				1.0	1.5
2018				1.0	1.5
2019				1.0	1.5
2020				1.0	1.5
2021				1.0	1.6
2022				1.0	1.6
2023				1.0	1.6
Subtotal				315.2	376.0

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	30	2943.8	56883.8	64747.5	81792.2

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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): \$ 9542

(U) Percent Total Program Expended: 11.7%

(U) Total expenditures as of January 31, 2003.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

As of date: February 11, 2002. 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 NAIG O&S Cost Estimating Guide using historical data from operating submarine classes. Maintenance and Personnel costs are the major contributors to the total O&S Program. The source of this cost estimate is the VIRGINIA Class Total Ownership Cost Baseline. The source of antecedent data is the Visibility and Management of Operation and Support Cost (VAMOSOC) data for LOS ANGELES Class (SSN-688) submarines.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	VIRGINIA CLASS SUBMARINE Average Annual Cost per Ship	LOS ANGELES CLASS Average Annual Cost per Ship
Mission Pay & Allowances	6.3	7.2
Unit Level Consumption	3.4	2.0
Intermediate Maintenance	2.1	0.4
Depot Maintenance	12.2	14.8
Contractor Support	0.1	0.0
Sustaining Support	5.3	0.8
Indirect Costs	0.0	0.9
Indirect Support	3.4	0.0
Total	34.8	26.1

Total O&S Cost	VIRGINIA CLASS SUBMARINE	LOS ANGELES CLASS
BY\$ (In Millions)	31743.0	N/A
TYS (In Millions)	50310.0	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: E-3 AWACS RSIP

CONGRESSIONAL

AS OF DATE: December 31, 2002

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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 BRIAN WAECHTER
3 EGLIN STREET	Assigned: July 2, 2001
HANSCOM AFB, MA 01731-2115	DSN 478-6899; COMM (781) 377-6899
	Brian.Waechter@hanscom.af.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0207417F (Shared) Project 67411L (Shared)  
PROCUREMENT:  
(U) APPN 3010 ICN 11411L (Air Force)

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FOR OPEN PUBLICATION**

EXAMINED  
FEB 27 2003 4

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: E-3 SECURITY CLASSIFICATION GUIDE, 24 June 1997  
Downgrade instructions: Not Subject to Automatic Downgrade  
Declassify on: Originating Agency Determination Required (OADR)~~

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E-3 AWACS RSIP, December 31, 2002

**5. (U) References:**

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated March 6, 2000.

Approved Program:

(U) AFSAE Approved Acquisition Program Baseline (APB) dated March 6, 2000.

**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 Airborne Warning and Control System (AWACS) radar. The AWACS RSIP provides 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 results 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

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E-3 AWACS RSIP, December 31, 2002

7. (U) Executive Summary (Cont'd):

qualification phase of the DT&E flight test program began in November 1994. Flight Qualification, Software Formal Qualification Testing (FQT) and In-Plant Formal Qualification were all completed with satisfactory radar detection performance. Concurrent U.S./NATO Initial Operational Test & Evaluation (IOT&E) testing began in October 1995. Other key events in 1995 were the signing of the RSIP Operational Requirements Document (ORD) and the U.S. Low Rate Initial Production (LRIP) approval.

In February 1996, a production contract was awarded to Boeing for 13 U.S. kits (basic [2], plus 3 options [1]), 18 NATO kits and 8 UK kits. The award of U.S. 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. The Option II award for 4 additional RSIP kits was awarded on October 31, 1997. The Option III award for 5 additional RSIP kits was awarded on October 8, 1998. This was the last option on the F19628-95-C-0041 contract. The Acquisition Program Baseline (APB) for RSIP was updated August 1998 to accommodate funding disconnects. The disconnect was caused by the overall weapon system funding constraints. The APB was updated again in March 2000 to reflect the changes in program costs for the follow-on production.

In the winter of 1999, the Secretary of the Air Force directed the acceleration of the RSIP program in order to complete the retrofit of the entire US AWACS fleet in FY05. The decision was based on the need to get the vital RSIP capability fielded as soon as possible and to reduce the number of unique AWACS configurations. The value of RSIP was demonstrated during operations in support of the Air War Over Serbia. NATO aircraft modified with RSIP consistently detected hostile aircraft well before US AWACS, which did not have RSIP capability.

To comply with this direction, the Air Force provided the RSIP program an additional \$9.5M in FY00 through the FY00 Omnibus, \$9.999M in FY01 through a Below Threshold Reprogramming Action, \$21.475M in FY01 through an Above Threshold Reprogramming Action, and \$40M in FY02. These actions were required to procure all of the 32 RSIP kits.

The Program Office awarded the follow-on production contract F19628-99-C-0042 on June 9, 2000 via an undefinitized contract action (UCA). The UCA was definitized on Nov 13, 2000. Eighteen RSIP kits plus the AISF APY-2 kit are being procured on this contract.

RSIP Required Assets Available (RAA) was declared on December 15, 2000. This met the APB threshold. Air Combat Command declared Initial Operational Capability (IOC) on June 14, 2001. Currently, there are thirteen USAF AWACS modified with RSIP.

In September 2002, SAF/FM set new Depot Maintenance Activity Group (DMAG) rates for the Depot. The new FY03 Depot install rate is 105% increase over the FY02 rate. This new rate caused significant cost impacts for the program. The

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7. (U) Executive Summary (Cont'd):

adjusted cost allows only 27 of 32 kit installations. The AWACS SPO is reviewing options to resolve the last 5 kit installations.

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 1988	DEC 1988	DEC 1988
Brassboard Flight Tests	APR 1991	APR 1991	MAR 1991
System Design Review	FEB 1990	FEB 1990	FEB 1990
Critical Design Review	SEP 1991	SEP 1991	SEP 1991
Test System-3 (TS-3) I&CO	NOV 1993	NOV 1993	NOV 1993
Flight Test DT&E			
Start	JAN 1994	JAN 1994	NOV 1993
Complete	JAN 1995	JAN 1995	MAR 1995
IOT&E			
Start	AUG 1995	AUG 1995	AUG 1995
Complete	NOV 1996	NOV 1996	OCT 1996
Physical Configuration Audit	DEC 1995	DEC 1995	JUN 1996
Low Rate Initial Production Decision	NOV 1995	NOV 1995	NOV 1995
Trial Installation	MAR 1998	MAR 1998	SEP 1998
Required Assets Available	JUN 2000	JUN 2000	DEC 2000

9b. (U) Schedule (Cont'd):

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

AS AMENDED

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Improve System	13.0	13.0 / 10.6	10.9 (1)	10.6
Sensitivity (dB)	(b)(1)			
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)				

(U) Performance Characteristics, Reference Notes

(U) (1) Non Elevation Scan (NEL) mode over Sea.

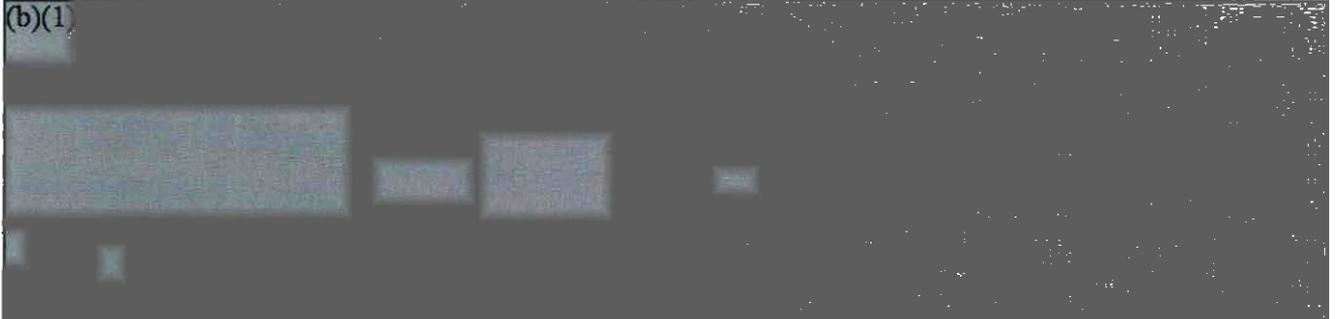
(b)(1)

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E-3 AWACS RSIP, December 31, 2002

10a. (U) Performance Characteristics (Cont'd):

AS AMENDED



Approved Program      Scaled      Demonstrated  
Threshold              Threshold



(U) (8) US IOT&E was completed in October 1996.

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10b. ~~(U)~~ Performance Characteristics (Cont'd):

b. Current Change Explanations --  
(U) None

Acronyms: MTBCF - Mean Time Between Critical Failure, ECCM - Electronic Counter-counter Measures, SRC - Surveillance Radar Computer, SRCMP - Surveillance Radar Computer Maintenance Panel.

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)	465.5	465.3	465.5
Procurement	424.6	520.1	551.7
Flyaway	(296.2)		(313.1)
Other Weapon Systems	(102.6)		(195.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(25.8)		(43.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1997 Base-Year \$	<u>890.1</u>	<u>985.4</u>	<u>1017.2</u>
Escalation	1.2	-10.7	-13.9
Development (RDT&E)	(-41.1)	(-40.9)	(-41.1)
Procurement	(42.3)	(30.2)	(27.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>891.3</u>	<u>974.7</u>	<u>1003.3</u>

(U) Initial spares reflect Contract Authority (CA).

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>32</u>	<u>32</u>	<u>32</u>
Total	32	32	32

(U) The Development line 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 were numbered at four: two in FY96 and two in FY97, which was more than ten percent (10%) of total planned buy. This quantity of two per year was selected for economic reasons. The Air Force Acquisition Executive (AFAE) approved US Low Rate Initial Production (LRIP) on November 29, 1995.

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11c. (U) Total Program Cost and Quantity (Cont'd):

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 provided one more RSIP Group B radar set modification kit and instrumentation for the NATO E-3A aircraft. Boeing Phase I effort provided one RSIP Group A Kit and the NATO Airborne Operational Computer Program (AOCP) software. In Phase II, added in January 1994, Northrop Grumman developed the logistics support for the RSIP hardware and software components and supported Boeing during the test program. Boeing installed and integrated the RSIP prototype Group A and B kits into the NATO E-3A test aircraft and conducted the test program. 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 U.S./NATO RSIP kits into the fleet of seven (7) UK E-3D AWACS aircraft. 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 aircraft worth of RSIP kits (2 U.S., 18 NATO, and 8 UK) under the production program. The U.S. contracted for 11 more aircraft worth of 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. Option 3 was awarded in October 8, 1998 to acquire 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. NATO completed the retrofit of its fleet in December 1999 and the UK completed in December 2000.

d. (U) Nuclear Costs --

None.

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12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	985.4	1017.2	
(2) Quantity	32	32	
(3) Unit Cost	30.794	31.788	+3.23
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	520.1	551.7	
(2) Quantity	32	32	
(3) Unit Cost	16.253	17.241	+6.08

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	-	-19.0	-	-19.0
Quantity	-	-	-	-
Schedule	-	+24.9	-	+24.9
Engineering	-	-	-	-
Estimating	-	-10.8	-	-10.8
Other	-	-	-	-
Support	-	+119.9	-	+119.9
Subtotal	-	+115.0	-	+115.0
Current Changes:				
Economic	-	-4.2	-	-4.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+2.0	-	+2.0
Other	-	-	-	-
Support	-	-0.8	-	-0.8
Subtotal	-	-3.0	-	-3.0
Total Changes	-	+112.0	-	+112.0
Current Estimate	424.4	578.9	-	1003.3

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E-3 AWACS RSIP, December 31, 2002

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	-	+22.2	-	+22.2
Engineering	-	-	-	-
Estimating	-	-7.1	-	-7.1
Other	-	-	-	-
Support	-	+111.0	-	+111.0
Subtotal	-	+126.1	-	+126.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+1.8	-	+1.8
Other	-	-	-	-
Support	-	-0.8	-	-0.8
Subtotal	-	+1.0	-	+1.0
Total Changes	-	+127.1	-	+127.1
Current Estimate	465.5	551.7	-	1017.2

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year    Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.2
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+2.0
Adjustment for Current and Prior Inflation. (Support)	+1.3	+1.4
Change in Initial Spares (Support)	+0.5	+0.1
Change in Other Weapon Systems. Decreased requirements in System Program Office Operations Support, Diminishing Manufacturing Sources (DMS), Production Follow-on Services Support and Engineering Change Orders. Offset by increased requirements in Kit Installation (due to install rate increase), Support Equipment for the Software Integration Lab, Software Modification Support, Test Program Sets (TPS), and Government Furnish Equipment. (Support)	-2.6	-2.3
Procurement Subtotal	+1.0	-3.0

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14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
20.29	-1.31	+0.700	+4.18	-2.40	+3.79	--	+2.60	+7.56	27.85

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	
27.85	-0.725	+0.002	+0.778	--	-0.275	--	+3.72	+3.50	31.35

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	
8.62	-1.18	-0.020	+2.67	--	+1.90	--	+2.60	+5.97	14.59

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	-0.725	+0.002	+0.778	--	-0.275	--	+3.72	+3.50	18.09

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 1988	DEC 1988	DEC 1988
Milestone III	N/A	N/A	SEP 1997	SEP 1997
IOC	N/A	SEP 1996	JUN 2000	DEC 2002
Total Cost	N/A	689.9	891.3	1003.3
Total Quantity	N/A	34	32	32
Prog Acq Unit Cost	N/A	20.3	27.9	31.4

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15. (U) Contract Information (Then-Year Dollars in Millions):

(U) AWACS RSIP PRODUCTION: The Boeing Company, Seattle, WA F19628-99-C-0042, FFP Award: November 12, 2000 Definitized: November 13, 2000	Initial Contract Price		
	Target	Ceiling	Qty
	\$195.4	\$195.4	18

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$195.4	\$195.4	18	\$195.4	\$195.4

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

RSIP Services contract is not reported because it doesn't meet the \$40M threshold.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY89-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	424.4	-	-	-	424.4
Procurement	550.5	21.8	6.6	-	578.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	974.9	21.8	6.6	-	1003.3

(U) RSIP Development (RDT&E) is a cooperative program with NATO. The total \$424.2M (TY\$) is the U.S. share of the cooperative development program.

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- RSIP MOD

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 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
Subtotal				465.5	424.4

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	2	16.6	22.4	51.4	51.9
1997	2	1.6	15.1	46.6	47.5
1998	4	0.1	28.6	64.5	66.2
1999	5		41.1	60.4	62.6
2000	2		59.4	81.7	86.0
2001	8		76.2	113.2	120.1
2002	9		52.0	83.3	89.2
2003				24.9	27.0
2004				19.8	21.8
2005				5.9	6.6
2006					
Subtotal	32	18.3	294.8	551.7	578.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	32	18.3	294.8	1017.2	1003.3

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E-3 AWACS RSIP, December 31, 2002

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	13	13

(U) Percent Total Program Quantities Delivered: 40.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 771.8

(U) Percent Total Program Expended: 76.9%

(U) Deliveries are the number of aircraft retrofitted. Expenditures data are as of December 31, 2002, and reflect US funds only. The total program cost include initial spares, which reflect Contract Authority (CA).

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The operating and support cost estimate for AWACS RSIP was updated in January 2002. 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 FY05. 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. The Total O&S Cost is for FY98-FY25, and the Annual Steady-State year is FY12.

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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	RSIP MOD Annual Steady-State Radar with RSIP	Fleet Predecessor E3 Annual Steady-State Radar Pre-RSIP
Mission Pay & Allowances	12.7	12.7
Unit Level Consumption	2.7	5.1
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.2	0.0
Contractor Support	0.9	1.2
Sustaining Support	5.2	4.7
Indirect Costs	7.6	7.6
Total	29.3	31.3

Total O&S Cost	RSIP MOD	Fleet Predecessor E3
BY\$ (In Millions)	830.7	29.3
TY\$ (In Millions)	1373.1	47.6

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# N-4 AV-8B REMANUFACTURE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: AV-8B Remanufacture

AS OF DATE: December 31, 2002

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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:  
Air ASW, Assault and Special Mission COL David R. Heinz  
Programs (PMA-257), 47123 Buse Road Assigned: October 25, 2002  
Unit IPT, Suite 161 DSN 757-5460; COMM (301) 757-5460  
Patuxent River, MD 20670-1547 HEINZDR@navair.navy.mil
4. (U) Program Elements/Procurement Line Items:  
PROCUREMENT:  
(U) APPN 1506 ICN 0124 (Navy)

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5. (U) References:

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline dated June 30, 1994.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated February 26, 2000.

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 a 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) This is our final SAR. The Remanufacture program is 91% delivered.

Production line transition/shutdown (PLT) has been funded in the budget starting in FY2003 through FY2006. The Program Manager continues to explore PLT cost minimization strategies consistent with post production support requirements.

Prior year funding cuts resulted in the inability to procure peculiar support equipment required to achieve Navy Support Date (NSD). NSD is defined as the date when the Navy assumes full integrated logistics support responsibility for a new weapon system, subsystem, engine or support equipment end item at Fleet operational sites. Although a depot support equipment shortfall remains unfunded, its impact has been substantially mitigated to date by a combination of organic and commercial depot repair sources. The program continues to make progress towards NSD.

7. (U) Executive Summary (Cont'd):

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:

Prior year funding cuts resulted in the inability to procure peculiar support equipment required to achieve Navy Support Date (NSD). Although a depot support equipment shortfall remains unfunded, its impact has been substantially mitigated to date by a combination of organic and commercial depot repair sources. The program continues to make progress towards NSD.

9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone IV/III Review	JAN 1994	JAN 1994	MAR 1994
Contract Award	FEB 1994	FEB 1994	MAY 1994
First A/C delivery	FEB 1996	FEB 1996	FEB 1996
DT-III			
Start	FEB 1996	FEB 1996	FEB 1996
Complete	AUG 1996	AUG 1996	AUG 1996
OT-III B FOT&E			
Start	FEB 1996	FEB 1996	FEB 1996
Complete	SEP 1996	MAY 1997	MAY 1997
IOC (Completion of FOT&E Report)	DEC 1996	AUG 1997	SEP 1997
FOC (Delivery of the 20th REMAN acft)	MAR 1999	MAR 1999	MAR 1999
Material Support Date 1/	MAR 1999	MAR 1999	APR 1995

9a. (U) Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Navy Support Date 2/	MAR 1999	OCT 2002	TBD

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
<b>Dimensions</b>				
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
Max VTOGW Wt (lbs)	19,200	19,200 / 19,200	19,200	19,200
<b>(Vertical Take-off Gross Weight)</b>				
Max STOGW Wt (lbs)	29,750	29,750 / 29,750	32,000	32,000
Speed Max. (Mach)	.83	.83 / .83	1.00	1.00
<b>Mission Radius (nm)</b>				
CAS	142	142 / 95	250	250
Interdiction	486	486 / 440	486	486
<b>Reliability (hrs)</b>				
MFHBMCF(HW) - Oper	12.6	12.6 / 12.6	32.6	32.6
<b>Maintainability (hrs)</b>				
MMH/FH(HW) Oper	3.2	3.2 / 3.2	2.7	2.7
MTTR (Critical)	6.7	6.7 / 6.7	4.4	4.4
<b>Oper</b>				
Gun Accuracy (mils)	<b>(b)(1)</b>			
Sea Surf Search (nm)				
Air-to-Air Det Range (5 sq.m. tgt) (nm)				
Nose, VS 1000 (ft)				
Tail, RWS 2000 (ft)				

(U) Performance Acronyms:

- STOGW - short take-off gross weight
- CAS - close air support
- MFHBMCF(HW) - mean flight hours between mission critical failure (hardware)
- MMH/FH (HW) - maintenance man hours per flight hour (hardware)
- MTTR - mean time to repair
- RWS - range while scan

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AV-8B Remanufacture, December 31, 2002

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)	0.0	0.0	0.0
Procurement	1843.0	2044.3	1999.0
Airframe	(1163.2)		(1136.5)
Engine	(310.6)		(269.5)
Avionics	(37.2)		(42.3)
Other GFE	(1.1)		(53.5)
Non-Recurring			(50.9)
Total Flyaway	(1512.1)		(1552.7)
Other Wpn Sys Cost	(0.0)		(0.0)
Peculiar Support	(248.3)		(369.7)
Initial Spares	(82.6)		(76.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1994 Base-Year \$	1843.0	2044.3	1999.0
Escalation	315.4	277.7	170.1
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(315.4)	(277.7)	(170.1)
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 \$	2158.4	2322.0	2169.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>73</u>	<u>73</u>	<u>74</u>
Total	73	73	74

(U) There are no LRIP quantities associated with this program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (FEB 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	2044.3	1999.0	
(2) Quantity	73	74	
(3) Unit Cost	28.004	27.014	-3.54
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	2044.3	1999.0	
(2) Quantity	73	74	
(3) Unit Cost	28.004	27.014	-3.54

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	2158.4	-	2158.4
Previous Changes:				
Economic	-	-163.9	-	-163.9
Quantity	-	+21.2	-	+21.2
Schedule	-	+40.3	-	+40.3
Engineering	-	+70.1	-	+70.1
Estimating	-	-94.3	-	-94.3
Other	-	-	-	-
Support	-	+134.8	-	+134.8
Subtotal	-	+8.2	-	+8.2
Current Changes:				
Economic	-	-5.6	-	-5.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+7.6	-	+7.6
Other	-	-	-	-
Support	-	+0.5	-	+0.5
Subtotal	-	+2.5	-	+2.5
Total Changes	-	+10.7	-	+10.7
Current Estimate	-	2169.1	-	2169.1

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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	-	+20.5	-	+20.5
Schedule	-	+23.3	-	+23.3
Engineering	-	+61.1	-	+61.1
Estimating	-	-71.2	-	-71.2
Other	-	-	-	-
Support	-	+114.9	-	+114.9
Subtotal	-	+148.6	-	+148.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+6.9	-	+6.9
Other	-	-	-	-
Support	-	+0.5	-	+0.5
Subtotal	-	+7.4	-	+7.4
Total Changes	-	+156.0	-	+156.0
Current Estimate	-	1999.0	-	1999.0

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) Procurement

Revised escalation indices. (Economic)	N/A	-5.6
Adjustment for Current and Prior Inflation. (Estimating)	+3.7	+4.0
Revised Cost Estimate (Estimating)	+3.2	+3.6
Adjustment for Current and Prior Inflation. (Support)	+1.0	+1.1
Change in Initial Spares (Support)	-0.1	-0.1
Change in Peculiar Support (Support)	-0.4	-0.5
Procurement Subtotal	+7.4	+2.5

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AV-8B Remanufacture, December 31, 2002

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	-2.29	-0.117	+0.545	+0.947	-1.17	--	+1.83	-0.255	29.31

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	-2.29	-0.117	+0.545	+0.947	-1.17	--	+1.83	-0.255	29.31

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 1994	MAR 1994
IOC	N/A	N/A	DEC 1996	SEP 1997
Total Cost	N/A	N/A	2158.4	2169.1
Total Quantity	0	0	73	74
Prog Acq Unit Cost	N/A	N/A	29.6	29.3

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --

(U) FY98 AIRFRAME:

MCDONNELL DOUGLAS CORP, ST. LOUIS MO

N00019-97-C-0046, FFP

Award: September 16, 1997

Definitized: January 23, 1998

Initial Contract Price		
Target	Ceiling	Qty
\$188.1	N/A	12

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$188.1	N/A	12	\$188.1	\$188.1

Explanation of Change:

None.

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15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Contract N00019-97-C-0046 is a four-year multi-year contract that is reported in three parts. The first part reflects the FY98 buy of 12 AV-8B (remanufacture) aircraft definitized January 23, 1998. The FY98 portion is a single year Firm Fixed Price (FFP) contract. The second part reflects a Fixed Price Incentive Fee (FPIF) FY99-FY01 buy of 32 AV-8B (remanufacture) aircraft. The third part reflects a FFP contract modification awarded May 04, 2001 for a buy of two AV-8B (remanufacture) aircraft added by Congress.

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>FY99-01 AIRFRAME:</u>					
MCDONNELL DOUGLAS, ST. LOUIS, MO					
N00019-97-C-0046, FPIF			\$489.0	\$505.5	32
Award: September 16, 1997					
Definitized: May 28, 1999					
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$495.6	\$495.8	
\$487.0	\$503.5	32			
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-11.8	\$-9.6	
Cumulative Variances To Date (12/28/02)			<u>\$-16.2</u>	<u>\$-1.3</u>	
Net Change			\$-4.4	\$8.3	

Explanation of Change:

(U) Cost and Schedule variances are a result of the following: Contractor direct and indirect rate increases, loss of manufacturing expertise and increase in manufacturing hours due to subcontractor facilities move (BAE to Brough) and divestiture impacts relative to Boeing fabrication facilities that were sold to GKN Corp.

Unfavorable cost variance is the result of the following: Cost (\$-4.4M) Contractor direct and indirect rate increases and increased manufacturing hours due to subcontractor (BAE) late deliveries and workarounds.

Favorable schedule variance (\$8.3M) is the result of on time sell off of completed aircraft.

(U) Contract Comments:

"Build to Complete," a 12-month negotiated, unauthorized option on FY01 multi-year contract, was definitized in May 1999. At the end of January 2002, Build to Complete became authorized and definitized (P00063), but the scope of work on FY01 multi-year was decreased to a five month period of

15. (U) Contract Information (Cont'd):

performance with the remaining seven months' scope on the additional firm-fixed price AV-8B contracts. These changes reduced Contract Budget Base (CBB) on the multi-year by \$1,700K and reduced the Latest Revised Estimate (LRE) by \$1,814K. As a result, the budget and estimate at completion are reduced.

Latest revised Government and Contractor estimates at completion project that the multiyear contract will go beyond target cost. Analysis of over target costs for FY1999 is complete and has been funded at \$5.6M. Analysis of FY2000 over target costs is complete and \$3.0M has been funded. Analysis of FY2001 over target costs is ongoing.

(U) <u>FY2001 AIRFRAME:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS, ST LOUIS, MO			
N00019-97-C-0046, FFP	\$33.6	N/A	2
Award: May 4, 2001			
Definitized: May 4, 2001			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$33.6	N/A	2	\$33.6	\$33.6

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

An Advanced Acquisition Contract (AAC) was signed on November 30, 2000 for two additional AV-8B (remanufacture) aircraft. The definitized Firm Fixed Price (FFP) modification was executed on May 04, 2001.

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AV-8B Remanufacture, December 31, 2002

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> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06)	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	2150.1	12.5	4.7	1.8	2169.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2150.1	12.5	4.7	1.8	2169.1

b. Annual Summary -- AV-8B Remanufacture

Appropriation: 1506 - Aircraft Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1994 Dollars Nonrec</u>	<u>Flyaway FY 1994 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994	4		121.6	141.0	145.4
1995	4	2.3	96.5	124.3	130.3
1996	8	13.1	169.8	240.4	255.5
1997	12	6.3	245.5	336.8	361.0
1998	12	6.0	230.9	299.8	325.0
1999	11		205.3	322.7	354.3
2000	11	0.9	200.3	278.2	309.3
2001	12	1.1	231.9	234.6	263.5
2002					
2003		5.0		5.0	5.8
2004		10.7		10.7	12.5
2005		4.0		4.0	4.7
2006		1.5		1.5	1.8
Subtotal	74	50.9	1501.8	1999.0	2169.1

	<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	74	50.9	1501.8	1999.0	2169.1

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AV-8B Remanufacture, December 31, 2002

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	67	68

(U) Percent Total Program Quantities Delivered: 91.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1890

(U) Percent Total Program Expended: 87.1%

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 17.0  
Number of aircraft/squadron 16  
(10 aircraft per squadron with a six aircraft detachment)  
Consumption rate gal/hr 669.0  
POL cost, JP-5, per barrel, FY 94 \$34.76  
Date of estimate: 28 January 2003  
Source: AIR-4.2 FY2000 Operating and Support Cost Update Report

Section b comments:

Total Program costs span from FY1994 through 2015. Program costs were projected based upon attrition rate of 3.3% and ramped down to meet program completion at FY2015. Costs do include kit modifications costs.

Sections a and b do not include Fleet Readiness Support (FRS) costs.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	AV-8B Remanufacture Avg Annual Cost Per squadron/year	No Antecedent System
Mission Pay & Allowances	11.4	N/A
Unit Level Consumption	12.9	N/A
Intermediate Maintenance	3.7	N/A
Depot Maintenance	3.1	N/A
Contractor Support	0.0	N/A
Sustaining Support	7.6	N/A
Indirect Costs	12.1	N/A
Total	50.8	N/A

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18b. (U) Operating and Support Costs (Cont'd):

Total O&S Cost	AV-8B Remanufacture	No Antecedent System
BYS (In Millions)	4860.7	N/A
TYS (In Millions)	5722.7	N/A

Report Creation Date: 03/18/2003 6:25:00 PM

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AF-19 NAS

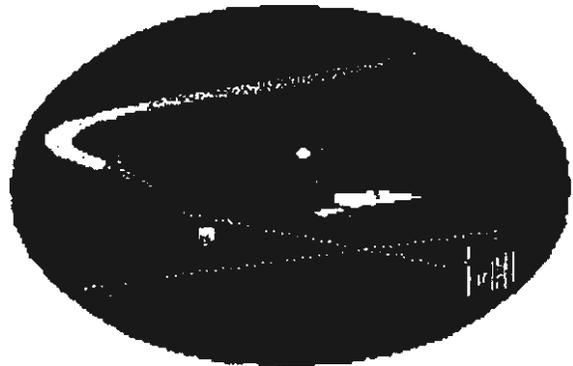
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM: NAS**

**AS OF DATE:** December 31, 2002

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**1. Designation and Nomenclature (Popular Name):** National Airspace System (NAS)

**2. DoD Component:** USAF

Joint Participants:  
Army, Navy

**3. Responsible Office and Telephone Number:**

ESC/GAA	GS-15 Alexander Kelley
75 Vandenberg Drive	Assigned: April 2, 2001
Hanscom AFB	DSN 478-4947; COMM (781) 377-4947
Bedford, MA 01731-2103	Alexander.Kelley@hanscom.af.mil

**4. Program Elements/Procurement Line Items:**

RDT&E:

- PE 0204696N
- PE 0305137F
- PE 0604633A

PROCUREMENT:

- APPN 1810 ICN 24696N (Navy)
- APPN 3080 ICN 35137F (Air Force)
- APPN 2031 ICN 64633A (Army)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

03-C-0294

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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 March 3, 2003.

**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. NAS is a Non-Developmental Item (NDI) acquisition. 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 Federal Aviation Administration (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 thru 1994 included the demonstration of the Military Airspace Management System (MAMS) prototype software at Edwards AFB, CA; the demonstration of a repackaged FAA Common Console into the DoD configuration; release of the MAMS Request for Proposal (RFP); formal approval of executive interagency agreements for test, procurement and support of FAA Automation Systems; Chief of Staff of the Air Force (CSAF) approval of updated National Airspace System (NAS) and MAMS Operational Requirements Documents (ORDs); Designated Acquisition Commander (DAC) approval of MAMS Milestone (MS) 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 thru 1996 included the NAS paper Air Force Acquisition Review Council (AFSARC) MS II review; the MAMS successful negotiations with Sacramento Air Logistics Center (SM-ALC) to utilize their existing Advanced Technology Support

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**7. Executive Summary (Cont'd):**

Program (ATSP) contract for completion of the MAMS development effort; FAA Enhanced Terminal Voice Switch (ETVS) contract award to Denro, Inc.; 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.

1997 thru 1998 included the Air Force Acquisition Executive (AFAE) approval of Change 1 to the NAS Acquisition Program Baseline (APB) on February 27, 1997. A second key approval occurred on June 30, 1997 with the issuance of an amendment to the DoD National Airspace System (NAS) MS II Decision and Phase II Guidance which authorized NAS a quantity increase from 53 to 65 operational sites. Successful completion of the MAMS Combined Test & Evaluation, favorable MS III Review, and Multi-Service Concept of Operation (CONOPS) approval also took place. The Voice Communications Switching System (VCSS) portion of NAS also experienced success with the completion of Developmental Test and Evaluation (DT&E) and the Program Executive Officer (PEO) approval of the Operational Test and Evaluation (OT&E) certification briefing.

1999 thru 2000 included the declaration of the MAMS Initial Operational Capability (IOC) on January 21, 1999 and start of MAMS Full Rate Production on March 31, 1999. Completion of the DoD Advanced Automation System (DAAS) DT&E occurred October 1, 1999, with the completion of the Digital Airport Surveillance Radar (DASR) DT&E following in step on October 8, 1999. The Voice Communication Switching System (VCSS) achieved a successful Full Rate Production Decision on November 15, 1999. Change 3 to the NAS APB received AFAE approval on May 3, 1999. SAF/AQ approved an amendment to the DoD National Airspace System (NAS) MS II Decision and Phase II Guidance on May 3, 1999. The new ADM authorized NAS a quantity increase from 65 to 92 operational sites. The Digital Airport Surveillance Radar (DASR) systems commenced safe flight operations at Eglin Air Force Base (AFB) in June 2000 which have successfully continued uninterrupted to date.

2001 thru January 2002 included the AFAE approval of Change 4 to the NAS APB and an amendment to the DoD NAS MS II Decision and Phase II Guidance on August 8, 2001. The new ADM authorized a second Low Rate Initial Production (LRIP) of DASR and DAAS equipment and delegated approval authority to the PEO. DAAS became operational at McGuire AFB in September 2001. Completed formal DT&E testing of Primary Surveillance Radar (PSR) software enhancements at Eglin AFB December 2001 in preparation for Multi-Service Test and Evaluation (MOT&E). Second DAAS LRIP Tri-Service coordination obtained early February 2002.

2002 through January 2003 included the delivery of the PSR software enhancement to the DASR on February 11, 2002. On February 14, 2002, the PEO approved an LRIP of 13 DAAS. A 2nd DASR LRIP approval by the PEO was held off to await the results of MOT&E. A DAAS-only MOT&E report was issued by Air Force Operational Test and Evaluation Center (AFOTEC) on May 3, 2002 that deemed DAAS "operationally effective and suitable." On July 23, 2002, the PEO certified readiness to re-enter MOT&E based upon consideration of MOT&E re-entry criteria and the inputs of the System Program Office (SPO), AFOTEC, Air Force Flight Standards Agency (AFFSA), 46th Test Squadron, and the SPO's certification

**7. Executive Summary (Cont'd):**

briefing. MOT&E was re-entered using Eglin AFB, FL and was concluded on September 7, 2002. AFOTEC drafted an MOT&E status report rating DASR as "ineffective and unsuitable." AFOTEC cited DASR's inability to manage false primary radar returns while consistently processing valid primary radar returns for the primary effectiveness concern and inadequate radar optimization plans, built-in test/fault isolation, technical manuals, maintenance concept, and logistics support guidance for the main suitability drivers. DoD users (AFFSA lead), the FAA, and the SPO non concurred with the findings. On November 20, 2002, SAF/AQ met with the PEO, AFOTEC, users, and the SPO. As a result of this meeting, SAF/AQ (AFAE) directed a slip to the MS III date. Due to this directed schedule slip and added program capabilities, Change 5 to the NAS APB was approved by the AFAE on March 3, 2003. The new MS III date is now set for March 2004. DAAS and VCSS production and installations continue to be on-track. A Full-Rate Production Award for DAAS is expected to be in conjunction with the Production Award for DASR following a MS III decision. Laughlin AFB, TX switched live operations over from the legacy equipment to DAAS and DASR in January 2003.

**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 --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
DoD ATCALs in the NAS			
Milestone 0	NOV 1990	NOV 1990	NOV 1990
Milestone I	JUL 1992	JUL 1992	JUL 1992
Milestone II	JUL 1995	JUL 1995	JUL 1995
Milestone III	JUN 1998	MAR 2004	MAR 2004 (Ch-1)
IOC (First DoD Site Activation)	APR 2000	AUG 2003	AUG 2003 (Ch-1)
RADAR (DASR)			
Contract Award	DEC 1995	AUG 1996	AUG 1996
DT&E			
Start	AUG 1996	JUL 1997	JUL 1997
Complete	JAN 1998	JUN 1999	OCT 1999
LRIP Contract	MAR 1998	N/A	N/A
LRIP First Delivery	JUN 1999	N/A	N/A
IOT&E			
Start	JUN 1997	JUL 2000	JUL 2000
Complete	MAR 1998	OCT 2003	OCT 2003 (Ch-1)
Full Rate Production Contract Award	MAR 1999	MAR 2004	MAR 2004 (Ch-1)
AUTOMATION (DAAS)			
Production Award Exercise	JUL 1998	MAR 2004	MAR 2004 (Ch-1)
VOICE (VCSS)			
Program Review	MAY 1997	SEP 1999	NOV 1999
MAMS			
Development Contract	JUL 1995	JUL 1995	NOV 1995
Combined T&E			
Start	OCT 1997	MAR 1998	MAR 1998
Complete	MAR 1998	AUG 1998	AUG 1998
IOT&E			
Start	MAY 1998	N/A	N/A
Complete	AUG 1998	N/A	N/A
Milestone III Review	NOV 1998	NOV 1998	DEC 1998
Full Rate Production Contract Award	NOV 1998	NOV 1998	MAR 1999
IOC (First Delivery)	AUG 1998	AUG 1998	JAN 1999

ACRONYMS:

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

9b. Schedule (Cont'd):

b. Current Change Explanations --  
 (Ch-1) Multi-Service Test and Evaluation (MOT&E) was re-entered using Eglin AFB, FL and was concluded on September 7, 2002. Air Force Operational Test and Evaluation Center (AFOTEC) released a draft MOT&E report rating DASR as ineffective and unsuitable. Users--Air Force Flight Standards Agency (AFFSA) lead--and the System Program Office (SPO) non-concurred with the findings. On November 20, 2002, SAF/AQ met with the Program Executive Officer (PEO), AFOTEC, AFFSA, and the SPO. As a result of this meeting, SAF/AQ (AFAE) directed a slip to the Milestone (MS) III date from September 2002 to March 2004. AFFSA now has enough data from past testing and evaluation to declare IOC and the DASR IOC date changed from August 2002 to August 2003. The SPO worked with AFOTEC to agree on a way ahead that includes reentering Multi-Service Operational Test and Evaluation (MOT&E). The IOT&E complete date changed from June 2002 to October 2003. The Full Rate Production Contract Award date for DASR changed from September 2002 to March 2004 and will occur following a MS III decision. Furthermore, the Production Award Exercise date for DAAS changed from September 2002 to March 2004 and will also occur following a MS III decision.

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
DOD ATCALs IN THE NAS				
Inter/Intrafacility Data Transfer				
Auto Transfer of Position Track Data	IAW ICD	IAW ICD / IAW ICD	Met Obj.	IAW ICD
Electronic Inter-facility Transfer of Flight Plans	IAW ICD	IAW ICD / IAW ICD	Met Obj.	IAW ICD
Aircraft Tracked Medium (LCF)	900	900 / 250	522	900
Radar Subclutter Visibility (dB)	55	55 / 42	47	47 (Ch-1)
Voice Compatibility/ Interoperability	Digital Voice Systems	Digital Voice Systems / face to existing / FAA / Systems	Met Thresh.	Digital Voice Systems
MAMS				
Conflict Identification	100% of flicts flicted; 85% of flicts flicted	100% of flicts flicted; 85% of flicts flicted / 98% of flicts flicted; 85% of flicts flicted / 85% of flicts flicted	Met Thresh.	100% of con-flicts identi-fied; 85% of

10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	<or= 10 (sec)	<or= 10 / fied (sec) / <or= 30 (sec)		con-flicts identified <or= 10 (sec)
Interface with FAA	Trans-mittal for 85% of messages between Scheduler and FAA <or= 5 (min)	Trans- / Trans-mittal for 85% of messages/ between Scheduler and FAA <or= 5 (min) / Trans-mittal for 85% of messages between Scheduler and FAA <or= 10 (min)	Met Obj.	Trans-mittal Time for 85% of messages between scheduler and FAA <or= 5 (min)
Reporting	Process-ing Time of Util-ization Data <or= 1 (min); Total Manual and Automat-ic Report tion <or= 10 (min)	Process- / Process-ing Time/ of Util-ization / Data Requests/ <or= 1 (min); Total Manual and Automat-ic Report / Genera- / tion <or= 10 (min) / <or= 30 (min)	Met Obj.	Process-ing Time of Util-ization Data Requests <or= 1 (min); Total Manual and Automat-ic Report Genera-tion <or= 10 (min)

ACRONYM: ICD - Interface Control Document  
 LCF - Local Control Facility

**10b. Performance Characteristics (Cont'd):**

b. Current Change Explanations --  
 (Ch-1) The Current Estimate for Radar Subclutter Visability was changed from 43 to 47 after the system demonstrated this new and improved number.

**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	101.3
Procurement	473.7	976.4	975.8
Flyaway	(302.8)		(633.7)
Other Wpn Systems Cost	(144.7)		(286.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.2)		(55.9)
Construction (MILCON)	3.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	<u>573.3</u>	<u>1081.8</u>	<u>1077.1</u>
Escalation	217.8	404.0	380.2
Development (RDT&E)	(16.4)	(21.8)	(14.5)
Procurement	(200.0)	(382.2)	(365.7)
Construction (MILCON)	(1.4)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>791.1</u>	<u>1485.8</u>	<u>1457.3</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>53</u>	<u>92</u>	<u>92</u>
Total	53	92	92

The unit of measure of this program represents National Airspace System (NAS) operational sites. A NAS site (unit) represents at least one paired DAAS and DASR. This definition of a unit is not a meaningful measurement of a "typical" site where NAS equipment is installed. It does not account for VCSS's, stand-alone DAAS's, or sites that have multiple DASR's. It is due to this restrictive definition and site unique requirements that costs (in addition to quantity and configuration) can vary significantly from site to site.

The LRIP quantity approved at MS II was eight Digital Airport Surveillance Radars (DASR) and zero DoD Advanced Automation Systems (DAAS) for the radar and automation portions of NAS. A new ADM received SAF/AQ approval August 8, 2001 authorizing a second LRIP of 20 DASR and 13 DAAS to keep DoD DASR production and deployment efforts on track avoiding shutdown, restart, and retraining impacts.

c. Foreign Military Sales -- None.

11d. Total Program Cost and Quantity (Cont'd):

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	1081.8	1077.1	
(2) Quantity	92	92	
(3) Unit Cost	11.759	11.708	-0.43
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	976.4	975.8	
(2) Quantity	92	92	
(3) Unit Cost	10.613	10.607	-0.06

The unit of measure of this program represents National Airspace System (NAS) operational sites. A NAS site (unit) represents at least one paired DAAS and DASR. This definition of a unit is not a meaningful measurement of a "typical" site where NAS equipment is installed. It does not account for VCSS's, stand-alone DAAS's, or sites that have multiple DASR's. It is due to this restrictive definition and site unique requirements that costs (in addition to quantity and configuration) can vary significantly from site to site.

Due to this restrictive definition of a site and the significant variations of the many complex and varied configurations at each NAS site, Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) information does not provide a useful measure of unit cost. PAUC and APUC provides only notional data.

**13. Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PRGC	MILCON	TOTAL
Development Estimate	113.0	673.7	4.4	791.1
Previous Changes:				
Economic	-6.3	-56.8	-	-63.1
Quantity	-	+287.2	-	+287.2
Schedule	-	+120.1	-	+120.1
Engineering	-	+42.1	-	+42.1
Estimating	+9.1	-77.4	-4.4	-72.7
Other	-	-	-	-
Support	-	+8.0	-	+8.0
Subtotal	+2.8	+323.2	-4.4	+321.6
Current Changes:				
Economic	-	-16.5	-	-16.5
Quantity	-	+13.3	-	+13.3
Schedule	-	+4.2	-	+4.2
Engineering	-	+100.3	-	+100.3
Estimating	-	+0.9	-	+0.9
Other	-	-	-	-
Support	-	+242.4	-	+242.4
Subtotal	-	+344.6	-	+344.6
Total Changes	+2.8	+667.8	-4.4	+666.2
Current Estimate	115.8	1341.5	-	1457.3

Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PRGC	MILCON	TOTAL
Development Estimate	96.6	473.7	3.0	573.3
Previous Changes:				
Quantity	-	+208.0	-	+208.0
Schedule	-	+52.4	-	+52.4
Engineering	-	+32.5	-	+32.5
Estimating	+4.7	-39.1	-3.0	-37.4
Other	-	-	-	-
Support	-	+1.5	-	+1.5
Subtotal	+4.7	+255.3	-3.0	+257.0
Current Changes:				
Quantity	-	+9.8	-	+9.8
Schedule	-	-	-	-
Engineering	-	+71.3	-	+71.3
Estimating	-	-4.0	-	-4.0
Other	-	-	-	-
Support	-	+169.7	-	+169.7
Subtotal	-	+246.8	-	+246.8
Total Changes	+4.7	+502.1	-3.0	+503.8
Current Estimate	101.3	975.8	-	1077.1

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-19.0
	Economic adjustment for negative program change. (Economic)	N/A	+2.5
	Total Quantity Variance associated with increase of 2 units (1 AF, 1 Navy). (Quantity)	+9.8	+13.3
	Stretchout of annual Navy procurement buy profile. (Schedule)	0.0	+1.1
	Acceleration of annual Army procurement buy profile. (Schedule)	0.0	-2.9
	Stretchout of annual Air Force procurement buy profile. (Schedule)	0.0	+6.0
	Addition of Technology Refresh to Navy Procurement Program (Engineering)	+17.6	+25.1
	Addition of Airfield Automation to Navy Procurement Program. (Engineering)	+12.3	+16.9
	Addition of Airfield Automation to Army Procurement Program (Engineering)	+10.7	+15.2
	Addition of Technology Refresh to AF Procurement Program (Engineering)	+23.5	+33.3
	Addition of Airfield Automation to AF Procurement Program. (Engineering)	+7.2	+9.8
	Adjustment for Navy Current and Prior Inflation. (Estimating)	+0.9	+1.3
	Refinement of Navy Estimate. (Estimating)	-13.4	-14.7
	Adjustment for Army Current and Prior Inflation. (Estimating)	+0.2	+0.2
	Refinement of Army Estimate. (Estimating)	+7.8	+10.6
	Adjustment for AF Current and Prior Inflation. (Estimating)	+1.6	+2.1
	Refinement of AF Estimate. (Estimating)	-1.1	+1.4
	Change in Navy Initial Spares (Support)	+7.1	+9.6
	Other Wpn Systems Cost increase for Navy are due to increased requirements, site installation/adaptation, and program extension. (Support)	+49.9	+71.6
	Adjustment for Army Current and Prior Inflation. (Support)	+0.2	+0.2
	Change in Army Initial Spares (Support)	+1.0	+1.4
	Other Wpn Systems Cost increase for Army are due to increased requirements, site installation/adaptation, and program extension. (Support)	+17.5	+25.1
	Adjustment for AF Current and Prior Inflation. (Support)	+0.8	+0.8
	Change in AF Initial Spares (Support)	+0.7	+1.2

**13b. Cost Variance Analysis (Cont'd):**

b. Current Change Explanations --

	(Dollars in Millions)
	<u>Base-Year</u> <u>Then-Year</u>
Other Wpn Systems Cost increase for AF are due to increased requirements, added test range sites, site installation/adaptation, and program extension. (Support)	+92.5    +132.5
Procurement Subtotal	+246.8    +344.6

**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	
14.93	-0.865	-3.06	+1.35	+1.55	-0.780	--	+2.72	+0.914	15.84

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.71	-0.797	-2.12	+1.35	+1.55	-0.832	--	+2.72	+1.87	14.58

c. Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	JUL 1992	JUL 1992	N/A	JUL 1992
Milestone II	JAN 1994	JUL 1995	N/A	JUL 1995
Milestone III	MAR 1997	JUN 1998	N/A	MAR 2004
IOC	OCT 1999	APR 2000	N/A	AUG 2003
Total Cost	122.6	791.1	N/A	1457.3
Total Quantity	N/A	53	N/A	92
Prog Acq Unit Cost	N/A	14.9	N/A	15.8

15. Contract Information (Then-Year Dollars in Millions):

The repeating of the Raytheon Contract was split to distinguish between the RDT&E and the Procurement Portion. It was also updated with the latest estimate for the total DoD contract value through the life of the program.

The DoD National Airspace System (NAS) is comprised of three systems: the Digital Airport Surveillance Radar (DASR), the Digital Advanced Automation System (DAAS), and the Voice Communication Switching System (VCSS). The DoD manages the DASR procurement contract. The remainder of NAS procurement funding is for the VCSS and DAAS programs. The VCSS and DAAS procurement contracts are managed by the Federal Aviation Administration (FAA) and are not reported by DoD.

a. RDT&E --	Initial Contract Price		
DASR:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Company, Marlborough, MA			
F19628-96-D0038, FFP	\$17.9	N/A	0
Award: August 9, 1996			
Definitized: August 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>
\$17.9	N/A	0	\$17.9	\$17.9

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

b. Procurement --	Initial Contract Price		
DASR:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Company, Marlborough, MA			
F19628-96-D0038, FFP	\$372.0	N/A	92
Award: June 10, 1998			
Definitized: June 10, 1998			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$372.0	N/A	92	\$372.0	\$372.0

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> (FY90-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-13)	<u>Total</u>
RDT&E	115.8	-	-	-	115.8
Procurement	386.8	84.8	112.4	757.5	1341.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	502.6	84.8	112.4	757.5	1457.3

b. Annual Summary -- NAS

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1990 Dollars Nonrec</u>	<u>Flyaway FY 1990 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 FY 1990 Dollars Nonrec</u>	<u>Flyaway FY 1990 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 FY 1990 Dollars Nonrec</u>	<u>Flyaway FY 1990 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				9.6	11.6
1999				1.5	1.8
2000				1.5	1.8

16b. Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal				94.5	198.8

FY00 funds realigned to ATCAL5 PE 351105 IAW HAT guidance.

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996			0.7	1.9	2.3
1999			4.3	7.5	6.7
2000	5		21.4	26.6	35.4
2001			18.6	24.7	31.4
2002	1		11.1	18.1	23.3
2003	2		2.9	6.1	8.4
2004	4		17.6	23.7	31.4
2005	3		16.5	24.2	32.6
2006	5		20.1	28.8	35.4
2007	3		15.9	20.5	28.6
2008	4		15.9	20.1	24.6
2009	2		16.4	20.1	29.0
2010	2		16.8	21.5	31.6
2011	3		14.4	19.0	28.4
2012			11.1	20.1	30.7
2013			7.9	13.9	21.6
Subtotal	36		210.2	293.5	405.3

Note: A NAS quantity represents a site receiving a full complement of NAS equipment. Recurring Flyaway Dollars shown without any respective quantity represents locations that will receive less than a full complement of NAS equipment.

16b. Program Funding Summary (Cont'd):

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998			0.1	0.2	0.3
1999			1.3	1.4	1.7
2000			1.6	1.9	2.4
2001			3.4	10.4	13.2
2002			4.5	6.5	8.4
2003	2		6.8	10.5	15.1
2004	2		8.8	12.0	15.9
2005	3		10.2	14.3	20.0
2006	1		8.8	11.3	16.2
2007	2		7.9	11.6	16.2
2008			10.1	14.5	20.8
2009			8.4	12.6	18.2
2010			0.9	3.0	4.4
2011			1.4	2.8	4.2
2012					
2013					
Subtotal	11		59.4	114.1	155.6

Note: A NAS quantity represents a site receiving a full complement of NAS equipment. Recurring Flyaway Dollars shown without any respective quantity represents locations that will receive less than a full complement of NAS equipment.

Appropriation: 3060 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998			3.7	12.9	15.8
1999			4.4	12.7	15.1
2000	3		28.0	38.7	48.0
2001	2		36.0	47.3	60.2

16b. Program Funding Summary (Cont'd):

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	3		22.1	42.1	54.2
2003			17.5	34.6	45.1
2004			14.3	28.5	37.5
2005	2		29.2	44.4	56.9
2006	11		26.8	42.7	58.6
2007	7		30.9	47.1	59.7
2008	7		29.1	47.8	61.9
2009	3		29.9	47.8	69.1
2010	7		30.3	46.3	68.2
2011	4		24.9	42.1	63.1
2012	5		13.2	25.7	43.8
2013			1.3	1.6	7.2
Subtotal	45		343.1	567.6	729.9

Note: A NAS quantity represents a site receiving a full complement of NAS equipment. Recurring Flyaway Dollars shown without any respective quantity represents locations that will receive less than a full complement of NAS equipment.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	36		210.2	297.4	409.3
Army	11		80.4	117.0	158.6
USAF	45		343.1	662.1	889.7
Grand Total	92		633.7	1076.5	1456.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RTMR	0	0
Procurement	4	4

Percent Total Program Quantities Delivered: 4.3%

b. Total Expenditures To Date (in Millions of Dollars): \$ 255.2

Percent Total Program Expended: 17.5%

**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 NS III decision. The estimate assumes a 22 year life from year FY00 to FY21. There is no antecedent system. Average annual O&S costs per NAS site have increased because the frequency of technology refresh increased from every 6 years to every 3 years.

BY total O&S costs have decreased from previously reported numbers because of fielding delays. TY total O&S costs have increased because the operational phase of the system increased two years. This two year increase caused an inflationary impact to the TY O&S totals not seen in the BY totals.

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	NAS Avg Annual Cost Per NAS Site	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	1.6	N/A
Unit Level Consumption	0.7	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	0.5	N/A
Sustaining Support	0.1	N/A
Indirect Costs	0.5	N/A
Total	3.2	N/A

Total O&S Cost	NAS	Avg Annual Cost Per
BY\$ (In Millions)	4567.8	N/A
TY\$ (In Millions)	9055.6	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: Longbow Hellfire

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

AS OF DATE: 03/17/03

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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	Ms. Carolyn Frazier
Aviation Rockets & Missiles Proj Ofc	Assigned: July 1, 2001
ATTN: SFAE-MSL-ARM	DSN 746-1117; COMM (256) 876-1117
RSA, AL 35898-5610	carol.frazier@msl.redstone.army.mil

4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U)	PE 0203802	Project D785
(U)	PE 0604816	Project DC13

PROCUREMENT:

(U)	APPN 2032	ICN C70300 (Army)
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~~Classified by: HELFINS Security Classification Guide  
 Downgrade instructions: HELFINS Security Classification Guide, 7 March 2000  
 Declassify on: OADR~~

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Longbow HELLFIRE, December 31, 2002

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 18, 2001.

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 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 are employed on the AH-64D Longbow Apache helicopter. Longbow HELLFIRE provides 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 provides a lock-on before launch (LOBL) or lock-on after launch (LOAL) capability, depending on target range and movement parameters. Longbow does not change the AH-64 mission or role, but provides 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 Critical Technology Demonstration (CTD). During the three-plus years of the CTD program, both MMC and WEC demonstrated that the technology was in hand for further systems development. As a result of a Government In-Process Review in Aug 85, a contract was awarded in Nov 85 to MMC and WEC, as a joint venture (JV), for preliminary design of the tactical Longbow System. This was followed in Aug 86 by the award of a Proof of Principle demonstration contract to the JV. An Initial Design Phase contract was awarded to the JV in Sep 89. Proof of Principal of the Longbow missile was accomplished 11 Apr 90. The Defense Acquisition Board (DAB) granted approval for engineering and manufacturing development (EMD) of the Longbow Missile 5 Dec 90, and a letter contract for

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\*\*\* UNCLASSIFIED \*\*\*

Longbow Hellfire, December 31, 2002

7. (U) Executive Summary (Cont'd):

EMD of the Longbow missile was awarded 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 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 met a cost effective combination of system qualification and live fire test objectives and 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. 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 and definitized 1 Jul 98. The final milestone for the program, first unit equipped, was accomplished Jul 98. Congressional authorization for the FY 99 - FY 03 multiyear contract was received Oct 98 and the contract was awarded 30 Apr 99 for 10,397 missiles. The missile firings associated with the Longbow Apache System first article tests were successfully completed on 29 Oct 98.

A contract for pre-planned product improvement of the Longbow Hellfire missile was awarded 5 Feb 01 to Longbow Limited Liability Company. This will improve Home-on-Jam(HOJ)/Anti-Jam(AJ) and add Counter-Active Protection System (CAPS) capabilities for the missile. The HOJ/AJ and CAPS objectives are to maintain the Longbow Hellfire Missile System's low vulnerability, and susceptibility to any "hard kill" Active Protection System and battlefield jammer threats.

During Hellfire live fire training in Oct 00, Apache aircraft were damaged by missile motor debris. This resulted in a Safety of Use message restricting Hellfires with the affected motors to War Time Use Only. On 13 Nov 01, a Letter Contract was awarded to Longbow Limited Liability Company to modify

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7. (U) Executive Summary (Cont'd):

1,935 missiles with a new missile motor rod grain support assembly. The current definitized contract retrofits 2,763 missiles.

Currently the Army has 6,530 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

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I In-Process Review	AUG 1985	AUG 1985	AUG 1985
Milestone IB ASARC	JUL 1989	JUL 1989	JUL 1989
Milestone II DAB	DEC 1990	DEC 1990	DEC 1990
FSD Contract Award	DEC 1990	DEC 1990	DEC 1990
Component Qual Test			
Start	AUG 1993	AUG 1993	AUG 1993
Complete	MAY 1995	MAY 1995	MAY 1995
System Qual Test			
Start	JUL 1994	JUL 1994	JUL 1994
Complete	MAY 1995	MAY 1995	MAY 1995
Milestone III (LRIP - DAB)	OCT 1995	OCT 1995	OCT 1995
Low-Rate Initial Production Contract Award	DEC 1995	DEC 1995	DEC 1995
First Production Delivery	MAR 1997	MAR 1997	JUL 1997
Milestone III (Full Rate - ASARC)	N/A	OCT 1997	OCT 1997
Full-Rate Production Contract Award	DEC 1997	DEC 1997	NOV 1997
Authorization FY 99 Multiyear Contract	OCT 1998	OCT 1998	OCT 1998
First Unit Equipped (FUE)	JUL 1998	JUL 1998	JUL 1998

9a. (U) Schedule (Cont'd):

(U) Acronym List:

- ASARC (Army Systems Acquisition Review Council)
- DAB (Defense Acquisition Board)
- LRIP (Low Rate Initial Production)
- FUE (First Unit Equipped)

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production	Approved	Demon-	Current
	Estimate (SAR)	Program (APB)	strated	Estimate
	Yes	Obj/Threshold	Perf	Estimate
	Yes	Yes / Yes	YES	YES
Independent Function				
After Launch				
Probability of	(b)(1)			
Single Shot Kill				

AS AMENDED  
AS AMENDED

(U) Demonstrated data source is the 42 missile inertially guided, radar aided development test firing program.

b. Current Change Explanations -- None

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LONGBOW HELLFIRE, December 31, 2002

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	452.1
Procurement	1941.0	2032.3	2003.7
Flyaway	(1932.9)		(1992.8)
Other Wpn Sys Cost	(2.8)		(4.1)
Peculiar Support	(5.3)		(6.8)
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 1996 Base-Year \$	2352.0	2490.5	2455.8
Escalation	283.6	147.0	119.5
Development (RDT&E)	(-24.4)	(-9.6)	(-14.4)
Procurement	(308.0)	(156.6)	(133.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2635.6	2637.5	2575.3
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.

(U) (2) The Milestone II DAB established LRIP quantities of 1118 missiles. A Special Program Review was held in Aug 92 and the LRIP quantities were changed from 1118 missiles to 1414 missiles. The Milestone III ASARC changed the LRIP quantities from 1414 missiles to 1408 missiles. The LRIP quantities were established over the 10% limit to align the missile deliveries with the aircraft fielding schedule.

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 at a cost of \$195M. The following foreign military sales have been signed: Singapore signed Mar 99, for a quantity of 10 missiles at a cost of \$2.4M, Israel signed Feb 00, for a quantity of 120 missiles at a cost of \$29M. Kuwait signed Aug 02, for a quantity of 96 missiles at a cost of \$21.5M.

d. Nuclear Costs -- None.

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Longbow Hellfire, December 31, 2002

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	2490.5	2455.8	
(2) Quantity	12905	12905	
(3) Unit Cost	0.193	0.190	-1.55
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	2032.3	2003.7	
(2) Quantity	12905	12905	
(3) Unit Cost	0.157	0.155	-1.27

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	+3.1	-166.9	-	-163.8
Quantity	-	-54.7	-	-54.7
Schedule	+2.5	+4.7	-	+7.2
Engineering	+48.2	+94.5	-	+142.7
Estimating	-1.4	+56.4	-	+55.0
Other	-	-	-	-
Support	-	+1.8	-	+1.8
Subtotal	+52.4	-64.2	-	-11.8
Current Changes:				
Economic	-0.8	-10.4	-	-11.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-36.9	-	-36.9
Estimating	-0.5	+0.1	-	-0.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.3	-47.2	-	-48.5
Total Changes	+51.1	-111.4	-	-60.3
Current Estimate	437.7	2137.6	-	2575.3

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Longbow Hellfire, December 31, 2002

13a. (U) Cost Variance Analysis (Cont'd):

(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	-	-41.8	-	-41.8
Schedule	-1.1	-	-	-1.1
Engineering	+44.1	+79.1	-	+123.2
Estimating	-1.3	+49.4	-	+48.1
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+41.7	+89.5	-	-131.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-27.2	-	-27.2
Estimating	-0.6	+0.4	-	-0.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.6	-26.8	-	-27.4
Total Changes	+41.1	+62.7	-	+103.8
Current Estimate	452.1	2003.7	-	2455.8

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
Revised estimate for in-house test and support costs. (Estimating)	-1.2	-1.1
RDT&E Subtotal	-0.6	-1.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-15.9
Economic adjustment for negative program change. (Economic)	N/A	+5.5
Decreased quantity of Counter-Active Protection Kits by 4,575 from 6,050 to 1,475. (Engineering)	-27.2	-36.9
Adjustment for Current and Prior Inflation. (Estimating)	+11.6	+12.5
Revised estimate for in-house support and test costs. (Estimating)	-11.2	-12.4
Procurement Subtotal	-26.8	-47.2

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Longbow Hellfire, December 31, 2002

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	
0.198	-0.014	+0.003	+0.001	+0.008	+0.004	--	--	+0.002	0.200

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	
0.169	-0.014	+0.003	--	+0.004	+0.004	--	--	-0.003	0.166

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 1985	AUG 1985	AUG 1985
Milestone II	N/A	DEC 1990	DEC 1990	DEC 1990
Milestone III	N/A	OCT 1995	OCT 1995	OCT 1995
IOC	N/A	APR 1997	JUL 1998	JUL 1998
Total Cost	N/A	2190.3	2635.6	2575.3
Total Quantity	N/A	10896	13311	12905
Prog Acq Unit Cost	N/A	0.2	0.2	0.2

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --

(U) Longbow HF Multiyear:  
 Longbow LLC, Orlando, FL  
 DAAH01-99-C-0086, FFP  
 Award: April 30, 1999  
 Definitized: April 30, 1999

			Initial Contract Price		
			Target	Ceiling	Qty
			\$1244.2	N/A	10397
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$1284.7	N/A	10397	\$1284.7	\$1284.7	

Explanation of Change:

None.

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Longbow Hellfire, December 31, 2002

15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Current Contract Price and Estimated Price at Completion include costs for 226 FMS missiles.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY91-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-07)	<u>Total</u>
RDT&E	427.9	9.8	-	-	437.7
Procurement	2038.0	33.1	28.5	38.0	2137.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2465.9	42.9	28.5	38.0	2575.3

b. Annual Summary -- Longbow Hellfire

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1996 Dollars Nonrec</u>	<u>Flyaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991				66.9	61.2
1992				107.6	100.8
1993				85.7	82.2
1994				108.7	106.2
1995				36.0	35.8
1996					
1997					
1998					
1999					
2000					
2001				10.9	11.7
2002				16.2	17.6
2003				11.3	12.4
2004				8.8	9.8
Subtotal				452.1	437.7

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Longbow HELLFIRE, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		25.1		40.7	41.2
1996	352	45.4	147.4	178.4	182.1
1997	1056	17.9	222.4	241.5	249.2
1998	1100	14.8	204.9	222.1	231.9
1999	2000		324.9	325.2	344.6
2000	2200		273.6	273.9	293.5
2001	2200		260.9	261.2	282.8
2002	2200		211.1	211.3	231.5
2003	1797		244.4	163.0	181.2
2004				29.3	33.1
2005				24.8	28.5
2006				23.0	26.9
2007				9.3	11.1
Subtotal	12905	103.2	1889.6	2003.7	2137.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12905	103.2	1889.6	2455.8	2575.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	6528	6581

(U) Percent Total Program Quantities Delivered: 51.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1817.1

(U) Percent Total Program Expended: 70.6%

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.

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Longbow Hellfire, December 31, 2002

18a. (U) Operating and Support Costs (Cont'd):

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.

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 Thousands)

Cost Element	Longbow Hellfire 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

Total O&S Cost	Longbow Hellfire	Avg Annual Cost Per
BY\$ (In Millions)	78.5	0.0
TY\$ (In Millions)	124.0	0.0

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N-14 LPD 17

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: LPD 17 Class

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): LPD 17 Class Amphibious Transport Dock Ship

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

LPD 17 AMPHIBIOUS TRANSPORT DOCK	CAPT SEAN J. STACKLEY
SHIP PROGRAM OFFICE (PMS317)	Assigned: June 22, 2001
PEO SHIPS	DSN 326-0723; COMM (703)781-0723
WASHINGTON, DC 20376-2101	STACKLEYSJ@NAVSEA.NAVY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603564N (Shared) Project S0408 (Shared)  
 PE 0604311N Project , 22283, 22425  
 PE 0604567N Project S1803 (Shared), S2198 (Shared)

PROCUREMENT:

APPN 1611 ICN 303600 (Navy)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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Dept. of the Navy

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LPD 17 Class, December 31, 2002

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated May 5, 1997.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 4, 2002.

**6. Mission and Description:**

The LPD 17 Class Amphibious Transport Dock Ship will be the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 Classes of Amphibious Ships in embarking, transporting and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct the primary amphibious warfare mission. The LPD 17 Class is required to fill the projected lift shortfall created by the retirement of the above ships, as necessary to support a 2.5 Marine Expeditionary Brigade (MEB) lift requirement and the forward presence of 12 Amphibious Ready Groups (ARGs)/Expeditionary Strike Groups (ESGs).

**7. Executive Summary:**

The lead ship design and construction contract was awarded to the Avondale Alliance in December 1996. In 2001, Northrop Grumman acquired Litton's Ingalls and Avondale Shipbuilding operations and facilities. Lead ship design difficulties and revised production estimates caused program cost and schedule breaches in 2001. In May 2002, USD (AT&L) certified the 12-ship program to Congress in accordance with Nunn-McCurdy criteria. A revised APB was approved in June 2002.

Also in June 2002, a workload swap agreement between the Navy, Bath Iron Works, and Northrop Grumman Ship Systems (NGSS) consolidated the 12-ship LPD 17 construction program within NGSS Gulf Coast facilities at Ingalls and Avondale. This agreement avoids the cost and schedule risks of a second "lead" ship, enhances production efficiency, reduces complexity of contract management and provides program savings.

Production design was completed in August 2002 and is stable. LPD 17 construction is over 50% complete (December 2002) and on track for launch (July 2003) and delivery (November 2004). LPD 18-20 are on contract and in early construction. LPD 21 is scheduled for contract award in 3rd quarter FY 2003. LPD 22 is included in President's Budget 2004 for award in FY 2004.

The FY 2004 President's Budget fully funds 11 of the 12-ship Class through the Future Years Defense Program (FYDP). The Program's funding reflects a revised procurement profile, increased labor and material rates, and workload swap/consolidation (subject to outyear rephasing in future budgets). The Navy is considering a multiyear procurement strategy to reduce program costs.

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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 --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
	JAN 1993	JAN 1993	JAN 1993
Milestone I			
DT&E (DT-I)			
Start	MAR 1993	MAR 1993	MAR 1993
Complete	FEB 1996	FEB 1996	FEB 1996
OT&E (OT-IA)			
Start	JAN 1995	JAN 1995	JAN 1995
Complete	MAR 1995	MAR 1995	MAR 1995
OT&E (OT-IB)			
Start	FEB 1996	FEB 1996	FEB 1996
Complete	APR 1996	APR 1996	APR 1996
Milestone II	JUN 1996	JUN 1996	JUN 1996
Lead Ship Award	AUG 1996	AUG 1996	DEC 1996
DT&E (DT-IIA)			
Start	SEP 1996	APR 1997	APR 1997
Complete	AUG 1998	MAR 2003	MAR 2003
OT&E (OT-IIA)			
Start	JUN 2003	MAY 1999	MAY 1999 (Ch-1)
Complete	SEP 2003	MAY 2000	MAY 2000 (Ch-1)
DIT (OT-IIB)			
Start	N/A	JAN 2002	JAN 2002 (Ch-1)
Complete	N/A	MAR 2003	MAR 2003 (Ch-1)
DT&E (DT-IIB)			
Start	SEP 1998	SEP 2002	SEP 2002 (Ch-1)
Complete	JUN 2002	NOV 2004	NOV 2004 (Ch-1)
OT&E (OT-IC)			

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LPD 17 Class, December 31, 2002

9a. Schedule (Cont'd):

	<u>Development</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate (SAR)</u>	<u>Program (APB)</u>	<u>Estimate</u>
Start	SEP 1998	N/A	N/A (Ch-1)
Complete	MAR 1999	N/A	N/A (Ch-1)
Lead Ship Delivery	JUN 2002	NOV 2004	NOV 2004
DT&E (DT-IIC)			
Start	JUL 2002	NOV 2004	NOV 2004 (Ch-1)
Complete	JAN 2004	NOV 2006	NOV 2006 (Ch-1)
IOT&E (OT-IIC)			
Start	N/A	JAN 2006	JAN 2006 (Ch-1)
Complete	N/A	JUN 2007	JUN 2007 (Ch-1)
LEAD SHIP IOC	JAN 2004	JUL 2006	JUL 2006
Milestone III	AUG 2007	SEP 2009	SEP 2009 (Ch-1)
FOT&E (OT-III)			
Start	JAN 2011	JUL 2010	JUL 2010 (Ch-1)

b. Current Change Explanations --

(Ch-1)Current estimates match the June 4, 2002 OSD approved APB which incorporated the redefinition of test milestone nomenclature by OPTEVFOR.

		<u>From</u>	<u>To</u>
OT&E (OT-IIA)	Start	JAN 2006	MAY 1999
	Complete	JUN 2007	MAY 2000
DIT (OT-IIB)	Start	N/A	JAN 2002
	Complete	N/A	MAR 2003
OT&E (OT-IC)	Start	MAY 1999	N/A
	Complete	SEP 2000	N/A
IOT&E (OT-IIC)	Start	N/A	JAN 2006
	Complete	N/A	JUN 2007
FOT&E (OT-III)	Start	N/A	JUL 2010

Acronym List

DT&E Developmental Test and Evaluation  
OT&E Operational Test and Evaluation  
DIT Design Integration Testing  
IOT&E Initial Operational Test and Evaluation  
IOC Initial Operational Capability  
FOT&E Follow-on Operational Test and Evaluation

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10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Mobility				
Sustained Speed (Kts)	23	23 / 21.5	TBD	21.5
Endurance ((NM)(K) @ Kts)	10/22	10/22 / 9.5/20	TBD	9.5/20
Amphibious Warfare				
Embarkation (NET)				
Troops	750	750 / 650	TBD	720
Vehicles (Sq Ft)(k)	25	25 / 22	TBD	25
Cargo (Cubic Feet)(k)	25	25 / 22	TBD	34
Bulk Fuel (Gals)(k)	325	325 / 250	TBD	271
LCAC	2	2 / 1(+1)	TBD	2
VTOL Land/Launch Spots (CH-46 or CH-53E or MV-22)	4/3/2	4/3/2 / 4/2/2	TBD	4/2/2
VTOL Maint/Storage (CH-46 or CH-53E or MV-22)	3/1/1	3/1/1 / 2/1/1	TBD	2/1/1
Ship To Shore				
Capability (LCAC)				
Sustained Operations (reload 6 LCACs)(mins)	220	220 / 285	TBD	285
Operational Availability (Ao)	.90	.90 / .80	TBD	.80

The Amphibious Warfare Embarkation LCAC (Landing Craft Air Cushion) Embarkation Threshold of 1(+1) is to indicate that the forward LCAC space can be utilized for additional vehicle space if needed to satisfy the vehicle requirement. The final LPD 17 design does not require that additional space.

Acronym List

VTOL Vertical Take-Off and Landing

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LPD 17 Class, December 31, 2002

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	78.7	97.1	100.4
Procurement	8939.4	12842.4	13299.2
Sailaway	(8939.4)		(13299.2)
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	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 1996 Base-Year \$	9018.1	12939.5	13399.6
Escalation	1743.7	2441.2	2212.0
Development (RDT&E)	(-0.9)	(-0.1)	(0.3)
Procurement	(1744.6)	(2441.3)	(2211.7)
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 \$	10761.8	15380.7	15611.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>12</u>	<u>12</u>	<u>12</u>
Total	12	12	12

Eleven of the 12-ship class are considered LRIP as they are planned to be awarded prior to MS III.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (JUN 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	12939.5	13399.6	
(2) Quantity	12	12	
(3) Unit Cost	1078.292	1116.633	+3.56
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	12842.4	13299.2	
(2) Quantity	12	12	
(3) Unit Cost	1070.200	1108.267	+3.56

Then-year procurement costs increased by \$227.2M (+1.5%). Due to revision of the inflation indices, base year dollars (FY 1996 dollars) increased by \$456.8M dollars (+3.56%).

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	77.8	10684.0	-	10761.8
Previous Changes:				
Economic	-0.5	-393.2	-	-393.7
Quantity	-	+64.9	-	+64.9
Schedule	-	+695.5	-	+695.5
Engineering	-	-	-	-
Estimating	+19.7	+4232.5	-	+4252.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+19.2	+4599.7	-	+4618.9
Current Changes:				
Economic	-0.1	-391.3	-	-391.4
Quantity	-	-	-	-
Schedule	-	+65.9	-	+65.9
Engineering	-	-	-	-
Estimating	+3.8	+552.6	-	+556.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3.7	+227.2	-	+230.9
Total Changes	+22.9	+4826.9	-	+4849.8
Current Estimate	100.7	15510.9	-	15611.6

13a. Cost Variance Analysis (Cont'd):

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	-	+315.7	-	+315.7
Engineering	-	-	-	-
Estimating	+18.4	+3587.3	-	+3605.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+18.4	+3903.0	-	+3921.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.3	+456.8	-	+460.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3.3	+456.8	-	+460.1
Total Changes	+21.7	+4359.8	-	+4381.5
Current Estimate	100.4	13299.2	-	13399.6

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised Escalation Indices. (Economic)	N/A	-0.1
Further definition of T&E requirements results in the inclusion of associated costs in FY 2004 & FY 2005. (Estimating)	+3.3	+3.8
RDT&E Subtotal	+3.3	+3.7
(2) <u>Procurement</u>		
Revised Escalation Indices. (Economic)	N/A	-391.3
Adjustment for current and prior years inflation. (Estimating)	+38.7	+42.8
Profile change resulted in a three ship-year increase. LPD 23 moved from FY 2005 to FY 2006. LPD 27 moved from FY 2008 to FY 2009. LPD 28 moved from FY 2009 to FY 2010. (Schedule)	0.0	+65.9
Actual and projected shipyard labor and material rates exceed OSD standard inflation indices. (Estimating)	+418.1	+509.8
Procurement Subtotal	+456.8	+227.2

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
896.82	-65.42	+5.40	+63.45	--	+400.72	--	--	+404.15	1300.97

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	
890.33	-65.38	+5.41	+63.45	--	+398.76	--	--	+402.24	1292.58

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 1993	JAN 1993	N/A	JAN 1993
Milestone II	JUL 1995	JUN 1996	N/A	JUN 1996
Milestone III	OCT 2003	AUG 2007	N/A	SEP 2009
IOC	OCT 2003	MAR 2004	N/A	JUL 2006
Total Cost	59.1	10761.8	N/A	15611.6
Total Quantity	0	12	N/A	12
Prog Acq Unit Cost	0.0	896.8	N/A	1301.0

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

LPD 17: Northrop Grumman Ship Sys, New Orleans LA N0002497C2202/17, CPIF/AF Award: December 17, 1996 Definitized: December 17, 1996	Initial Contract Price		
	Target	Ceiling	Qty
	\$641.4	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1194.7	N/A	1	\$1333.1	\$1401.5

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-19.1	\$0.2
Cumulative Variances To Date (11/30/02)	<u>\$-140.0</u>	<u>\$-12.5</u>
Net Change	\$-120.9	\$-12.7

Explanation of Change:

The unfavorable change to cost variance is primarily the result of material, subcontract, labor, and overhead increases projected in the SAR last year. Although the government's budget was increased last year to cover these projected costs, the contract itself has not been rebaselined. A revised performance measurement baseline will be established following the bottoms-up review that is currently underway. Schedule variance is not significant.

Contract Comments:

The Current Contract Target Price reflects negotiation and incorporation of a NGSS request for equitable adjustment and miscellaneous small contract changes. The \$29.8M increase in the Program Manager's Estimated Price At Completion (from \$1371.7M to \$1401.5M) is attributed to increased labor rates.

<u>LPD 18:</u> Northrop Grumman Ship Sys, New Orleans LA N0002497C2202/18, CPIF/AF Award: December 18, 1998 Definitized: December 18, 1998	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$390.8	N/A	1
	Current Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$578.6	N/A	1
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$662.0	\$705.0	
	<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances	\$0.0	\$0.0	
Cumulative Variances To Date (08/30/02)	<u>\$-2.0</u>	<u>\$0.0</u>	
Net Change	\$-2.0	\$0.0	

Explanation of Change:

Cost variance is not significant.

Contract Comments:

The Current Contract Target Price reflects negotiation and incorporation of a NGSS request for equitable adjustment and miscellaneous small contract changes. The \$9.5M increase in the Program Manager's Estimated Price At

15. Contract Information (Cont'd):

Completion (from \$695.5M to \$705.0M) is attributed to increased labor rates. Both the contractor and Program Manager (PM) estimated prices reflect the June 2002 Navy, Northrop Grumman Shipbuilding Systems, and Bath Iron Works agreement with regard to DDG/LPD workload swap/split and increased costs projected last year. The LPD 18 contract is in the process of being rebaselined in accordance with the LPD/DDG workload swap Memorandum of Understanding.

<u>LPD 19:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Ship Sys, New Orleans LA			\$491.9	N/A	1
N0002497C2202/19, CPIF/AF					
Award: February 29, 2000					
Definitized: February 29, 2000					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$505.7	N/A	1	\$692.0	\$714.0	
			<u>Cost Variance</u> <u>Schedule Variance</u>		
Previous Cumulative Variances			\$-0.1	\$0.0	
Cumulative Variances To Date (08/30/02)			\$-1.3	\$0.0	
Net Change			\$-1.2	\$0.0	

Explanation of Change:

Cost variance is not significant.

Contract Comments:

The Current Contract Target Price reflects negotiation and incorporation of miscellaneous small contract changes. Both the contractor and Program Manager (PM) estimated prices reflect the June 2002 Navy, Northrop Grumman Shipbuilding Systems, and Bath Iron Works agreement with regard to DDG/LPD workload swap/split and increased costs projected last year. The delta between the contractor and government estimates is attributed to increased labor rates. The LPD 19 contract is in the process of being rebaselined in accordance with the LPD/DDG workload swap Memorandum of Understanding.

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LPD 17 Class, December 31, 2002

15. Contract Information (Cont'd):

<u>LPD 20:</u>			Initial Contract Price		
Northrop Grumman Ship Sys, New Orleans LA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N0002497C2202/20, CPIF/AF			\$477.7	N/A	1
Award: May 30, 2000					
Definitized: May 30, 2000					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$479.9	N/A	1	\$510.2	\$691.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (08/30/02)			\$1.9	\$0.8	
Net Change			<u>\$1.3</u>	<u>\$-1.4</u>	
			\$-0.6	\$-2.2	

Explanation of Change:

Cost and schedule variance is not significant.

Contract Comments:

The Current Contract Target Price reflects negotiation and incorporation of miscellaneous small contract changes. Establishing a revised baseline for LPD 20 was postponed pending the results of the DDG/LPD swap and LPD 17 bottoms-up review discussed above. A revised baseline for LPD 20 will be established subsequent to implementation of revised baselines for LPD's 17-19. The increase in the Program Manager's estimated price at completion from last year is attributed to increased labor hours and rates.

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> (FY90-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-16)	<u>Total</u>
RDT&E	93.6	1.8	5.3	-	100.7
Procurement	5441.3	1516.8	337.7	8215.1	15510.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5534.9	1518.6	343.0	8215.1	15611.6

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LPD 17 Class, December 31, 2002

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- LPD 17 CLASS

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Sailaway FY 1996 Dollars Nonrec	Sailaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				0.6	0.5
1991				5.4	4.9
1992				1.3	1.2
1993				10.8	10.3
1994				28.7	28.0
1995				10.9	10.8
1996				9.1	9.2
1997				4.2	4.3
1998				12.5	12.9
1999				1.2	1.3
2000				2.2	2.3
2001				0.2	0.2
2002				0.8	0.9
2003				6.2	6.8
2004				1.6	1.8
2005				4.7	5.3
Subtotal				100.4	100.7

Program funding shown in 16b does not include life of type non-acquisition development funds for in-service ship product improvements that are included in the LPD 17 program element budget.

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1996 Dollars Nonrec	Sailaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	1		1716.0	968.6	994.1
1997					
1998				91.0	96.0
1999	1		974.0	593.8	632.9
2000	2		1918.1	1412.2	1527.2
2001				541.2	593.5
2002				375.6	418.0
2003	1		1076.5	1044.1	1179.6
2004	1		1151.3	1320.7	1516.8
2005				289.1	337.7
2006	2		1929.5	1919.7	2282.0
2007	1		1060.3	1045.4	1264.9
2008	1		1088.6	1068.4	1316.1
2009	1		1061.5	1048.5	1314.8

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LPD 17 Class, December 31, 2002

16b. Program Funding Summary (Cont'd):

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1996 Dollars Nonrec	Sailaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2010	1		1323.4	1313.7	1677.0
2011				54.0	70.2
2012				53.4	70.7
2013				53.0	71.4
2014				52.7	72.3
2015				43.0	60.0
2016				11.1	15.7
Subtotal	12		13299.2	13299.2	15510.9

FY 2011-2016 funding is associated with Outfitting and Post Delivery costs.

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12		13299.2	13399.6	15611.6

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): \$ 2398.6

Percent Total Program Expended: 15.4%

18. Operating and Support Costs:

a. 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 sources are Total Ownership Cost (TOC), and Contract

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LPD 17 Class, December 31, 2002

18a. Operating and Support Costs (Cont'd):

Data Requirements List (CDRL) September 2001. There is no antecedent system.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	LPD 17 CLASS AVG ANNUAL COST PER LPD CLASS HULL	Antecedent System
Mission Pay & Allowances	24.9	N/A
Unit Level Consumption	9.7	N/A
Intermediate Maintenance	0.5	N/A
Depot Maintenance	17.3	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.0	N/A
Maintenance	2.0	N/A
Total	54.4	N/A

Total O&S Cost	LPD 17 CLASS	Antecedent System
BY\$ (In Millions)	26097.7	N/A
TY\$ (In Millions)	56460.4	N/A

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A-Z ATACMS - BAT

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: ATACMS/BAT

AS OF DATE: December 31, 2002

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ATACMS/BAT

1. (U) Designation and Nomenclature (Popular Name): Army Tactical Missile System (TACMS)/BAT
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:  
 Project Manager COL James C. Naudain  
 Precision Fires Rocket & Missile Sys Assigned: August 6, 2001  
 ATTN: SFAE-MSL-PF DSN 746-1195; COMM 256-876-1195  
 Redstone Arsenal, AL 35898-5650 Craig.Naudain@msl.redstone.army.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0200302A  
 (U) PE 0603754A  
 (U) PE 0604754A  
 (U) PE 0604768A  
 PROCUREMENT:  
 (U) APPN 2032 ICN CA025A (Army)  
 (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, 2002

5. (U) References:

BAT/BAT P3I

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum (ADM), dated May 15, 1991, approval to enter Engineering and Manufacturing Development (EMD).

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 14, 2000.

ATACMS BLK II/IIA

SAR Baseline (Development Estimate):

(U) AAE Acquisition Decision Memorandum (ADM) dated May 15, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 14, 2000.

6. (U) Mission and Description:

(U) The ATACMS Block II/BAT system provides deep fires to Army Objective Force and Joint Forces Commanders to delay and disrupt threat armored 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 Preplanned Product Improvement (P3I) BAT adds cold, stationary armor, heavy multiple rocket launchers, and surface-to-surface missile transporter erector launchers to the target set through seeker and warhead improvements. BAT and P3I BAT submunitions are carried deep into enemy territory by the ATACMS Block II missile, then dispensed to attack and destroy targets. The missile and submunition have a low sustainment cost as they are certified rounds (a predictable and acceptable level of reliability over a specified certification period). The ATACMS Block II missile, a version of the currently fielded and combat-proven ATACMS Block I missile, will carry BAT or P3I BAT submunitions. The ATACMS Block II and BAT Programs do not replace another system.

7. (U) Executive Summary:

(U) This will be the final SAR for ATACMS-BAT due to program termination. The Congressional Conferees provided no FY 03 funds, and the program is not funded in the FY 04 President's Budget.

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 ATACMS Block II was designated as the BAT carrier in December 1993 when the Army terminated participation in the Tri-Service Standoff Attack Missile (TSSAM) program. The P3I BAT received approval to continue Program Definition and Risk Reduction (PDRR) with ATACMS Block IIA (an extended range version of the Block II missile) as the carrier in February 1993. The ATACMS

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8c. (U) Threshold Breaches (Cont'd):

Termination of the BAT/P3I BAT program has caused schedule breaches and Nunn-McCurdy unit cost breaches, both PAUC and APUC.

ATACMS BLK II/IIA

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)	Yes
-- Average Procurement Unit Cost (APUC)	Yes

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	Yes
Average Procurement Unit Cost	Yes

c. (U) Explanation of Breach:

Termination of the ATACMS Block II program has caused schedule breaches and Nunn-McCurdy unit cost breaches, both PAUC and APUC.

9. (U) Schedule:

BAT/BAT P3I

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
BAT			
Milestone 0	JUN 1984	JUN 1984	JUN 1984
Milestone I	FEB 1985	FEB 1985	FEB 1985
Milestone II	MAY 1991	MAY 1991	MAY 1991
Preliminary Design Review	MAY 1991	MAY 1991	MAY 1991
EMD/FSD Contract Award	JUN 1991	JUN 1991	JUN 1991
Critical Design Review Complete	MAR 1992	MAY 1992	MAY 1992
Prototype Production Start	DEC 1992	N/A	APR 1993

7. (U) Executive Summary (Cont'd):

version of the Block II missile) as the carrier in February 1993. The ATACMS Block II Continued Development Program was approved in May 1995. The ATACMS Block II/BAT program received approval for system-level entry into Low Rate Initial Production (LRIP) in February 1999. The P3I BAT Continued Development Program was approved in July 1999. In February 2000, the ATACMS Block IIA program was terminated to fund higher priority programs.

The ATACMS Block II/BAT program will complete in December 2003 with the last LRIP III missile delivery. First unit equipped (FUE) requirements were met in April 2002 at Letterkenny Army Depot.

The P3I BAT program has been terminated. To date, five Recoverable BAT (RBAT) drop tests have been conducted. Some anomalies were noted and were analyzed/worked as part of the development process. Significant progress has been made in all technical areas. The multi-mode seeker development and testing will be continued as Program Element 0605478, Project Code P01.

In October 2002, two instrumented and two warhead base BAT submunitions were successfully dispensed from a Hunter Unmanned Aerial Vehicle (UAV). All four submunitions flew their predicted flight patterns and impacted targets (BMPs/T-72s) in highly vulnerable areas, which demonstrated and verified the BAT/Hunter tactical capability. This system has the potential of providing the Army with a new loitering precision strike capability.

8. (U) Threshold Breaches:

BAT/BAT P3I

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	Yes
-- Average Procurement Unit Cost (APUC)	Yes

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	Yes
Average Procurement Unit Cost	Yes

c. (U) Explanation of Breach:

**8c. (U) Threshold Breaches (Cont'd):**

Termination of the BAT/P3I BAT program has caused schedule breaches and Nunn-McCurdy unit cost breaches, both PAUC and APUC.

ATACMS BLK II/IIA

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)	Yes
-- Average Procurement Unit Cost (APUC)	Yes

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	Yes
Average Procurement Unit Cost	Yes

c. (U) Explanation of Breach:

Termination of the ATACMS Block II program has caused schedule breaches and Nunn-McCurdy unit cost breaches, both PAUC and APUC.

**9. (U) Schedule:**

BAT/BAT P3I

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
BAT			
Milestone 0	JUN 1984	JUN 1984	JUN 1984
Milestone I	FEB 1985	FEB 1985	FEB 1985
Milestone II	MAY 1991	MAY 1991	MAY 1991
Preliminary Design Review	MAY 1991	MAY 1991	MAY 1991
EMD/FSD Contract Award	JUN 1991	JUN 1991	JUN 1991
Critical Design Review Complete	MAR 1992	MAY 1992	MAY 1992
Prototype Production Start	DEC 1992	N/A	APR 1993

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9a. (U) Schedule (Cont'd):

BAT/BAT P3I

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Complete	SEP 1994	N/A	SEP 1995
Design Verification Test			
Start	JAN 1993	MAY 1993	JUN 1993
Complete	NOV 1993	OCT 1995	APR 1996
First Prototype Unit Delivery	OCT 1993	OCT 1994	OCT 1994
Contractor Development Test			
Start	NOV 1993	FEB 1996	JUL 1996
Complete	SEP 1994	DEC 1997	JAN 1998
Long Lead Program Review	DEC 1993	N/A	N/A
Long Lead Contract Award for LRIP	JAN 1994	N/A	N/A
BAT/ATACMS BL II LRIP ASARC	N/A	JAN 1999	JAN 1999
BAT/ATACMS BL II LRIP DAB	N/A	FEB 1999	FEB 1999
LRIP Program Review (DAB)	NOV 1994	N/A	N/A
EMD/LRIP I Contract Award	NOV 1994	N/A	N/A
Milestone III	DEC 1996	N/A	N/A
Production Contract Award	JAN 1997	N/A	N/A
Submunition Readiness Date (IOC)	DEC 1995	N/A	N/A
First Production Unit Delivery	JAN 1998	N/A	N/A
BAT P3I			
P3I Phase I Study Award	N/A	OCT 1993	OCT 1993
P3I Continued Development Contract Award	N/A	MAY 1999	JUL 1999
Block II/P3I Production Cut-In Decision (less MRL/TEL capability)	N/A	JUN 2002	N/A
Block II/P3I Production Cut-In	N/A	NOV 2002	N/A
Block II/P3I BAT Continued Production Decision	N/A	NOV 2004	N/A

b. Current Change Explanations --

(U) Acronym List:

ASARC - Army Systems Acquisition Review Council  
 DAB - Defense Acquisition Board  
 EMD - Engineering and Manufacturing Development  
 FSD - Full Scale Development  
 IOC - Initial Operational Capability  
 LRIP - Low Rate Initial Production  
 MRL - Multiple Rocket Launchers  
 P3I - Preplanned Product Improvement  
 TEL - Transporter Erector Launchers

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9a. (U) Schedule (Cont'd):  
ATACMS BLK II/IIA

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
	MAR 1995	MAY 1995	MAY 1995	
DA IPR				
BLOCK II ATACMS				
Continued Development Contract Award	MAY 1995	JUN 1995	JUL 1995	
Preliminary Design Review	MAY 1996	OCT 1996	OCT 1996	
Hardware Critical Design Review	FEB 1997	MAR 1997	APR 1997	
Software Critical Design Review	MAY 1997	JUN 1997	APR 1997	
Pre-production (PPT)				
Start	MAY 1997	NOV 1997	NOV 1997	
Complete	NOV 1997	MAR 1998	APR 1998	
EMD OT Option Award	JAN 1998	MAR 1998	MAR 1998	
Production Qualification Tests (PQT)				
Start	DEC 1997	JUN 1998	AUG 1998	
Complete	JUL 1998	JAN 1999	DEC 1998	
PEO LRIP Decision	DEC 1998	N/A	N/A	
Block II/BAT LRIP ASARC	N/A	JAN 1999	JAN 1999	
Block II/BAT LRIP DAB	N/A	FEB 1999	FEB 1999	
LRIP Contract Award	JAN 1999	FEB 1999	JUN 1999	
Developmental Testing (DT)				
Start	JUL 1998	APR 1999	MAR 1999	
Complete	DEC 1998	JUN 2000	JUL 2001	
Operational Tests (OT)				
Start	DEC 1999	AUG 2000	AUG 2001	
Complete	MAR 2000	DEC 2000	N/A	
Long Lead Contract Award for Production	N/A	NOV 2000	N/A	
LRIP First Delivery	JUN 2000	MAR 2001	OCT 2001	
Organic Support Capability	SEP 2000	MAR 2001	N/A	
Service Depot Support	SEP 2000	MAR 2001	N/A	
MS III	SEP 2000	MAY 2001	N/A	
First Full Rate Production Contract Award	JAN 2001	MAY 2001	N/A	
IOC	SEP 2000	OCT 2001	N/A	
First Full Rate System Delivery	N/A	SEP 2002	N/A	
BLOCK IIA ATACMS				
Milestone IV P3I Review	MAR 1998	N/A	N/A	
EMD Contract Award	APR 1998	N/A	N/A	
LRIP Contract Award	JAN 2002	N/A	N/A	
MS III	FEB 2002	N/A	N/A	
Service Depot Support	DEC 2003	N/A	N/A	
Organic Support Capability	DEC 2003	N/A	N/A	
IOC	MAY 2003	N/A	N/A	
	N/A	N/A		
Block II/P3I BAT	N/A	N/A		
DT (Armor Only)	N/A	N/A		
Start	N/A	N/A	N/A	(Ch-1)
Complete	N/A	N/A	N/A	(Ch-1)

9a. (U) Schedule (Cont'd):  
 ATACMS BLK II/IIA

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
LRIP (Armor Only) DAB	N/A	N/A	N/A	(Ch-1)
LRIP Contract Award	N/A	N/A	N/A	(Ch-1)
DT with MRLs/TELS	N/A	N/A		
Start	N/A	N/A	N/A	(Ch-1)
Complete	N/A	N/A	N/A	(Ch-1)
OT	N/A	N/A		
Start	N/A	N/A	N/A	(Ch-1)
Complete	N/A	N/A	N/A	(Ch-1)
FRP (MRLs/TELS) ASARC	N/A	N/A	N/A	(Ch-1)
Organic Support Capability	N/A	N/A	N/A	(Ch-1)
First LRIP Delivery	N/A	N/A	N/A	(Ch-1)
First FRP Contract Award	N/A	N/A	N/A	(Ch-1)
FUE	N/A	N/A	N/A	(Ch-1)
First FRP Delivery	N/A	N/A	N/A	(Ch-1)

b. Current Change Explanations --

(U) (Ch-1) The ATACMS Block II/P3I BAT program has been terminated; therefore, the following milestones are no longer applicable:

<u>MILESTONE</u>	<u>FROM</u>	<u>TO</u>
DT (Armor Only)		
Start	Jul 03	N/A
Complete	Sep 03	N/A
LRIP (Armor Only) DAB	Dec 03	N/A
LRIP Contract Award	Jan 04	N/A
DT with MRLs/TELS		
Start	Mar 04	N/A
Complete	May 04	N/A
OT		
Start	Jun 04	N/A
Complete	Dec 04	N/A
FRP (MRLs/TELS) ASARC	Jun 05	N/A
Organic Support Capability	Jul 05	N/A
First LRIP Delivery	Aug 05	N/A
First FRP Contract Award	Nov 05	N/A
FUE	Sep 06	N/A
First FRP Delivery	Aug 07	N/A

Acronym List:

FRP - Full Rate Production  
 IPR - In-Process Review  
 PPT - Pre-Production Testing

10. (U) Performance Characteristics:

BAT/BAT P3I

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
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	.80	.86
Useful Life (yrs)	20	20 / 10	TBD	20
Lethality				
Rolled Homogeneous Armor (mm RHA)	N/A	N/A / N/A	N/A	N/A
Rolled Homogeneous Armor (RHA) Penetration (Incl residual) (mm)	N/A	(b)(1)		
Range Targets	(b)(1)			
Residual Penetration (mm)	N/A	N/A / N/A	N/A	N/A
Residual Penetration Behind Range Targets (mm)	N/A	(b)(1)		
Additional Penetration (mm)	(b)(1)	N/A / N/A	N/A	N/A
Kills/Launcher Load Large Cruise	(b)(1)	N/A / N/A	N/A	N/A
ATACMS Block II (Moving)	(b)(1)			
BAT PRE-PLANNED PRODUCT IMPROVEMENT				
Weight (lbs)	N/A	44 / 44	TBD	44
Length (stowed) (ins)	N/A	36 / 36	TBD	36
Diameter (stowed) (ins)	N/A	5.5 / 5.5	TBD	5.5
Reliability (Operational)	N/A	.90 / .86	TBD	.86
Useful Life (yrs)	N/A	20 / 10	TBD	20

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10a. (U) Performance Characteristics (Cont'd):  
 BAT/BAT P3I

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Kills				
ATACMS Block II Armor (Launcher Load)	N/A	(b)(1)		
Kills/Missile Load	N/A	N/A / N/A	TBD	
ATACMS Block IIA (Armor)	N/A	N/A / N/A	TBD	N/A
ATACMS Block IIA (TEL/MRL)	N/A	N/A / N/A	TBD	N/A

**AS AMENDED**

(U) TBDs in Demonstrated Performance signify test data is not available. Information provided in Demonstrated Performance column reflects test articles to date.

Reliability (Operational) - Threshold value is based on a fully matured system. Demonstrated Performance value meets expected operating reliability based on the reliability growth curve.

b. Current Change Explanations -- None

ATACMS BLK II/IIA

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
BLOCK II ATACMS	(b)(1)			
Kills/Launcher Load	(b)(1)			
Maximum Range (km)	200	200 / >145	145.8 @ WSMR	145.3 @ Sea Level
Minimum Range (km)	25	25 / 35	41	35
Payload (No. BAT/BAT P3I Submunitions)	13	13 / 12	13	13
Accuracy	(b)(1)			
w/ GPS (meters at all ranges)	(b)(1)			
Meters from min range to 107 km	(b)(1)	N/A / N/A	N/A	N/A
w/o GPS (meters from min range to 107 km)	(b)(1)			

**AS AMENDED**



10b. (U) Performance Characteristics (Cont'd):  
 ATACMS BLK II/IIA

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):  
 BAT/BAT P3I

a. (U) Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	702.1	1416.2	1362.9
Procurement	1569.9	1656.6	312.2
Recurring	(1553.6)		(286.7)
Non-Recurring	(0.0)		(24.3)
Total Flyaway	(1553.6)		(311.0)
Other Weapon Systems	(16.3)		(1.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1991 Base-Year \$	<u>2272.0</u>	<u>3072.8</u>	<u>1675.1</u>
Escalation	714.6	679.7	183.7
Development (RDT&E)	(29.5)	(134.8)	(121.4)
Procurement	(685.1)	(544.9)	(62.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2986.6</u>	<u>3752.5</u>	<u>1858.8</u>
b. (U) Quantity --			
Development (RDT&E)	0	98	98
Procurement	30993	15707	1262
Total	<u>30993</u>	<u>15805</u>	<u>1360</u>

(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 exceeded the 10% guideline established in 10 U.S.C. 2400 (FASTA). However, the LRIP quantity has changed from 1501 to 1262.

c. (U) Foreign Military Sales --  
 None.

d. (U) Nuclear Costs --  
 None.

11a. (U) Total Program Cost and Quantity (Cont'd):

ATACMS BLK II/IIA

a. (U) Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	385.4	278.9	272.7
Procurement	1210.3	1244.2	212.9
Recurring Flyaway	(1092.3)		(206.5)
Nonrecurring Flyaway	(89.6)		(3.0)
Total Flyaway	(1181.9)		(209.5)
Other Weapon System	(22.0)		(1.1)
Peculiar Support	(3.6)		(0.1)
Initial Spares	(2.8)		(2.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1991 Base-Year \$	<u>1595.7</u>	<u>1523.1</u>	<u>485.6</u>
Escalation	705.4	468.5	85.8
Development (RDT&E)	(103.1)	(43.5)	(42.9)
Procurement	(602.3)	(425.0)	(42.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2301.1</u>	<u>1991.6</u>	<u>571.4</u>
b. (U) Quantity --			
Development (RDT&E)	0	6	6
Procurement	<u>1806</u>	<u>1206</u>	<u>96</u>
Total	1806	1212	102

(U) ATACMS Block II unit of measure is a missile.

The ATACMS Block II Continued Development decision (Acquisition Decision Memo, May 15, 1995) provided for an LRIP I and LRIP II quantity of 150 which exceeded the 10% guideline established in 10 U.S.C. 2400 (FASTA). In addition, the Under Secretary of Defense, Acquisition, Technology, and Logistics, approved two additional LRIP buys on May 16, 2001 for a total buy of 163 missiles. The LRIP quantity has changed from 112 to 96.

c. (U) Foreign Military Sales --  
None.

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

BAT/BAT P3I

	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1991 BY\$)	3072.8	1675.1	
(2) Quantity	15805	1360	
(3) Unit Cost	0.194	1.232	+535.05
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1991 BY\$)	1656.6	312.2	
(2) Quantity	15707	1262	
(3) Unit Cost	0.105	0.247	+135.24
	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
c. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	3752.5	1858.8	
(2) Unit Cost	0.237	1.367	+476.79
d. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	2201.5	374.5	
(2) Unit Cost	0.140	0.297	+112.14
e. (U) Changes from Previous SAR (Dec 2001)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	0.221	+21.87	
(2) APUC (BY\$)	0.118	+91.20	
(3) PAUC Quantity	16187	-109.17	
(4) PAUC (TY\$)	0.278	+25.53	
(5) APUC (TY\$)	0.163	+121.87	
f. (U) Initial SAR Information			
Initial SAR Date (SEP 1991):			
(1) Program Acquisition Cost (BY\$)		2272.0	
(2) Program Acquisition Cost (TY\$)		2986.6	

g. (U) Unit Cost PAUC Changes --

The BAT/P3I BAT programs were terminated since the Congressional Conferees provided no FY 03 funds, and the programs are not funded in the FY 04 President's Budget. The ATACMS Block II-BAT program completes in December 2003 when LRIP III deliveries are completed. The total acquisition quantity was reduced from 16187 (includes 98 RDTE units) to 1360 (includes 98 RDTE units) LRIP submunitions; therefore, the Program Acquisition Unit Cost increased.

(U) Unit Cost APUC Changes --

The BAT/P3I BAT programs were terminated since the Congressional Conferees provided no FY 03 funds, and the programs are not funded in the FY 04

12. (U) Unit Cost Summary (Cont'd):  
BAT/BAT P3I

President's Budget. The ATACMS Block II-BAT program completes in December 2003 when LRIP III deliveries are completed. The total acquisition quantity of LRIP BAT submunitions was reduced from 16089 to 1262; therefore, the Average Procurement Unit Cost increased.

- h. Impact of Perf or Sched Changes -- None.
- i. Program Management & Control -- None.
- j. Cost Control Actions -- None.
- k. (U) Contract Information (In Millions of Then-Year Dollars) -- None.
- l. General Comments -- None.

ATACMS BLK II/IIA

	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1991 BY\$)	1523.1	485.6	
(2) Quantity	1212	102	
(3) Unit Cost	1.257	4.761	+278.76
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1991 BY\$)	1244.2	212.9	
(2) Quantity	1206	96	
(3) Unit Cost	1.032	2.218	+114.92
	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
c. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	1991.6	571.4	
(2) Unit Cost	1.643	5.602	+240.96
d. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	1669.2	255.8	
(2) Unit Cost	1.384	2.665	+92.56

12e. (U) Unit Cost Summary (Cont'd):

ATACMS BLK II/IIA

e. (U) Changes from Previous SAR (Dec 2001)	Dollars/Qty	Percent
(1) PAUC (BY\$)	1.211	+34.11
(2) APUC (BY\$)	0.999	+81.97
(3) PAUC Quantity	1241	-108.96
(4) PAUC (TY\$)	1.211	+27.58
(5) APUC (TY\$)	1.375	+106.62

f. (U) Initial SAR Information

Initial SAR Date (Dec 94):

(1) Program Acquisition Cost (BY\$)	1595.7
(2) Program Acquisition Cost (TY\$)	2301.1

g. (U) Unit Cost PAUC Changes --

The ATACMS Block II program was terminated since the Congressional Conferees provided no FY 03 funds, and the program was not funded in the FY 04 President's Budget. The ATACMS Block II-BAT program completes in December 2003 when LRIP III deliveries are completed. The total acquisition quantity was reduced from 1241 (includes 6 RDTE units) to 102 (includes 6 RDTE units) LRIP missiles; therefore, the Program Acquisition Unit Cost increased.

(U) Unit Cost APUC Changes --

The ATACMS Block II program was terminated since the Congressional Conferees provided no FY 03 funds, and the program was not funded in the FY 04 President's Budget. The ATACMS-BAT program completes in December 2003 when LRIP III deliveries are completed. The total acquisition quantity was reduced from 1235 to 96 LRIP missiles; therefore, the Average Procurement Unit Cost increased.

h. Impact of Perf or Sched Changes -- None.

i. Program Management & Control -- None.

j. Cost Control Actions -- None.

k. (U) Contract Information (In Millions of Then-Year Dollars) -- None.

l. General Comments -- None.

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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	-44.0	-220.5	-	-264.5
Quantity	-0.8	-1017.7	-	-1018.5
Schedule	+45.7	+371.2	-	+416.9
Engineering	+319.3	+48.3	-	+367.6
Estimating	+833.6	+1199.0	-	+2032.6
Other	-	-	-	-
Support	-	-14.9	-	-14.9
Subtotal	+1153.8	+365.4	-	+1519.2
Current Changes:				
Economic	+11.6	+207.4	-	+219.0
Quantity	-	-1249.8	-	-1249.8
Schedule	-	-273.0	-	-273.0
Engineering	-	-35.5	-	-35.5
Estimating	-412.7	-890.9	-	-1303.6
Other	-	-	-	-
Support	-	-4.1	-	-4.1
Subtotal	-401.1	-2245.9	-	-2647.0
Total Changes	+752.7	-1880.5	-	-1127.8
Current Estimate	1484.3	374.5	-	1858.8

(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	-0.7	-569.7	-	-570.4
Schedule	+33.5	-9.0	-	+24.5
Engineering	+269.0	+30.0	-	+299.0
Estimating	+674.2	+892.5	-	+1566.7
Other	-	-	-	-
Support	-	-12.6	-	-12.6
Subtotal	+976.0	+331.2	-	+1307.2
Current Changes:				
Quantity	-	-716.7	-	-716.7
Schedule	-	+8.5	-	+8.5
Engineering	-	-28.3	-	-28.3
Estimating	-315.2	-849.9	-	-1165.1
Other	-	-	-	-
Support	-	-2.5	-	-2.5
Subtotal	-315.2	-1588.9	-	-1904.1
Total Changes	+660.8	-1257.7	-	-596.9
Current Estimate	1362.9	312.2	-	1675.1

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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>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-9.0
	Economic adjustment for negative program change. (Economic)	N/A	+20.6
	Adjustment for Current and Prior Inflation. (Estimating)	+4.0	+5.2
	Revised program estimate due to program termination. (Estimating)	-302.9	-396.8
	Revised program estimate to reflect budget adjustments. (Estimating)	-16.3	-21.1
	RDT&E Subtotal	<u>-315.2</u>	<u>-401.1</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-64.2
	Economic adjustment for negative program change. (Economic)	N/A	+271.6
	Total Quantity Variance associated with decrease of 14827 units.	-1642.3	-2537.3
	Quantity decrease of 14827 units from 16089 to 1262 due to program termination. (Quantity)	-716.7	-1249.8
	Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	+8.5	-273.0
	Allocation to Engineering variance resulting from Quantity Change. (QR)(Engineering)	-28.3	-35.5
	Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	-842.6	-881.9
	Adjustment for Current and Prior Inflation. (Estimating)	+2.8	+3.3
	Revised program estimate to reflect budget adjustments. (Estimating)	-10.1	-12.3
	Refinement of estimate for Other Weapon Systems cost (data and training). (Support)	-2.5	-4.1
	Procurement Subtotal	<u>-1588.9</u>	<u>-2245.9</u>

QR = Quantity related changes.

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13. (U) Cost Variance Analysis (Cont'd):

ATACMS BLK II/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	-17.9	-131.9	-	-149.8
Quantity	-	-569.1	-	-569.1
Schedule	+17.1	+180.1	-	+197.2
Engineering	+15.7	-	-	+15.7
Estimating	-191.8	+440.9	-	+249.1
Other	-	-	-	-
Support	-	-34.7	-	-34.7
Subtotal	-176.9	-114.7	-	-291.6
Current Changes:				
Economic	-0.3	+133.0	-	+132.7
Quantity	-	-980.9	-	-980.9
Schedule	-	-167.5	-	-167.5
Engineering	-	-	-	-
Estimating	+4.3	-426.0	-	-421.7
Other	-	-	-	-
Support	-	-0.7	-	-0.7
Subtotal	+4.0	-1442.1	-	-1438.1
Total Changes	-172.9	-1556.8	-	-1729.7
Current Estimate	315.6	255.8	-	571.4

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13a. (U) Cost Variance Analysis (Cont'd):  
ATACMS BLK II/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	-	-323.2	-	-323.2
Schedule	+10.3	+5.3	-	+15.6
Engineering	+13.1	-	-	+13.1
Estimating	-139.8	+365.2	-	+225.4
Other	-	-	-	-
Support	-	-24.3	-	-24.3
Subtotal	-116.4	+23.0	-	-93.4
Current Changes:				
Quantity	-	-583.1	-	-583.1
Schedule	-	-6.1	-	-6.1
Engineering	-	-	-	-
Estimating	+3.7	-430.5	-	-426.8
Other	-	-	-	-
Support	-	-0.7	-	-0.7
Subtotal	+3.7	-1020.4	-	-1016.7
Total Changes	-112.7	-997.4	-	-1110.1
Current Estimate	272.7	212.9	-	485.6

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Revised program estimate to reflect budget adjustments. (Estimating)	+3.4	+4.0
RDT&E Subtotal	+3.7	+4.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-41.6
Economic adjustment for negative program change. (Economic)	N/A	+174.6
Total Quantity Variance associated with decrease of 1139 units.	-1122.6	-1722.9
Quantity decrease of 1139 units from 1235 to 96 due to program termination. (Quantity)	-583.1	-980.9
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	-6.1	-167.5
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	-417.4	-410.1

13b. (U) Cost Variance Analysis (Cont'd):  
ATACMS BLK II/IIA

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+1.9	+2.4
Revised program estimate to reflect budget adjustments. (Estimating)	-15.0	-18.3
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Refinement of estimate for Initial Spares. (Support)	-0.2	-0.2
Refinement of estimate for Peculiar Support. (Support)	-0.1	-0.1
Refinement of estimate for Other Weapon System costs (training, data, and new equipment training). (Support)	-0.5	-0.5
Procurement Subtotal	-1020.4	-1442.1

QR = Quantity related changes.

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	
0.096	-0.033	+0.431	+0.106	+0.244	+0.536	--	-0.014	+1.27	1.37

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	
0.073	-0.010	-0.083	+0.078	+0.010	+0.244	--	-0.015	+0.224	0.297

(U) The BAT program began SAR reporting in Sep 91 after a successful Milestone II decision in May 91.

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ATACMS/BAT, December 31, 2002

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 1985	N/A	FEB 1985
Milestone II	N/A	MAY 1991	N/A	MAY 1991
Milestone III	N/A	DEC 1996	N/A	N/A
IOC	N/A	DEC 1995	N/A	N/A
Total Cost	N/A	2986.6	N/A	1858.8
Total Quantity	N/A	30993	N/A	1360
Prog Acq Unit Cost	N/A	0.1	N/A	1.4

(U) The BAT program began SAR reporting in Sep 91 after a successful Milestone II decision in May 91.

ATACMS BLK II/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	-0.168	+6.09	+0.291	+0.154	-1.69	--	-0.347	+4.33	5.60

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.00	+0.011	+1.73	+0.131	--	+0.155	--	-0.369	+1.66	2.66

(U) The ATACMS Block II Program began SAR reporting in Dec 94.

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14c. (U) Unit Cost and Other History (Cont'd):  
 ATACMS BLK II/IIA

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 1995	N/A	MAY 1995
Milestone III	N/A	SEP 2000	N/A	N/A
IOC	N/A	SEP 2000	N/A	N/A
Total Cost	N/A	2301.1	N/A	571.4
Total Quantity	N/A	1806	N/A	102
Prog Acq Unit Cost	N/A	1.3	N/A	5.6

(U) The ATACMS Block II Program began SAR reporting in Dec 94.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) P3I BAT Continued Dev:  
 Northrop Grumman Corp., Linthicum Heights MD  
 DAAH01-99-C-0154, CPIF  
 Award: July 28, 1999  
 Definitized: July 28, 1999

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$142.4	N/A	0	\$191.8	\$191.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-17.3	\$-2.4
Cumulative Variances To Date (11/24/02)	\$0.0	\$0.0
Net Change	\$17.3	\$2.4

Explanation of Change:

(U) The favorable change in both cost and schedule variances is due to the decision to reset variances to zero in anticipation of rebaselining the program.

The change in estimated price at completion is due to a planned 10-month extension of the contract period of performance. However, the Congressional Conferees provided no P3I BAT FY 03 funding; therefore, effort on this contract will cease.

(U) Contract Comments:

15. (U) Contract Information (Cont'd):

This is a final report for this contract since the program has been terminated.

b. Procurement -- (U) <u>ATACMS Blk II/BAT LRIP I:</u> Lockheed Martin Missiles, Dallas TX DAAH01-99-C-0121, FPIF Award: June 4, 1999 Definitized: June 4, 1999	<table border="0"> <tr> <th colspan="3" style="text-align: center;">Initial Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$134.2</td> <td>\$147.7</td> <td>24</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$134.2	\$147.7	24
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$134.2	\$147.7	24								

<table border="0"> <tr> <th colspan="3" style="text-align: center;">Current Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$136.4</td> <td>\$147.7</td> <td>24</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$136.4	\$147.7	24	<table border="0"> <tr> <th colspan="2" style="text-align: center;">Estimated Price At Completion</th> </tr> <tr> <th style="text-align: left;"><u>Contractor</u></th> <th style="text-align: left;"><u>Program Manager</u></th> </tr> <tr> <td>\$147.7</td> <td>\$147.7</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$147.7	\$147.7
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$136.4	\$147.7	24														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$147.7	\$147.7															
Previous Cumulative Variances Cumulative Variances To Date (11/24/02) Net Change	<table border="0"> <tr> <th style="text-align: left;"><u>Cost Variance</u></th> <th style="text-align: left;"><u>Schedule Variance</u></th> </tr> <tr> <td>\$-12.2</td> <td>\$-11.7</td> </tr> <tr> <td><u>\$-15.4</u></td> <td><u>\$0.0</u></td> </tr> <tr> <td>\$-3.2</td> <td>\$11.7</td> </tr> </table>	<u>Cost Variance</u>	<u>Schedule Variance</u>	\$-12.2	\$-11.7	<u>\$-15.4</u>	<u>\$0.0</u>	\$-3.2	\$11.7							
<u>Cost Variance</u>	<u>Schedule Variance</u>															
\$-12.2	\$-11.7															
<u>\$-15.4</u>	<u>\$0.0</u>															
\$-3.2	\$11.7															

Explanation of Change:

(U) The favorable change in schedule variance is due to the completion of scheduled deliveries. The unfavorable change in cost variance is due to the submunition subcontract being renegotiated to Firm Fixed Price with the new contract value exceeding the original budget for the submunition effort.

(U) Contract Comments:

Contract Target Price does not include FFP portion of the contract (\$4.3M).

This is a final report for this contract since deliveries are complete.

(U) <u>Block II/BAT LRIP II:</u> Lockheed Martin Missiles, Dallas TX DAAH01-99-C-0121, FFP Award: December 23, 1999 Definitized: February 29, 2000	<table border="0"> <tr> <th colspan="3" style="text-align: center;">Initial Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$204.9</td> <td>N/A</td> <td>48</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$204.9	N/A	48
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$204.9	N/A	48								

<table border="0"> <tr> <th colspan="3" style="text-align: center;">Current Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$204.9</td> <td>N/A</td> <td>48</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$204.9	N/A	48	<table border="0"> <tr> <th colspan="2" style="text-align: center;">Estimated Price At Completion</th> </tr> <tr> <th style="text-align: left;"><u>Contractor</u></th> <th style="text-align: left;"><u>Program Manager</u></th> </tr> <tr> <td>\$204.9</td> <td>\$204.9</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$204.9	\$204.9
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$204.9	N/A	48														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$204.9	\$204.9															

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

		Initial Contract Price		
		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) Block II/BAT LRIP III:				
Lockheed Martin Missiles, Dallas TX				
DAAH01-01-C-0133, FFP		\$164.8	N/A	24
Award: July 30, 2001				
Definitized: June 4, 2002				
		Estimated Price At Completion		
<u>Current Contract Price</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
<u>Target</u>	<u>Ceiling</u>			
\$164.8	N/A	\$164.8	\$164.8	

Explanation of Change:

(U) Quantity changed from 22 to 24 when contract was definitized.

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 (FY84-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	1799.9	-	-	-	1799.9
Procurement	630.3	-	-	-	630.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2430.2	-	-	-	2430.2

BAT/BAT P3I

16a. (U) Program Funding Summary (Cont'd):

BAT/BAT P3I

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY84-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	1484.3	-	-	-	1484.3
Procurement	374.5	-	-	-	374.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1858.8	-	-	-	1858.8

ATACMS BLK II/IIA

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	315.6	-	-	-	315.6
Procurement	255.8	-	-	-	255.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	571.4	-	-	-	571.4

b. Annual Summary -- BAT/BAT P3I

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1991 Dollars Nonrec</u>	<u>Flyaway FY 1991 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1984				5.2	4.2
1985				18.4	15.2
1986				37.8	32.2
1987				34.2	30.0
1988				46.0	42.0
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	105.3
1996				120.8	136.9
1997				82.7	94.8
1998				121.3	140.1
1999				80.6	94.2

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ATACMS/BAT, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):  
BAT/BAT P3I

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				88.9	105.4
2001				56.3	67.6
2002				84.9	102.9
Subtotal	98			1362.9	1484.3

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	304	11.6	76.7	89.0	105.5
2000	609	12.7	103.6	116.5	139.6
2001	349		106.4	90.8	109.9
2002				15.9	19.5
Subtotal	1262	24.3	286.7	312.2	374.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1360	24.3	286.7	1675.1	1858.8

b. Annual Summary -- ATACMS BLK II/IIA

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				8.8	9.8
1996				47.2	53.5
1997				58.3	66.8
1998				71.7	82.8
1999				32.3	37.7
2000				25.9	30.7
2001				25.2	30.3
2002				3.3	4.0
Subtotal	6			272.7	315.6

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ATACMS/BAT, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):  
ATACMS BLK II/IIA

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	24	1.8	43.4	46.1	54.6
2000	48	1.2	67.0	68.4	81.9
2001	24		96.1	80.0	96.8
2002				18.4	22.5
Subtotal	96	3.0	206.5	212.9	255.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	102	3.0	206.5	485.6	571.4

17. (U) Delivery/Expenditure Information:

BAT/BAT P3I

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	98	98
Procurement	416	416

(U) Percent Total Program Quantities Delivered: 37.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1735.1

(U) Percent Total Program Expended: 93.3%

ATACMS BLK II/IIA

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	6	6
Procurement	32	32

(U) Percent Total Program Quantities Delivered: 37.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 471.1

(U) Percent Total Program Expended: 82.4%

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18. (U) Operating and Support Costs:

BAT/BAT P3I

a. (U) Assumptions and Ground Rules --

The submunition is considered a certified round requiring minimal O&S cost. It will consist of stockpile reliability tests for recertification and minimal depot maintenance. 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 reflects average annual cost for total BAT quantity (1262).

Cost estimate dated January 2003.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	BAT/BAT P3I Avg Annual Cost for Total BAT Qty	N/A
Mission Pay & Allowances	0.4	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	0.4	0.0
Indirect Costs	0.0	0.0
Total	0.8	0.0

Total O&S Cost	BAT/BAT P3I	N/A
BY\$ (In Millions)	19.1	N/A
TY\$ (In Millions)	26.1	N/A

ATACMS BLK II/IIA

a. (U) Assumptions and Ground Rules --

ATACMS Block II will be fired from the Multiple Launch Rocket System (MLRS) M270A1 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 reflects average annual cost for total ATACMS Block II quantity (96).

Cost estimate dated January 2003.

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ATACMS/BAT, December 31, 2002

18b. (U) Operating and Support Costs (Cont'd):  
ATACMS BLK II/IIA

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	ATACMS BLK II/IIA Avg Annual Cost for Total Missile Qty	N/A
Mission Pay & Allowances	0.2	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.1	0.0
Contractor Support	0.3	0.0
Sustaining Support	0.7	N/A
Indirect Costs	0.5	0.0
Total	1.8	0.0

Total O&S Cost	ATACMS BLK II/IIA	N/A
BY\$ (In Millions)	36.2	N/A
TY\$ (In Millions)	51.8	N/A

Report Creation Date: 03/10/2003 3:11:36 PM

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N-11 F/A-18E/F

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: F/A-18E/F

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): F/A-18E/F Naval Strike Fighter  
{SUPER HORNET}
2. DoD Component: Navy
3. Responsible Office and Telephone Number:  
 PEO FOR TACTICAL AIRCRAFT (PMA265)      CAPT JEFFREY A. WIERINGA, USN  
 BLDG 2272 STE 445 NAVAIRSYSCOMHQ      Assigned: April 7, 2000  
 47123 BUSE ROAD, UNIT #IPT              DSN 757-7669; COMM (301) 757-7669  
 PATUXENT RIVER, MD 20670-1547        wieringaja@navair.navy.mil
4. Program Elements/Procurement Line Items:  
 RDT&E:  
     PE 0204136N  
 PROCUREMENT:  
     APPN 1506 ICN 014500 (Navy)  
     APPN 1506 ICN 060510 (Navy)

No Security Objection  
to Open Publication  
(AS AMENDED)

03-C-115  
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M. O'Sullivan

Office of the Chief of  
Naval Operations  
Dept. of the Navy

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FOR OPEN PUBLICATION

MAR 24 2003 8

DIRECTORATE FOR INTELLIGENCE, POLICY,  
AND SECURITY  
DEPARTMENT OF DEFENSE

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03-C-0479

**5. References:**

SAR Baseline (Production Estimate):

NAE Approved Acquisition Program Baseline dated September 17, 2000.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated September 17, 2000.

**6. Mission and Description:**

The F/A-18E/F is 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) are high performance, twin engine, mid-wing, multi-mission tactical aircraft designed to replace F/A-18C (single seat), S-3, and F-14 aircraft as they reach the end of service life and retire. The F/A-18E/F is designed to meet current Navy fighter escort and interdiction mission requirements, and to maintain F/A-18 fleet air defense and close air support roles. Enhancements include the increased range, two additional weapons stations, and improved carrier suitability required for the F/A-18 to continue its key strike fighter role against the advanced threat of the twenty-first century.

**7. Executive Summary:**

The F/A-18E/F has completed Engineering and Manufacturing Development (EMD) flight test and Operational Test and Evaluation (OPEVAL). As of December 31, 2002, Super Hornet aircraft have flown over 60 thousand flight hours. The program continues on cost and on schedule, meeting or exceeding program performance parameters.

This report is based on the rebaselined F/A-18 E/F program as of the MS III (production) decision, which reflected the procurement of 548 F/A-18E/F aircraft. Of the original 548 F/A-18E/F aircraft, 86 were redesignated as EA-18G aircraft, and an additional 4 EA-18G aircraft were then added to this total. This brings the total procured aircraft quantity from 548 to 552 aircraft. The program extension of one year and the EA-18G unique avionics equipment result in an APB cost breach of approximately \$30K per aircraft. The airframe Multi-Year Procurement (MYP) contract is more than 32% complete. As of 31 December, 2002, a total of 54 aircraft had been accepted (9 aircraft ahead of the contractual schedule). The LRIP 2/3 ILS contract is 88% complete, the FY00 ILS contract is 56% complete, and the FY01 ILS contract is 25% complete.

The Milestone III Acquisition Decision Memorandum (ADM) was signed by the Assistant Secretary of the Navy, Research, Development, and Acquisition on June 14, 2000. The Full Rate Production MYP contract was signed on June 15, 2000. The MYP covers the procurement of F/A-18E/F for FY2000 through FY2004 under a single, 5-year fixed price incentive fee type contract, supporting the first five (5) years of FRP. The MYP is structured to achieve significant savings (7.4%) over a single-year procurement, while providing unprecedented

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7. Executive Summary (Cont'd):

quantity flexibility for emergent requirements. A firm-fixed price multi-year contract for engines was definitized on 2 July 2002 for 480 install engines and 13 spare engines in FRP Lots 6-10. Funding numbers reflect F/A-18E/F, AESA, and EA-18G procurement.

The program office has proposed a second aircraft multiyear procurement (MYP II), which covers the purchase of 154 F/A-18E/F aircraft and 56 EA-18G aircraft for a total of 210 aircraft in FY 2005 through FY 2009 under a single, five year fixed price type contract. These aircraft constitute the second five years of FRP of the F/A-18E/F. This MYP strategy has been structured to achieve significant savings/cost avoidance (\$1,052M) from the single year price (SYP) while providing quantity flexibility for emergent requirements.

OPEVAL (OT-IIC) was successfully completed in November 1999. The F/A-18E/F was found to be operationally suitable and operationally effective. The final report was submitted by Commander, Operational Test and Evaluation Force (COMOPTEVFOR) on February 14, 2000. The first FOT&E period has been completed. VFA-122, the Fleet Replacement Squadron, has been flying F/A-18E/Fs since 1999 and is meeting their training throughput schedule. IOC was achieved on schedule and F/A-18E aircraft are currently deployed on the USS Abraham Lincoln (with VFA-115). The next three operational squadrons (VFA-14, VFA-41, and VFA-102) are in workups and training for deployment. VFA-14 workups are on schedule. VFA-41, the first F-14 squadron to transition to F/A-18Es, workups are also on schedule. VFA-122 is meeting their training throughput schedule. VFA-102 achieved Safe For Flight in October 2002.

An OSD executive committee approved the F/A-18E/F for foreign military sales, and the Program Office has begun briefing potential customers on the F/A-18E/F.

The Navy has taken delivery of all 62 Low Rate Initial Production (LRIP) aircraft. Fifty-four FRP aircraft deliveries have been completed ahead of contract schedule. This brings the total deliveries to 123 aircraft, 116 production, and 7 development aircraft.

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**B. Threshold Breaches:**

a. 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)	Yes

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

This report is based on the rebaselined F/A-18 E/F program as of the MS III (production) decision, which reflected the procurement of 548 F/A-18E/F aircraft. Of the original 548 F/A-18E/F aircraft, 86 were redesignated as EA-18G aircraft, and an additional 4 EA-18G aircraft were then added to this total. This brings the total procured aircraft quantity from 548 to 552 aircraft. The program extension of one year and the EA-18G unique avionics equipment result in an APB cost breach of approximately \$30K per aircraft.

**9. Schedule:**

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone IV/II	MAR 1992	MAR 1992	MAY 1992
Production Readiness Review (Airframe)	APR 1995	APR 1995	AUG 1995
First Engine to Test	APR 1993	APR 1993	MAY 1993
Preliminary Design Review (Airframe)	APR 1993	APR 1993	JUN 1993
Critical Design Review (Airframe)	JAN 1994	JAN 1994	JUL 1994
Preliminary Flight Qualification (Engine)	MAR 1995	MAR 1995	SEP 1995
First Flight	OCT 1995	OCT 1995	NOV 1995
Long Lead Release for LRIP	DEC 1995	DEC 1995	MAR 1996
LRIP Decision Milestone	MAR 1997	MAR 1997	MAR 1997
Limited Production Qualification (Engine)	MAR 1997	MAR 1997	APR 1997
LRIP Contract Award	JAN 1997	JAN 1997	MAY 1997
Full Production Qualification (Engine)	AUG 1998	AUG 1998	DEC 1998
LRIP First Delivery	DEC 1998	DEC 1998	DEC 1998

9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone III	JAN 2000	JAN 2000	JUN 2000
Full Rate Production Contract Award	JAN 2000	JAN 2000	JUN 2000
DT&E			
DT-IIA	OCT 1995	OCT 1995	NOV 1995
DT-IIB	NOV 1996	NOV 1996	DEC 1996
DT-IIC	NOV 1997	NOV 1997	DEC 1997
DT-IID	JUL 1998	JUL 1998	OCT 1998
DT-IIE	OCT 1998	OCT 1998	APR 1999
IOT&E			
OT-IIA	NOV 1997	NOV 1997	NOV 1997
OT-IIB	DEC 1997	DEC 1997	JUN 1998
OT-IIC	MAR 1999	MAR 1999	MAY 1999
O-Level Maintenance Capability (OPEVAL)	MAR 1999	MAR 1999	MAY 1999
IOC	JUN 2001	JUN 2001	SEP 2001
I-Level Maintenance Capability			
WRA TPS and Modified TPSs (IOC)	SEP 2000	SEP 2000	SEP 2000
New SRA TPS (IOC + one year)	SEP 2001	SEP 2001	SEP 2001
Material Support Date	OCT 2002	OCT 2002	APR 2003
Navy Support Date	OCT 2003	OCT 2003	MAR 2004
D-Level Maintenance Capability	OCT 2003	OCT 2003	MAR 2004

Note: The approved program (APB) dates are objectives.

ACRONYM LIST

LRIP-Low Rate Initial Production  
 DT&E-Developmental Test and Evaluation  
 DT-Developmental Testing  
 IOT&E-Initial Operational Test and Evaluation  
 OT-Operational Testing  
 FOT&E-Follow-on Operational Test and Evaluation  
 OPEVAL-Operational Evaluation  
 IOC-Initial Operational Capability  
 WRA-Weapon Replaceable Assembly  
 TPS-Test Program Set  
 SRA-Shop Replaceable Assembly  
 ADM-Acquisition Decision Memorandum  
 MS-Milestone  
 APB-Acquisition Program Baseline

9b. Schedule (Cont'd):

b. Current Change Explanations --  
None

10. Performance Characteristics:

a. Performance --

KEY PERFORMANCE PARAMETERS (KPPs) (Specified in F/A-18E/F ORD and validated by JROC)	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Deck Spot Factor (F/A-18A/B/C/D =1.2)	<= 1.4	<= 1.4 / <1.5 / /	1.46	1.46	
Fighter Escort Radius (F/A-18E) (internal fuel) (Nm)	>=425	>=425 / >=410	462	459	
Interdiction Mission Radius (Nm)					
2 external tanks (retained)	>=400	>=400 / >=390 /	444	441	(Ch-1)
3 external tanks (retained)	>=450	>=450 / >=430 /	489	486	
Combat Ceiling (max thrust) (ft)	>50000	>50000 / >=50000	52,300	52,265	(Ch-1)
Carrier Suitability (Tropical Day Conditions)					
Launch: Catapult WOD (C-13-1 Catapult MAX TOGW (kts))	<=25	<=25 / <=30 /	19	19	
Recovery: WOD (MK-7 MOD 3) (kts)	<=10	<=10 / <=15 /	8	9	(Ch-1)
Approach Speed (kts)	<=140	<=140 / <=150 /	142	142	
Recovery Payload (lbs)	>9000	>9000 / >=9000 /	10195	9894	(Ch-2)
Usable Load Factor (Subsonic; Nz) (G's)	>= +7.5	>= +7.5 / >= +7.5 /	+7.5	+7.45	(Ch-1)
Specific Excess Power (Max Thrust, .9M, 1G, 10kft) (fps)	>=650	>=650 / >600 /	648	644	(Ch-1)
Acceleration (.8M to 1.2M at 35kft) (sec)	<=60	<=60 / <70 /	65	66	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>	
Additional Internal Fuel Capacity (lbs) (greater than C/D)	>=3000	>=3000 / >=3000	4090	4090	
SUITABILITY PARAMETERS (Specified in F/A-18E/F ORD)					
Direct Maintenance Manhours per Flight Hour (DMMH/FH) (Replaces MH/FH)	<=5.0	<=5.0 / <=9.0	.59	6.0	(Ch-3)
OTHER PARAMETERS (desired to achieve maximum performance)					
Built-In Test (All Avionics)					
Fault Detection (%)	75	75 / 65	99	97.7	(Ch-4)
Fault Isolation (%)	90	90 / 85	99.5	97.1	(Ch-4)
False Alarm Rate (%)	30	30 / 45	16	58.1	(Ch-5)
Speed (Mach) Fighter Escort	.98	.98 / .96	.96	.95	(Ch-1)
Mission Configuration @10,000 ft with Intermediate Rated Thrust					
Empty Weight (lbs)	29950	29950 / 31950	30123	30400	(Ch-2)
Interoperability of the F/A-18E/F Communications & Data Link Suite	Achieve all IERs	Achieve all IERs / Achieve all IERs	Achieve all IERs	Achieve all IERs	
Mean Time Between Operational Mission Failure (MTBOMF) (Replaces MFHBF)	>=3.2	>=3.2 / >=2.6	7.2	14.0	(Ch-6)

Note: Interdiction Mission Radius, Recovery Payload, Specific Excess Power, Additional Internal Fuel Capacity, Launch Wind Over Deck and Acceleration Time are estimates based on the F/A-18E aircraft.

Note: Interdiction Mission Radius (NM) payload with:  
 a. 2 external tanks = 2 AIM-9 + FLIR/NAVFLIR + 4 MARK 83 LD on Low Drag Pylons  
 b. 3 external tanks = 2 AIM-9 + FLIR/NAVFLIR + 4 MARK 83 LD on Low Drag Pylons

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10a. Performance Characteristics (Cont'd):

Note: Demonstrated performance (except Empty Weight and Recovery Payload) is based on latest configuration changes and current flight-derived aero performance database as of MSIII. This database was verified during OPEVAL (OT-IIC) by accurately predicting the demonstrated F/A-18E/F aircraft performance. Empty Weight and Recovery Payload are based on the weight status for FRP 2 as of 15 October 2002.

Note: The interoperability KPP was added during the Milestone III ORD revalidation in accordance with the 10 August 1999 CJCSI 3170.01A.2. The specific avionics subsystems related to the Interoperability KPP are delineated in paragraph 4.b of the ORD.

Note: Recovery Payload: F/A-18F: 44,000 CLDGW. The F/A-18 E/F at IOC should provide for a threshold/objective of 9,000 pounds of recovery payload.

Note: Specific Excess Power: F/A-18E: (2) AIM-9 + (2) AIM-120 + Gun and Ammo @ 60% internal fuel; and the equivalent design gross weight for the F/A-18F.

Note: All Reliability and Maintainability performance numbers are based on a Lot 24 configuration. A software solution for ECS false alarms has been identified and verified on H1 system configuration set (SCS) aircraft. There is a plan to incorporate the same ECS false alarm fix for 18E SCS aircraft, which would improve the MTBOMF to 3.0 hours. Of the new modified systems, the Multi-Purpose Color Display/Upfront Color Display (MPCD/UFCD), is the major contributor to new BIT false alarms. The MPCD/UFCD accounts for roughly 22% of the BIT false alarms. These BIT false alarms are expected to be corrected with release of F/A-18E/F 18E+ system configuration set (SCS).

ACRONYM LIST

KPP-Key Performance Parameter  
ORD-Operational Requirements Document  
JROC-Joint Requirements Oversight Council  
Nm-Nautical Mile/s  
Ft-Feet  
WOD-Wind Over Deck  
MAX TOGW-Maximum Take Off Gross Weight  
kts-knots  
Nz-Normal Load Factor, Normal Acceleration  
G-Gravitational Acceleration  
M-Mach Number  
kft-Thousand Feet  
fps-feet per second  
lbs-pounds  
MTBOMF-Mean Time Between Operational Mission Failure  
MFHBF-Mean Flight Hours Between Failure  
O&I-Organizational and Intermediate

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10a. Performance Characteristics (Cont'd):

DMMH/FH-Direct Maintenance Manhours per Flight Hour  
MH/FH-Maintenance Hours per Flight Hour  
IER-Information Exchange Requirement  
FLIR-Forward Looking Infrared  
NAVFLIR-Navigation Forward Looking Infrared  
TECHEVAL-Technical Evaluation  
ECS-Environmental Control System  
MPCD-Multipurpose Color Display  
UFCD-Up Front Control Display  
PIDS-Positive Identification System  
BIT-Built in Test  
MSP-Maintenance Status Panel  
CJCSI-Chairman, Joint Chiefs of Staff Instruction

b. Current Change Explanations --

(Ch-1): Current estimates are based on the latest (October 2002) configuration changes and current flight-derived aero performance database. Interdiction Mission Radius with 2 external tanks changed from 442 to 441. Combat Ceiling changed from 52,300 to 52,265, Recovery WOD from 8 to 9, Recovery Payload from 9960 to 9894, Speed (Mach) from .96 to .95, Usable Load Factor changed from +7.4 to +7.45, and Specific Excess Power changed from 645 to 644. The +7.5g load factor was met at IOC. The current +7.45g estimate is a result of expected in-service weight growth.

(Ch-2): The current estimate reflects weight status as of October 2002 (FRP 2 configuration). Recovery Payload, based on the actual weight empty and not the specification weight empty, changed from 9960 to 9894 and Empty Weight changed from 30333 to 30400.

(Ch-3): Direct Maintenance changed from 4.7 to 6.0 due to a change in aircraft configuration reporting. All Reliability and Maintainability performance numbers are based on a Lot 24 configuration vice a LRIP III configuration. The Demonstrated Performance of 0.59 was from the F/A-18E/F EMD TECHEVAL period during which Boeing was responsible for maintenance. The Current Estimates are based on USN Organizational-level actuals.

(Ch-4): Fault Detection changed from 98.5 to 97.7 and Fault Isolation changed from 99.0 to 97.1 due to a change in aircraft configuration reporting. All Reliability and Maintainability performance numbers are based on a Lot 24 configuration vice a LRIP III configuration.

(Ch-5): BIT false alarm percentage changed from 44.7 to 58.1 due to a change in aircraft configuration reporting. All Reliability and Maintainability performance numbers are based on a Lot 24 configuration vice a LRIP III configuration. Additional factors include the addition of new avionic sub-systems onto the Lot 24 aircraft.

(Ch-6): Mean Flight Hour Between Operational Failures changed from 9.4 to 14.0 due to a change in aircraft configuration reporting. All Reliability and Maintainability performance numbers are based on a Lot 24 configuration

10b. Performance Characteristics (Cont'd):

vice a LRIP III configuration.

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)	5889.4	5889.4	5895.2
Procurement	37600.2	37600.2	41679.0
Recurring Flyaway	(28406.3)		(30649.6)
Nonrecurring	(889.5)		(1152.3)
Ancillary	(2980.2)		(3183.8)
Net AP			(22.8)
Total Flyaway	(32276.0)		(35008.5)
Total Other Wpn Sys			(0.0)
Peculiar Support	(4384.9)		(5479.3)
Initial Spares	(939.3)		(1214.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	<u>43489.6</u>	<u>43489.6</u>	<u>47597.0</u>
Escalation	3336.1	3336.1	3176.0
Development (RDT&E)	(-315.4)	(-315.4)	(-337.6)
Procurement	(3651.5)	(3651.5)	(3513.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>46825.7</u>	<u>46825.7</u>	<u>50750.2</u>

Costs for the AESA (AN/APG-79 Radar) and EA-18G procurements are included.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>548</u>	<u>548</u>	<u>552</u>
Total	548	548	552

Note: Excludes seven RDT&E prototypes from the Current Estimate that are not considered fully configured.

LRIP quantities approved at the 1992 MS II 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 the overall aircraft quantity reduction caused by the QDR, the LRIP quantities are above the current 10% guideline. The LRIP quantities remain as approved during the March 1997 DAB.

11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales --  
 Potential sales include Malaysia, Singapore, Australia, and Kuwait.

d. Nuclear Costs --  
 N/A

12. Unit Cost Summary:

	UCR Baseline (SEP 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	43489.6	47574.2	
(2) Quantity	548	552	
(3) Unit Cost	79.361	86.185	+8.60
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	37600.2	41679.0	
(2) Quantity	548	552	
(3) Unit Cost	68.614	75.505	+10.04

Costs for the AESA (AN/APG-79 Radar) and EA-18G procurements are included.

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5574.0	41251.7	-	46825.7
Previous Changes:				
Economic	-23.3	-60.4	-	-83.7
Quantity	-	+55.7	-	+55.7
Schedule	-	+998.0	-	+998.0
Engineering	-	-	-	-
Estimating	+6.9	+501.0	-	+507.9
Other	-	-	-	-
Support	-	+487.5	-	+487.5
Subtotal	-16.4	+1981.8	-	+1965.4
Current Changes:				
Economic	-0.4	-780.9	-	-781.3
Quantity	-	+198.6	-	+198.6
Schedule	-	+159.9	-	+159.9
Engineering	-	+1178.7	-	+1178.7
Estimating	+0.4	+159.3	-	+159.7
Other	-	-	-	-
Support	-	+1043.5	-	+1043.5
Subtotal	-	+1959.1	-	+1959.1
Total Changes	-16.4	+3940.9	-	+3924.5
Current Estimate	5557.6	45192.6	-	50750.2

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5889.4	37600.2	-	43489.6
Previous Changes:				
Quantity	-	+54.9	-	+54.9
Schedule	-	+805.5	-	+805.5
Engineering	-	-	-	-
Estimating	+5.4	+460.4	-	+465.8
Other	-	-	-	-
Support	-	+473.9	-	+473.9
Subtotal	+5.4	+1794.7	-	+1800.1
Current Changes:				
Quantity	-	+163.7	-	+163.7
Schedule	-	+55.2	-	+55.2
Engineering	-	+1021.5	-	+1021.5
Estimating	+0.4	+148.5	-	+148.9
Other	-	-	-	-
Support	-	+895.2	-	+895.2
Subtotal	+0.4	+2284.1	-	+2284.5
Total Changes	+5.8	+4078.8	-	+4084.6
Current Estimate	5895.2	41679.0	-	47574.2

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-0.4
	Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
	RDT&E Subtotal	+0.4	0.0
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-780.9
	Total Quantity Variance associated with increase of 4 aircraft from 548 to 552.	+198.2	+240.4
	Quantity increase of 4 aircraft from 548 to 552. (Quantity)	+163.7	+198.6
	Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	+22.0	+27.8
	Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	+12.5	+14.0
	Extension of annual procurement buy profile by 1 year. (Changed from FY10 to FY11). (Schedule)	0.0	+98.9
	Additional Schedule Variance relating to mix change between E (1 seat) and F (2 seat) aircraft. (Schedule)	+33.2	+33.2
	EA-18G: Engineering design change for aircraft designated as EA-18. (Engineering)	+908.7	+1055.1
	Non-recurring: Line Shutdown moved from FY10 to FY11 (Engineering)	-0.6	0.0
	Non-recurring: Engine Non-recurring extended to FY11. (Engineering)	+15.7	+19.0
	Non-recurring: Cost Reduction Initiative Investment in FY04. (Engineering)	+93.2	+100.0
	Non-recurring: ATFLIR Government Owned Contractor Operated Tooling. Pre-Depot Repair Equipment - original Depot requirement in FY07 was accelerated. (Engineering)	+9.5	+10.0
	Non-recurring: AESA funding for Special Test Equipment. (Engineering)	-5.0	-5.4
	Adjustment for Current and Prior Inflation. (Estimating)	+139.0	+144.6
	Update for Actual Contract Price and Learning Curve Effects. (Estimating)	-30.3	-32.1
	AESA: LRIP Risk funds not needed. (Estimating)	-26.0	-28.8
	Increase in Information Technology / Information Management (IT/IM) due to Boeing accounting change (Estimating)	+53.3	+61.6

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Support)	+25.7	+26.6
Change in Initial Spares due to quantity increase, schedule extension, and addition of EA-18G. (Support)	+277.0	+314.1
Change in Peculiar Support due to quantity increase, schedule extension, and addition of EA-18G. (Support)	+592.5	+702.8
Procurement Subtotal	<u>+2284.1</u>	<u>+1959.1</u>

QR = Quantity related changes.

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	
85.45	-1.57	-0.160	+2.10	+2.14	+1.21	--	+2.77	+6.49	91.94

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	
75.28	-1.52	-0.096	+2.10	+2.14	+1.20	--	+2.77	+6.59	81.87

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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	DEC 1991	MAR 1992	MAR 1992	MAY 1992
Milestone III	DEC 1998	JAN 2000	JAN 2000	JUN 2000
IOC	N/A	SEP 2000	JUN 2001	SEP 2001
Total Cost	3974.4	94583.0	46825.7	50750.2
Total Quantity	0	1000	548	552
Prog Acq Unit Cost	0.0	94.6	85.5	91.9

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
Airframe MYP:  
 MCDONNELL DOUGLAS, ST. LOUIS, MO  
 N00019-99-C-1226, FPIF  
 Award: June 17, 2000  
 Definitized: June 17, 2000

	Initial Contract Price		
	Target	Ceiling	Qty
	\$8966.3	\$9746.6	222

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$9153.7	\$9952.7	216	\$4030.2	\$4030.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$11.3	\$-29.1
Cumulative Variances To Date (12/31/02)	\$-17.5	\$-13.0
Net Change	\$-28.8	\$16.1

Explanation of Change:

The net change in the cumulative cost variance and associated change in the cumulative CPI from 1.01 to 0.99 as of December 2002 are primarily due to the cessation of Cost Performance Reporting (CPR) for the first production lot (FY00), as well as unfavorable cost performance within the third production lot (FY02). At the time that the CPR for the FY00 portion of the contract ceased (September 2002), the FY00 lot had a cumulative CPI of 1.01, which drove an overall cumulative CPI of 1.00 for the combined portions of the contract receiving CPRs at that time (FY00, FY01, FY02, CRI/ECQ and ECP 6038). CPR Reporting for FY00 ceased in September 2002 in accordance with the contract (Final submittal for each year's buy will be the quarter following 95% complete as defined by BCWP/BCWS and last aircraft delivery). The FY02 lot is only 9.8% complete, and based on trends observed with the FY01 lot, cost performance for FY02 is expected to eventually improve.

The net change in the cumulative schedule variance and associated change in

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15. Contract Information (Cont'd):

the cumulative SPI from 0.98 to 0.99 reflect Boeing's improved performance to their Performance Measurement Baseline (PMB). Since Boeing's PMB is based on an internal schedule which is accelerated from the contractual schedule, the CPR reports an SPI of 0.99 despite the acceptance of aircraft ahead of the contractual schedule. A rough PM's estimate of the SPI against the contractual aircraft delivery schedule for only the production lot currently delivering aircraft (FY01) would be approximately 1.14.

Contract Comments:

The current MYP contract will be executed over five years (FY00-FY04). The contract variance and Estimated Price at Completion data discussed in this section address the cumulative performance for the active portions of the MYP for which CPRs are currently being received (i.e., the second and third production lots (FY01 and FY02), as well as the CRI/EOQ and ECP 6038 efforts). It does not reflect the performance or estimated price at completion for the last two lots (FY03 and FY04) or the first lot (FY00) of the MYP contract since formal CPR is not being received for those parts of the contract. Once formal CPR data are received for the MYP FY03 and FY04 lots, it will be included in subsequent SARs. The current contract price data reflect contract values for the entire MYP contract including FYs for which CPRs are not yet being received.

<u>Airframe LRIP 2/3 ILS:</u>			<u>Initial Contract Price</u>		
McDonnell Douglas, St. Louis, MO	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-00-C-0367, FPIF	\$279.3	\$306.9	0		
Award: June 2, 2000					
Definitized: June 2, 2000					
<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>	
\$319.1	\$350.4		\$319.1	\$319.1	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$8.3	\$-6.2	
Cumulative Variances To Date (12/31/02)			\$8.4	\$-4.8	
Net Change			\$0.1	\$1.4	

Explanation of Change:

The net change (improvement) in the cumulative Cost Variance (CV) and associated Cost Performance Index of 1.04 (unchanged from the previous report) is attributable to the LRIP-2 ILS portion of the effort, particularly the Northrop-Grumman Corporation subcontract and Boeing Tech Pubs support. The LRIP 2 ILS effort remains the primary driver of the overall favorable cumulative cost variance.

The net change (improvement) in the unfavorable cumulative SV and associated Schedule Performance Index from 0.97 to 0.98 is attributable to

15. Contract Information (Cont'd):

the LRIP-2 ILS portion of the contract, driven by improvements in Boeing Support Equipment and Tech Pub support. The LRIP 3 ILS effort is driving the overall unfavorable cumulative schedule variance primarily due to Boeing Support Equipment.

<u>Airframe FY00 ILS:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas, St. Louis, MO N00019-01-C-0012, CPFF/CPIF Award: October 20, 2000 Definitized: April 2, 2002	\$148.1	\$0.0	0

	<u>Current Contract Price</u>		<u>Qty</u>	<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>		<u>Contractor</u>	<u>Program Manager</u>
	\$129.9	\$129.9		\$129.9	\$129.9
<u>Previous Cumulative Variances</u>				<u>\$0.7</u>	<u>\$-0.8</u>
<u>Cumulative Variances To Date (12/31/02)</u>				<u>\$4.0</u>	<u>\$-1.5</u>
<u>Net Change</u>				<u>\$3.3</u>	<u>\$-0.7</u>

Explanation of Change:

Since the last report, the contract has been definitized and trends have stabilized. The net change (improvement) in cumulative CV is largely the result of the definitization and inclusion of the subcontract Northrop-Grumman effort which currently has a favorable \$2.2M cumulative CV driven by Support Equipment and Product Support SEIT. Cumulative CPI is currently 1.07.

The net change (degradation) in cumulative SV is driven by Boeing Support Equipment associated with a cumulative SPI of 0.98.

<u>F414-GE-400 Engine IV/V:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric Company, Lynn, MA N00019-99-C-1175, FFP Award: June 22, 1999 Definitized: September 13, 2000	\$824.8	N/A	159

	<u>Current Contract Price</u>		<u>Qty</u>	<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>		<u>Contractor</u>	<u>Program Manager</u>
	\$890.7	N/A	159	\$890.7	\$890.7

Explanation of Change:

15. Contract Information (Cont'd):

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

Cost and Schedule variance reporting is not required on this FFP contract.

Hardware deliveries complete. ILS CLINs open.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>F414-GE-400 Engine VI/X:</u> General Electric, Lynn, MA N00019-01-C-0147, FFP Award: July 5, 2001 Definitized: July 2, 2002	\$1917.0	N/A	493

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1917.0	N/A	493	\$1917.0	\$1917.0

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

First production delivery of Lot VI occurred December 2001.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>Airframe FY01 ILS:</u> McDonnell Douglas, St Louis, MO N00019-02-C-3036, CPFF/CPIF Award: October 20, 2000 Definitized: N/A	\$0.0	\$88.0	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$0.0	\$88.0	0	\$88.0	\$88.0

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/02)	\$2.6	\$-0.4
Net Change	\$2.6	\$-0.4

Explanation of Change:

The Boeing portion of the contract reflects a favorable cumulative CV and associated cumulative CPI of 1.18 which is driven by Tech Pubs Support and Logistics and Engineering Support. The unfavorable cumulative SV is small relative to the baseline and is driven by Support Equipment and Logistics and Engineering Support. Cumulative SPI is currently 0.98.

Contract Comments:

The contract remains undefinitized and does not reflect subcontractor Northrop-Grumman effort. This is the first time the contract is being reported.

Concluded reporting: The following contracts, which are over 90% complete are no longer being reported: Airframe E&MD (N00019-92-C-0059); F414 Engine E&MD (N00019-92-C-0149); Airframe LRIP-2/3 Production (N00019-97-C-0136); F414 Engine LRIP-1 (N00019-96-C-0080); F414 Engine LRIP-2/3 (N00019-97-C-0114)

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> (FY92-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-11)	<u>Total</u>
RDT&E	5557.6	-	-	-	5557.6
Procurement	19805.6	3119.8	3042.0	19225.2	45192.6
MILCCN	-	-	-	-	-
O&M	-	-	-	-	-
Total	25363.2	3119.8	3042.0	19225.2	50750.2

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F/A-18E/F, December 31, 2002

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- F/A-18E/F

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				391.7	349.5
1993				922.4	842.1
1994				1501.2	1396.2
1995				1314.4	1246.0
1996				831.0	801.1
1997				354.0	345.4
1998				238.5	234.6
1999				196.5	195.6
2000				130.8	132.1
2001				13.6	13.9
2002				1.1	1.1
Subtotal				5895.2	5557.6

Costs for the AESA (AN/APG-79 Radar) procurement are included.

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				239.3	233.5
1997	12	203.2	1493.4	2142.1	2108.2
1998	20	164.1	1839.2	2182.0	2172.3
1999	30	193.9	2200.7	2862.2	2885.6
2000	36	84.1	2118.7	2839.4	2898.9
2001	39	55.8	2327.7	2876.6	2966.5
2002	48	60.2	2598.3	3150.9	3284.7
2003	45	57.6	2597.5	3080.4	3255.9
2004	42	140.7	2415.8	2906.4	3119.8
2005	42	50.0	2405.2	2788.4	3042.0
2006	42	27.6	2400.8	2892.0	3209.3
2007	42	15.8	2464.3	2996.0	3383.9
2008	42	15.7	2513.3	3032.3	3486.6
2009	42	15.8	2453.8	2926.9	3426.0
2010	42	15.8	2394.0	2780.7	3313.5
2011	28	52.0	1610.7	1983.4	2405.9
Subtotal	552	1152.3	33833.4	41679.0	45192.6

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F/A-18E/F, December 31, 2002

16b. Program Funding Summary (Cont'd):

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	552	1152.3	33833.4	47574.2	50750.2

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	7	7
Procurement	107	116

Percent Total Program Quantities Delivered: 22.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 17090

Percent Total Program Expended: 33.7%

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 FY00\$: \$0.62

Antecedent Program: F/A-18C

Flight hours per aircraft per month: 31.1

Number of aircraft per squadron: 12

Consumption rate, gallons per hour: 976.49 POL cost, JP-5, per gallon, FY00\$: \$0.62

Date of estimate: March 2000

Source: AIR-4.2 Operating & Support Cost Estimate

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	F/A-18E/F Average Annual Cost per Squadron	F/A-18C Average Annual Cost per Squadron
Mission Pay & Allowances	9.9	7.8
Unit Level Consumption	16.4	15.2
Intermediate Maintenance	0.4	0.5
Depot Maintenance	2.9	2.7
Contractor Support	0.0	0.0
Sustaining Support	3.2	3.2
Indirect Costs	1.2	1.2
Total	34.0	30.6

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F/A-18E/F, December 31, 2002

18b. Operating and Support Costs (Cont'd):

Total O&S Cost	F/A-18E/F	F/A-18C
BYS (In Millions)	34.0	30.6
TYS (In Millions)	34.6	31.2

Report Creation Date: 03/21/2003 9:16:25 AM

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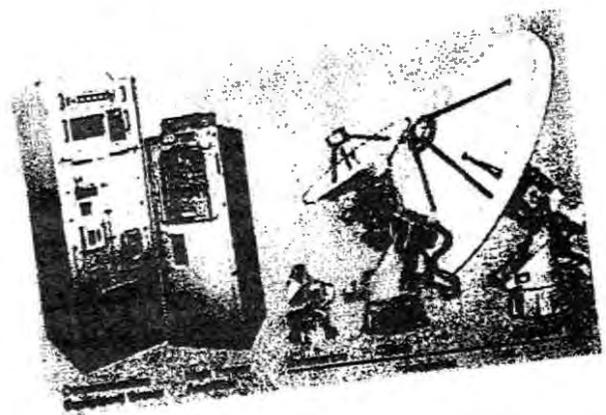
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SELECTED ACQUISITION REPORT (RCS: CD-A&T(Q&A)823)  
PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 2002

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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:  
 PEO C4I and Space  
 PMW 176  
 4301 Pacific Highway  
 San Diego, CA 92110-3217  
 Ms. Michelle Bailey  
 Assigned: August 1, 2000  
 DSN (312) 524-7930; COMM (619) 524-7930  
 michelle.e.bailey@navy.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E: PE 0303109N Project X0728 (Shared)  
 (U)  
 PROCUREMENT:  
 (U) APPN 1810 ICN 33321500 (Navy) (Shared)  
 (U) APPN 1810 ICN 33902000 (Navy) (Shared)  
 (U) APPN 1611 ICN MULTIPLE (Navy)  
 MILCON:  
 (U) PE 0303109N

No Security Objection  
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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 August 16, 2001.

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 (C3) applications such as secure voice, teletype, data and fleet broadcast systems. As the Navy's portion of Military Strategic, Tactical and Relay SATCOM (Milstar) I (Low Data Rate) and II (Medium Data Rate), NESP terminals are an essential part of the number one command and control communications system within DOD. 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 operate with Milstar satellites as well as EHF packages on board Ultra High Frequency (UHF) Follow-On (UFO) Satellites and with the Fleet Satellite (FLTSAT) EHF Packages (FEP) installed on FLTSATs 7 and 8. A Medium Data Rate (MDR) capability has been developed to allow MDR communications with Milstar II satellites while also providing backward compatibility with Milstar I satellites. NESP terminals provide vital survivable wartime command and control communications for the President and Secretary of Defense, Combatant Commanders and operational commanders. NESP has configurations for Submarine, Ship and Shore platforms with significant commonality between platform types. This system does not replace another system.

7. (U) Executive Summary:

(U) The NESP terminal was developed to support the: Mission Element Need Statement (MENS); Assistant Secretary of the Navy (ASN) Research, Engineering and Systems (RE&S) letter of July 23, 1981; Navy Decision Coordinating Paper (NDCP) of January 21, 1982 (updated April 25, 1989); and the September 1992 Milstar Operational Requirements Document (ORD). NESP operational performance will meet the threat defined in the March 1997 Milstar System Threat Assessment Report (STAR) update. Three companies began system definition and concept demonstration in 1979 after a full and open competition. Two companies were selected for Full Scale Development (FSD) in 1982 with one company awarded a Firm Fixed Price contract in 1986 for FSD completion and initial production. Low Rate Initial Production (LRIP) beginning in FY90 was approved at a Milestone IIIA decision in May 1989. Operational Evaluation (OPEVAL) Phase I and OPEVAL II were successfully completed in September 1990 and August 1992, respectively. The Milestone III decision in April 1993 approved Full Rate Production beginning that year.

(U) The first Milstar satellite was launched on February 7, 1994. A

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7. (U) Executive Summary (Cont'd):

production NESP terminal successfully communicated with an Air Force terminal over the on-orbit Milstar I Satellite on February 15, 1994 as part of Milstar System Test (MST)-8000. NESP Initial Operational Capability (IOC) was achieved in April 1994.

(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 was a major accomplishment for NESP.

(U) The NESP Acquisition Strategy was updated in December 1996 and provided for the development and deployment of an MDR upgrade to satisfy interoperability and compatibility with Milstar II satellites. The strategy also included a plan to competitively procure an Low Data Rate (LDR)/Medium Data Rate (MDR) Follow-On NESP terminal to allow the Navy to capitalize on the most current technology to satisfy the remaining fleet requirements. The resultant "Follow-On Terminal" (FOT) procurement was based on full and open competition and integrates the LDR and MDR capabilities into a streamlined terminal configuration.

(U) The MDR upgrade contract was awarded on January 20, 1998. This system provides an MDR capability via a spare drawer in the initial LDR terminal.

(U) The FOT contract was awarded on March 20, 1998. This terminal provides LDR/MDR capability to satisfy remaining Fleet requirements.

(U) MST-6000 was successfully completed in August 1998. This test verified Navy unique MDR data communications as well as interoperability between the Navy EHF terminal and Army Secure Mobile Anti-jam Reliable Tactical Terminals (SMART-T) over the ground based Milstar II MDR payload.

(U) The EHF Program completed the first two installations of the LDR terminal's MDR upgrade. The installations were completed at Commander, U.S. Pacific Fleet (COMPACFLT) and on the USS CORONADO.

(U) The 1st option for the LDR/MDR FOT contract was exercised on January 28, 2000 for 89 LDR/MDR capable terminals. The LDR/MDR FOT provides significantly increased data rates to the fleet.

(U) Milstar II Flight 4 was launched February 27, 2001 and was turned over to the operational community in August 2001. Flight 4 is completely operational.

(U) The first LDR/MDR FOT was successfully installed on the USS OSCAR AUSTIN June 11, 2001.

(U) Milstar II Flight 5 was successfully launched January 15, 2002 and MST-8000-5 testing is complete. Milstar II Flight 6 is scheduled to launch March 2003 and is the last of the MDR Block 2 payloads.

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7. (U) Executive Summary (Cont'd):

(U) Commander, Operational Test and Evaluation Force (COMOPTEVFOR) completed OT-IIID and OPEVAL for MDR applique on May 9, 2002. MDR applique is certified by COMOPTEVFOR as operationally suitable and operationally effective.

(U) NESP requires \$84.5M to complete LDR/MDR FOT fielding requirements. The \$84.5M shortfall is the result of emergent requirements for procurement of 18 SSBN/GN FOT terminals, restoration of budget reductions levied for Navy reprioritization and additional costs associated with FOT production contract extension.

(U) A new Program Executive Office for C4I (Command, Control, Communications, Computers, Intelligence) and Space stood up on November 01, 2002. NESP has moved from the Space and Naval Warfare Systems Command (SPAWAR) organization to PEO C4I and Space.

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</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
FSD Approval (Milestone II) (2 Contractors)	JAN 1982	JAN 1982	JAN 1982
PDR Complete	NOV 1982	NOV 1982	NOV 1982
CDR Complete	JUN 1984	JUN 1984	JUN 1984
System Definition/Concept Demo (CEB) (3 Contractors)	OCT 1979	OCT 1979	OCT 1979
Downselect (1 Contractor)	MAR 1986	MAR 1986	MAR 1986
Factory Acceptance Test	JAN 1988	JAN 1988	JAN 1988
Operational Assessment (OTIIA)	MAR 1988	MAR 1988	MAR 1988
Program Review (Low Rate Initial Prod)	MAY 1989	MAY 1989	MAY 1989
Operational Evaluation (OTIIB)	JUN 1990	JUN 1990	JUN 1990
Low Rate Initial Production First Delivery	JUL 1992	AUG 1992	AUG 1992
Additional Operational Testing (OTIIC)	JUL 1992	JUL 1992	JUL 1992
Milestone III (Full Rate Production)	DEC 1992	DEC 1992	APR 1993
First Unit Equipped Start	JAN 1993	JAN 1993	JAN 1993
Service Depot Support Date	FEB 1994	FEB 1994	FEB 1994
Organic Support Capability Date	FEB 1994	FEB 1994	FEB 1994
Initial Operational Capability (Navy)	JAN 1994	JAN 1994	APR 1994
FOT&E	MAR 1994	MAR 1994	AUG 1994
Follow-On Procurement RFP Release	JAN 1997	JAN 1997	JUL 1997
MDR Applique Award	OCT 1997	OCT 1997	JAN 1998
MDR Operational Test	OCT 1998	OCT 2001	APR 2002
Milestone IV	FEB 1999	N/A	N/A

(U) Acronyms:

FSD	Full Scale Development
PDR	Preliminary Design Review
CDR	Critical Design Review
CEB	Chief of Naval Operations (CNO) Evaluation Board
FOT&E	Follow-on Operational Test and Evaluation
RFP	Request for Proposal
MDR	Medium Data Rate

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Survivability	(b)(1)			
Transient Overpressure (psi)	(b)(1)			
Neutron Fluence (neutrons/cm <sup>2</sup> )	(b)(1)			
Gamma Dose Rate (rads) (si)/(sec)	(b)(1)			
Total Gamma Dose (rads) (si)	(b)(1)			
Gamma Dose Initial (rads) (si)	(b)(1)			
Thermal Fluences	(b)(1)			
1 MT yield (cal/cm <sup>2</sup> )	(b)(1)			
EMP (peak at antenna)	(b)(1)			
E <sub>0</sub> Field (volts/meter)	(b)(1)			
H <sub>0</sub> Field (amps/meter)	(b)(1)			
Resistance to Jamming	(b)(1)			
Shore (EIRP) (dBW)	(b)(1)			
Shore (G/T) (dBi)	(b)(1)			
Ship (EIRP) (dBW)	(b)(1)			
Ship (G/T) (dBi)	(b)(1)			
Sub (EIRP) (Wet Radome) (dBW)	(b)(1)			
Sub (G/T) (Wet Radome) (dBi)	(b)(1)			
Low Probability of Intercept (CEVR) (75bps/minimum power)	(b)(1)			
Ship (nmi)	(b)(1)			
Sub (nmi)	(b)(1)			
Submarine	(b)(1)			
Surface	(b)(1)			
Shore	(b)(1)			
Reliability (All Terminals) (hrs)	(b)(1)			
Maintainability (MTTR) (hrs)	(b)(1)			
Minimum Essential Communications	(b)(1)			
Ship (1 <sup>0</sup> Spot) (bps) (sv)	(b)(1)			
Ship (1 <sup>0</sup> Spot) (bps) (TTY)	(b)(1)			

10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Receive Only (bps) data	(b)(1)			
Sub (1^0 Spot) (bps) (sv)				
Sub 3.6^0 Agile (bps) (TTY)				
Shore (EC) (bps) (sv)				
Send Only (bps) data				
Send Only (bps) (TTY)				
FLTBCST (bps) (TTY)				
Medium Data Rate Effective Isotropic Radiated Power (EIRP)				
Shore (10 Ft. Ant.) (dBw)				(Ch-1)
Shore (6 Ft. Ant.) (dBw)				
Ship (4 Ft. Ant.) (dBw)				(Ch-1)
Ship (3 Ft. Ant.) (dBw)				(Ch-1)
Sub (9.5 in. Ant.) (dBw) (Wet Radome)				
G/T				
Shore (10 Ft. Ant.) (dBk)				(Ch-1)
Shore (6 Ft. Ant.) (dBk)				(Ch-1)
Ship (4 Ft. Ant.) (dBk)				(Ch-1)
Ship (3 Ft. Ant.) (dBk)				(Ch-1)
Sub (9.5 in. Ant.) (dBk) (Wet Radome)				(Ch-1)
Maximum Aggregate Data Rate				
Shore (10 Ft. Ant.) (kBPS)				
Shore (6 Ft. Ant.) (kBPS)				
Ship (4 Ft. Ant.) (kBPS)				
Ship (3 Ft. Ant.) (kBPS)				

10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate	
Sub (9.5 in. Ant.) (KBPS)	(b)(1)				(Ch-1)

(U) The results of the Operational Test event OT-IIIB are documented in Commander, Operational Test and Evaluation Force (COMOPTEVFOR) report Ser. 611/5049 of December 19, 1996. OT-IIIB test results verified that the performance of the NESF terminal meets or exceeds Acquisition Program Baseline (APB) Thresholds.

(b)(1)

(b)(1)

Low Probability of Intercept values were demonstrated during OT-IIIB testing.

Reliability, Maintainability, and Availability values were demonstrated during OT-IIIA testing.

Minimum Essential Communications values were demonstrated during OT-IIIA testing.

(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
- EMP Electromagnetic Pulse
- G/T antenna receive gain/temperature of receive system (figure of merit)
- kbps kilobits per second
- MTTR Mean Time To Repair
- nmi nautical miles

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10a. (U) Performance Characteristics (Cont'd):

MTRR	Mean Time To Repair
nmi	nautical miles
psi	pounds per square inch
rads(si)/sec	radiation dose (square inches)/second
sec	seconds
si	square inch
sv	secure voice
TTY	Teletype
hrs	hours
FLTBCST	Fleet Broadcast

b. Current Change Explanations --

(U) (Ch-1) PM's Current Estimate for MDR EIRP, G/T, and Maximum Aggregate Data Rate were changed from APB objective values to actual demonstrated performance.

Entries shown for Performance Characteristics under "Demonstrated Performance" have been tested at values equal to or better than the Approved Program Objective/Threshold.

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	457.4	457.4	434.2
Procurement	1395.2	1395.2	1360.0
Terminals	(991.7)		(1051.4)
Other Weapon Sys	(127.9)		(120.8)
Peculiar Support	(40.7)		(41.6)
Initial Spares	(234.9)		(146.2)
Construction (MILCON)	24.0	24.0	7.7
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	1876.6	1876.6	1801.9
Escalation	497.1	497.1	261.2
Development (RDT&E)	(6.0)	(6.0)	(-5.0)
Procurement	(486.3)	(486.3)	(265.3)
Construction (MILCON)	(4.8)	(4.8)	(0.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2373.7	2373.7	2063.1
b. (U) Quantity --			
Development (RDT&E)	7	7	7
Procurement	386	386	513
Total	393	393	520

(U) Note: RDT&E units are fully configured

[U] A total of 116 EHF LDR terminals were procured under LRIP, exceeding 10% of

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11b. (U) Total Program Cost and Quantity (Cont'd):

total production. Three one-year LRIFs were approved between FY90-92 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.

{U} The current estimate of 513 total units (Procurement) represents 183 LDR only Terminals, 13 LDR only Single Channel Anti-Jam Man Portables (SCAMPS), 71 LDR Terminals with MDR Applique Upgrades, and 246 LDR/MDR Follow-On Terminals. The increase in LDR/MDR Follow-On Terminals from 222 to 246 is due to the addition of 18 SSBN/GN MDR requirements, an additional 1 submarine MDR test and training equipment (TTE) requirement, and the addition of 5 SCN MDR requirements.

{U} The increase in end-item procurements from the SAR baseline reflects a change in the acquisition strategy for providing an MDR capability to meet Fleet requirements, as reported in the December 1999 SAR. The actual number of terminals required to be fielded by FY 2007 to meet Fleet requirements is 324.

c. (U) Foreign Military Sales --  
None.

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (AUG 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	1876.6	1801.9	
(2) Quantity	393	520	
(3) Unit Cost	4.775	3.465	-27.43
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	1395.2	1360.0	
(2) Quantity	386	513	
(3) Unit Cost	3.615	2.651	-26.67

{U} The revised Acquisition Program Baseline of August 16, 2001 updated schedule information only; no cost information was updated from 1993 SAR Baseline.

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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	463.4	1881.5	28.8	2373.7
Previous Changes:				
Economic	+2.9	-191.2	-0.6	-188.9
Quantity	-	+173.9	-	+173.9
Schedule	+23.9	+14.8	-	+38.7
Engineering	+35.5	+33.7	-	+69.2
Estimating	-96.5	-211.9	+0.8	-307.6
Other	-	-	-	-
Support	-	-145.3	-20.4	-165.7
Subtotal	-34.2	-326.0	-20.2	-380.4
Current Changes:				
Economic	-0.2	-5.9	-	-6.1
Quantity	-	+50.0	-	+50.0
Schedule	-	+1.7	-	+1.7
Engineering	-	-	-	-
Estimating	+0.2	+25.3	-	+25.5
Other	-	-	-	-
Support	-	-1.3	-	-1.3
Subtotal	-	+69.8	-	+69.8
Total Changes	-34.2	-256.2	-20.2	-310.6
Current Estimate	429.2	1625.3	8.6	2063.1

(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	-	+148.6	-	+148.6
Schedule	+12.1	+3.1	-	+15.2
Engineering	+24.3	+23.8	-	+48.1
Estimating	-59.6	-171.8	+0.5	-230.9
Other	-	-	-	-
Support	-	-93.5	-16.8	-110.3
Subtotal	-23.2	-89.8	-16.3	-129.3
Current Changes:				
Quantity	-	+36.0	-	+36.0
Schedule	-	-0.1	-	-0.1
Engineering	-	-	-	-
Estimating	-	+20.1	-	+20.1
Other	-	-	-	-
Support	-	-1.4	-	-1.4
Subtotal	-	+54.6	-	+54.6
Total Changes	-23.2	-35.2	-16.3	-74.7
Current Estimate	434.2	1360.0	7.7	1801.9

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>This-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.2
RDT&E Subtotal	<u>0.0</u>	<u>0.0</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-5.9
Adjustment for Current and Prior Inflation. (Estimating)	+2.6	+3.3
Procurement increase of 24 Low Data Rate (LDR)/ Medium Data Rate (MDR) Follow-On Terminals (FOT) from 489 to 513. (Quantity)	+36.0	+50.0
Accelerated procurement of Shipbuilding and Conversion, Navy LDR/MDR FOT and other equipment, offset by delayed procurement of Other Procurement, Navy LDR/MDR FOT and other equipment. (Schedule)	-0.1	+1.7
Revised estimates for terminal upgrades, installations and LDR/MDR FOT procurement costs beyond current production contract. (Estimating)	+17.5	+22.0
Estimating change for Initial Spares unit cost based on actuals. (Support)	-5.2	-6.7
Increase in Other Weapons Systems, Peculiar Support, and Initial Spares quantity due to increased LDR/MDR FOT procurements. (QR) (Support)	+3.9	+5.4
Procurement Subtotal	<u>+54.6</u>	<u>+69.8</u>

QR = Quantity related changes.

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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 Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.04	-0.375	-1.05	+0.078	+0.133	-0.542	--	-0.321	-2.07	3.97

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	
4.87	-0.384	-0.770	+0.032	+0.066	-0.364	--	-0.286	-1.71	3.17

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	OCT 1979	OCT 1979
Milestone II	N/A	N/A	JAN 1982	JAN 1982
Milestone III	N/A	N/A	DEC 1992	APR 1993
IOC	N/A	N/A	JAN 1994	APR 1994
Total Cost	N/A	N/A	2373.7	2063.1
Total Quantity	N/A	N/A	393	520
Prog Acq Unit Cost	N/A	N/A	6.0	4.0

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$468.4	N/A	269	\$468.4	\$468.4

Explanation of Change:

None.

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Navy EHF SATCOM Prog, December 31, 2002

15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The current contract price of \$468.4M shows an increase from the initial contract price of \$83.7M to reflect the addition of 245 procurements and associated costs.

(U) <u>EHF Follow-On Terminals:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Company, Marlborough, MA N00039-98-C-0047, FFP Award: March 20, 1998 Definitized: January 20, 2000	\$9.5	N/A	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$127.9	N/A	150	\$253.6	\$253.6

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The Current Contract Price increased to reflect the Production Year 1, 2, 3 and 4 procurements and obligations to date. The EHF Follow-on Terminal contract will be used to procure the remaining Fleet requirements.

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Navy EHF SATCOM Prog, December 31, 2002

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> (FY82-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-07)	<u>Total</u>
RDT&E	426.9	1.0	0.8	0.5	429.2
Procurement	1386.4	91.1	35.0	112.8	1625.3
MILCON	8.6	-	-	-	8.6
O&M	-	-	-	-	-
Total	1821.9	92.1	35.8	113.3	2063.1

b. Annual Summary -- NAVY EHF SATCOM PROGRAM

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 1990 Dollars Nonrec</u>	<u>Sailaway FY 1990 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				11.4	13.6
1998				12.3	14.8
1999				12.6	15.4
2000				5.1	6.3
2001				4.3	5.4
2002				2.6	3.3
2003				1.2	1.5
2004				0.8	1.0
2005				0.6	0.8
2006				0.4	0.5
Subtotal	7			434.2	429.2

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Navy EHF SATCOM Prog, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Sailaway FY 1990 Dollars Nonrec	Sailaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990			6.6	4.0	4.3
1991			2.0	1.2	1.3
1992			2.2	2.0	2.3
1993			19.6	12.0	13.9
1994	7		26.6	11.6	13.7
1995				6.7	8.0
1996	3		7.0	15.0	18.2
1997				4.9	6.0
1998	15		27.0	19.5	24.3
1999				4.7	5.9
2000	15		19.6	19.8	25.3
2001				9.4	12.2
2002	5		6.8	7.6	10.0
2003	7		11.0	9.3	12.4
2004	7		11.8	10.6	14.4
2005	4		7.1	9.6	13.3
2006				2.8	4.0
Subtotal	77		147.3	150.7	189.5

(U) "Sailaway" 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	Sailaway FY 1990 Dollars Nonrec	Sailaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989		4.3	4.5	8.8	9.1
1990	21	17.4	44.7	119.2	127.5
1991	37	2.8	71.5	98.2	106.9
1992	53	1.8	118.9	137.2	154.0
1993	54	1.0	110.5	111.0	126.0
1994	58	0.4	138.6	93.3	107.4
1995			1.1	48.2	56.5
1996	7		14.6	46.2	54.8
1997		7.8	5.0	61.7	74.0
1998	1	7.2	16.2	39.7	48.0
1999	13	1.8	38.3	53.1	65.0
2000	74		100.1	90.2	112.0
2001	71		32.6	59.0	74.2
2002	23		36.4	51.8	65.8
2003	11		18.5	36.9	47.4

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Sailaway FY 1990 Dollars Nonrec	Sailaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	35		46.6	58.8	76.7
2005			3.7	16.4	21.7
2006			2.0	18.0	24.3
2007	28		55.8	61.6	84.5
Subtotal	436	44.5	859.6	1209.3	1435.8

(U) "Sailaway" 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, "Sailaway Rec" numbers include production of upgrades such as MDR upgrades for retrofit into NESP terminals in the year in which the funds are budgeted. Total program costs include NESP 1810 ICN 33321500 (SATCOM OPN budget) and 1810 ICN 33902000 (spares OPN budget). FY07 reflects "To Complete" Requirements.

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Sailaway FY 1990 Dollars Nonrec	Sailaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				7.7	8.6
Subtotal				7.7	8.6

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	520	44.5	1006.9	1801.9	2063.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	7	7
Procurement	380	380

(U) Percent Total Program Quantities Delivered: 74.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1682.8

(U) Percent Total Program Expended: 81.6%

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 by FY 2007 will consist of 186 Ship, 78 Submarine, 49 Shore, and 11 Training.

(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) O&S costs for the NESP Follow-On Terminals (FOT) are being formalized, but are expected to be lower than the original NESP terminal estimates from MS III.

(U) There is no Antecedent System for this program.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	NAVY EHF SATCOM PROGRAM Average Annual Cost per Terminal	No Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	18.0	N/A
Intermediate Maintenance	39.0	N/A
Depot Maintenance	41.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	98.0	N/A

Total O&S Cost	NAVY EHF SATCOM PROGRAM	No Antecedent System
BY\$ (In Millions)	472.0	N/A
TY\$ (In Millions)	592.0	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: MIDS-LVT

AS OF DATE: December 31, 2002

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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 Tactical Aircraft Programs	CAPT John N. Kohut
MIDS Program (PMW 101)	Assigned: November 1, 2000
4201 Pacific Highway	DSN 524-7776; COMM 619-524-7776
San Diego, CA 92110-3215	john.kohut@navy.mil

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0205604N (Shared) Link-16 Project X2126
- (U) PE 0207130F (Shared) F-15C/D Project
- (U) PE 0207133F (Shared) F-16 Project
- (U) PE 0207134F (Shared) F-15E Project
- (U) PE 0603713A (Shared) Project D370
- (U) PE 0603883C (Shared) ABL
- (U) PE 0604240F (Shared) B-2
- (U) PE 0604270N (Shared) EA-6B Integration Project E0556, E2781
- (U) PE 0604771D (Shared) MIDS Project P773
- (U) PE 0604280N (Shared) MIDS SCA Project X3073 (Shared)

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AS AMENDED AS AMENDED  
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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

Derived from: MIDS Security Classification Guide, dated January 15, 1999  
Downgrade instructions: Source marked OADR, dated January 15, 1999  
Declassify on: Source document marked OADR, dated January 15, 1999

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~~Security Objection to Open Publication (AS AMENDED)~~  
03-C-0463  
MAR 20 2003  
M. J. Farrell  
Office of the Chief of Naval Operations  
Dept. of the Navy

03-C-0463

4a. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

(U) APPN 3080 ICN 0207130F (Air Force) (Shared)  
(U) APPN 3010 ICN 0207133F (Air Force) (Shared)  
(U) APPN 3080 ICN 0207134F (Air Force) (Shared)  
(U) APPN 0300 ICN 0208861C (DoD) (Shared)  
(U) APPN 0300 ICN 0208865C (DoD) (Shared)  
(U) APPN 3010 ICN 0603319F (Air Force) (Shared)  
(U) APPN 1506 ICN 3101450000 (Navy) (Shared)  
(U) APPN 1506 ICN 3105110000 (Navy) (Shared)  
(U) APPN 1506 ICN 3105250000 (Navy) (Shared)  
(U) APPN 1611 ICN 3320860000 (Navy) (Shared)  
(U) APPN 1611 ICN 3321220000 (Navy) (Shared)  
(U) APPN 1611 ICN 3330350000 (Navy) (Shared)  
(U) APPN 1611 ICN 3330360000 (Navy) (Shared)  
(U) APPN 1611 ICN 3352150000 (Navy) (Shared)  
(U) APPN 1810 ICN 3426140000 (Navy) (Shared)  
(U) APPN 2035 ICN 0528992A (Army) (Shared)  
(U) APPN 3010 ICN 0207138F (Air Force) (Shared)

(U) The current estimate of the MIDS-LVT acquisition cost includes Défense Emergency Relief Funds for appropriations: 3010 ICN 0207133F (Air Force) (Shared), 3080 ICN 0207134F (Air Force) (Shared), and 1506 ICN 3105250000 (Navy) (Shared). These funds were used to support Homeland Defense and Operation Enduring Freedom.

5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

(U) SAE Approved Acquisition Program Baseline (APB) dated July 18, 2002.

6. (U) Mission and Description:

(U) The MIDS-LVT terminal does not replace an existing DOD system in that it provides Link-16 capability to platforms that were unable to employ Joint Tactical Information Distribution System (JTIDS) due to space and weight constraints. The MIDS-LVT Program is a multinational (U.S., France, Germany, Italy, Spain) cooperative development program with joint service participation (Navy, Army, Air Force). The program was established to design, develop and deliver low volume, lightweight tactical information system terminals for U.S. and Allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT will provide interoperability with NATO users significantly increasing force effectiveness and minimizing hostile actions and friend-on-friend engagements. The terminal is designed to be smaller, lighter, highly reliable, interoperable with JTIDS Class 2 terminal, compatible with all the participants' designated platforms, affordable, and re-configurable to individual user needs and budgets. Three principal configurations of the

6. (U) Mission and Description (Cont'd):

terminal are in production and use an open system, modular architecture. MIDS-LVT(1) includes voice, Tactical Air Navigation (TACAN) and variable power transmission with maximum power of 200 watts and will provide Link-16 capability to F/A-18 aircraft previously unable to use JTIDS due to space and weight limitations. MIDS-LVT(2) is an Army variant of MIDS tailored to be a functional replacement for the JTIDS Class 2M terminal. MIDS-LVT(3), also referred to as MIDS Fighter Data Link (FDL), is a reduced function terminal for the Air Force (no voice, no TACAN, and a maximum power of 40 watts). Currently, over 2,000 terminals (total for all three variants) are planned for procurement through FY11.

7. (U) Executive Summary:

(U) The F/A-18 MIDS-LVT commenced Technical Evaluation (TECHEVAL) April 11, 2002, coinciding with a Joint Combat Identification Evaluation Team that enabled system evaluation in a large force exercise prior to the third Low Rate Initial Production (LRIP) decision. On June 26, 2002, the Under Secretary of Defense (Acquisition, Technology, and Logistics) approved LRIP Lot 3, redesignated the MIDS-LVT as an Acquisition Category IC program, and delegated Milestone III, Full Rate Production (FRP) decision authority to Assistant Secretary of the Navy (Research, Development, and Acquisition). In accordance with the MIDS-LVT acquisition strategy, continuous competition is planned throughout the production phase. LRIP Lot 3 was awarded on a 60/40 competitive source selection to the two U.S contractors, Data Link Solutions (DLS) and ViaSat, respectively. The F/A-18 MIDS-LVT Operational Evaluation (OPEVAL) commenced late October 2002 aboard the Nimitz Battle Group (BG) with completion planned mid-February 2003. During OPEVAL the Joint Interoperability Test Command (JITC) conducted testing for the required interoperability certification, and the OPEVAL, JITC, and Beyond LRIP Reports will be submitted in support of the Milestone III FRP decision planned July 2003. The Army completed operational test of the MIDS-LVT(2) variant June 2002 and achieved the Initial Operational Capability December 2002; the FRP decision for the MIDS-LVT(2) is planned March 2003. During the last year, the Navy has been coordinating plans to transition the MIDS-LVT to Joint Tactical Radio System Software Communications Architecture. Development funding for this effort is included in the President's fiscal year 2004 budget and reported herein.

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:

Note: On February 5, 2003, Program Executive Officer for Tactical Aircraft Programs (PEO(T)) submitted a Program Deviation Report identifying a schedule breach for the Army MIDS-LVT(2) Full Rate Production (FRP) decision. Although the Army completed operational test and achieved the initial operational capability within approved thresholds, data authentication and the reporting process delayed submission of the Systems Evaluation Report by the Army Test and Evaluation Command until January 30, 2003, which will delay the FRP decision until March 2003. No performance or cost breach has occurred.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II (DAB)	DEC 1993	DEC 1993	DEC 1993
Development Contract Award			
LVT Contract Award	DEC 1993	MAR 1994	MAR 1994
LVT(2) Modification	N/A	AUG 1995	AUG 1995
LVT(3) Qual Contract Award	N/A	SEP 1996	SEP 1996
F/A-18 Integration Contract Award (NAVAIR)	MAR 1994	N/A	N/A
Critical Design Review (MIDS Terminal)	DEC 1995	N/A	N/A
Critical Design Review			
LVT	N/A	NOV 1995	NOV 1995
LVT(2)	N/A	FEB 1997	FEB 1997
First EMD Terminal Delivery			
LVT	OCT 1997	DEC 1997	FEB 1998
LVT(2)	N/A	MAY 1998	OCT 1998
LVT(3)	N/A	FEB 1998	MAY 1998

9a. (U) Schedule (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
First EMD Flight	JUN 1998	N/A	N/A
Initial Carrier Suitability	N/A	NOV 1998	FEB 1999
TECHEVAL			
Start	JUN 2000	N/A	N/A
Complete	JUN 2000	N/A	N/A
OPEVAL			
Start	DEC 2000	N/A	N/A
Complete	DEC 2000	N/A	N/A
IOT&E Complete			
LVT	N/A	JAN 2003	FEB 2003 (Ch-1)
LVT(2)	N/A	FEB 2002	JUN 2002
LVT(3)	N/A	JUL 1999	AUG 1999
Low-Rate Initial Production First Delivery	OCT 2000	N/A	N/A
Program Review DAB for LRIP	JUN 2001	FEB 2000	APR 2000
LRIP Production Contract Award	N/A	MAR 2000	MAY 2000
Milestone III (Navy)			
LVT	N/A	JUL 2003	JUL 2003
LVT (3)	N/A	DEC 1999	OCT 1999
Full Rate Production Contract Award	JUN 2001	N/A	N/A
Initial Operational Capability			
LVT	DEC 2000	MAY 2003	MAY 2003
LVT(2)	N/A	JUN 2002	DEC 2002 (Ch-2)
LVT(3)	N/A	JAN 2001	FEB 2001
Organic Support Capability Date	JUN 2003	N/A	N/A
Service Depot Support Date	JAN 2004	MAR 2005	MAR 2005
Full Rate Production - LVT(2)	N/A	MAY 2002	MAR 2003 (Ch-3)

b. Current Change Explanations --

(U) (Ch-1) MIDS-LVT F/A-18 Operational Evaluation commenced late October 2002, later than planned, and flight testing extended into February 2003.

<u>Milestone</u>	<u>From</u>	<u>To</u>
IOT&E Complete		
LVT	Jan 03	Feb 03

(Ch-2) ViaSat did not complete qualification testing on schedule, which delayed production ramp-up and delivery of the Army unique MIDS-LVT(2).

<u>Milestone</u>	<u>From</u>	<u>To</u>
Initial Operational Capability		
LVT(2)	Oct 02	Dec 02

(Ch-3) Operational test of the MIDS-LVT(2) was completed as planned, but data authentication and the preparation and approval of the Systems Evaluation Report by the Army Test and Evaluation Command has delayed the Full Rate Production decision process.

9b. (U) Schedule (Cont'd):

<u>Milestone</u>	<u>From</u>	<u>To</u>
Full Rate Production - LVT(2)	Oct 02	Mar 03

10. (U) Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Interoperability	N/A	All IERS/ All in SMORD/ critical	F/A-18 JIT	All (Ch-1) Critical IERS in SMORD
Waveform Compatibility	N/A	STANAG / STANAG 4175 & / 4175 & JTIDS / JTIDS SSS / SSS	STANAG 4175 & JTIDS SSS	STANAG 4175 & JTIDS SSS (Ch-1)
Message Standard	N/A	STANAG / STANAG 5516 (& / 5516 (& 5616 for/ 5616 for Data / Data Fwds) & / Fwds) & MIL-STD- / MIL-STD- 6016A / 6016A	STANAG 5516 (& 5616 for Data Fwds) & MIL-STD- 6016A	STANAG 5516 (& 5616 for Data Fwds) & MIL-STD- 6016B (Ch-1)
Maximum Power Transmission (w) LVT	N/A	/	TBD	
LVT(2)	N/A	Multiple/ select- / able / 1000 levels /	200 with IF for 1000	200 with IF for 1000 (Ch-1)
LVT(3)	N/A	Multiple/ select- / able / 50 levels /	200 or 25 select- / able	200 or 25 Select- / able (Ch-1)
Information Exchange Rate (Kbps)	N/A	1000 / 28.8 - / 115.2	26.375 - 53.526	26.375 - 53.526 (Ch-1)
Coded Data Rate (Kbps) Standard Packing	N/A	N/A / N/A	TBD	Deleted (Ch-1)
Packed 2 DP	26.8	N/A / N/A		Deleted (Ch-1)
Packed 4 DP	57.6	N/A / N/A		Deleted (Ch-1)
Paired Time Slot Relay Capability	115.2	N/A / N/A		Deleted (Ch-1)
Relay Range (nm)	N/A	Integral/ and / auto- / mated	Integral and auto- mated	Integral and auto- mated (Ch-1)
	1200	N/A / N/A		Deleted (Ch-1)

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Paired Time Slot Relay Range (nm) (USN Only)	N/A	1200 / 500	430 (data & voice)	500	(Ch-1)
Repromulgation Relay (nm) MIDS-LVT(2)	N/A	4 hop / 3 hop with LOS/ with LOS	TBD	3 hop with LOS	(Ch-1)
Communication Range (NM)	300	N/A / N/A		Deleted	(Ch-1)
Communication Range LVT (USN: C2 to C2)	N/A	300 / 300	TBD	300	(Ch-1)
LVT (USN: Non-C2 to C2)	N/A	240 / 220	250	240	(Ch-1)
LVT (USN: Non-C2 to Non-C2)	N/A	200 / 180	225	260 data & 240 voice	(Ch-1)
LVT (USN: Surface Platforms)	N/A	LOS up / LOS up to 300 / to 300	TBD	LOS up to 300	(Ch-1)
LVT (F-16: Non-C2 to C2)	N/A	300 / 200	TBD	200	(Ch-1)
LVT (F-16: Non-C2 to Non-C2)	N/A	150 / 100	TBD	100	(Ch-1)
LVT(2)	N/A	300 with/ LOS at / 300 with 200 w / 200 w	TBD	300 with LOS at 200 w	(Ch-1)
LVT(3) (Non-C2 to C2)	N/A	300 / 200	TBD	200	(Ch-1)
LVT(3) (Non-C2 to Non-C2)	N/A	150 / 100	TBD	100	(Ch-1)
Voice Channels	2	N/A / N/A		Deleted	(Ch-1)
Voice Channels: LVT (USN)	N/A	Capable / 1 of 2 /	2	2	(Ch-1)
Coded Message Error Probability (%)	1	N/A / N/A		Deleted	(Ch-1)
Coded Message Error Probability (%)					(Ch-1)
LVT	N/A	1 / 2	1	1	(Ch-1)
LVT(2)	N/A	1 / 2	TBD	2	(Ch-1)
LVT(3)	N/A	< 1 / 2	TBD	2	(Ch-1)
(b) Jam Resistance (db)	(b)(1)	detected/ N/A / N/A	TBD	Deleted	(Ch-2)
Jam Resistance LVT (USN) (db)	N/A	MJCS- / MJCS- 194-89 / 194-89	MJCS- 194-89	MJCS- 194-89	(Ch-1)
LVT (F-16) (%)	N/A	< 1 / < 1 detected/ detected error / error	TBD	< 1 detected error	(Ch-1)

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate	
LVT(2) (%)	N/A	< 1	/ < 5	TBD	< 5	(Ch-1)
		detected/			detected	
		error /			error	
LVT(3) (%)	N/A	< 1	/ < 1	TBD	< 1	(Ch-1)
		detected/	detected		detected	
		error /	error		error	
Ao	.9	N/A	/ N/A		Deleted	(Ch-1)
Ao						(Ch-1)
LVT	N/A	.90	/ .90	TBD	.90	(Ch-1)
LVT(2) (Terminal)	N/A	.94	/ .90	TBD	.90	(Ch-1)
LVT(3)	N/A	.97	/ .95	TBD	.95	(Ch-1)
MTBF (hr)(lab)						
LVT	1000	N/A	/ N/A		Deleted	(Ch-1)
USN	N/A	1000	/ 1000	1285	1000	(Ch-1)
USA	N/A	1800	/ 1000	TBD	1000	(Ch-1)
USAF	N/A	1500	/ 1000	TBD	1000	(Ch-1)
MFHBMCF (hr)(field)	300		/		N/A	
MFHBOMF/MTBOMF (hr)						(Ch-1)
System	N/A	25	/ 25	90	25	(Ch-1)
LVT (Aircraft)	N/A	300	/ 220	121	220	(Ch-1)
(Terminal)						
LVT (Ships)	N/A	350	/ 257	TBD	257	(Ch-1)
(Terminal)						
LVT(2) (Terminal)	N/A	393	/ 393	TBD	393	(Ch-1)
MTR (0-level) (min)	30	N/A	/ N/A		Deleted	(Ch-1)
MTR (O-level) (min)						(Ch-1)
LVT(2) (Terminal)	N/A	30	/ 30	TBD	30	(Ch-1)
MCMTOMF	N/A		/	TBD		(Ch-1)
LVT (USN Aircraft)	N/A	60	/ 90	70	90	(Ch-1)
LVT (USN Ships)	N/A	60	/ 90	TBD	90	(Ch-1)
LVT (USAF)	N/A	MRT < 20/	MRT < 30	TBD	MRT < 30	(Ch-1)
LVT(3)	N/A	MRT < 20/	MRT < 30	TBD	MRT < 30	(Ch-1)
Volume (dm3)	16.4	N/A	/ N/A		Deleted	(Ch-1)
Volume (Cubic Feet)						(Ch-1)
LVT	N/A	< .6	/ < .6	.56	< .6	(Ch-1)
LVT(2)	N/A	< 1.4	/ < 1.4	TBD	< 1.4	(Ch-1)
LVT(3)	N/A	< .6	/ < .6	TBD	< .6	(Ch-1)
Weight (kg)	N/A	N/A	/ N/A	TBD	Deleted	(Ch-1)
LVT	29.5	N/A	/ N/A		Deleted	(Ch-1)
Weight (lbs)						(Ch-1)
LVT	N/A	< 65	/ < 65	51.4	< 65	(Ch-1)
LVT(2)	N/A	< 88	/ < 88	TBD	< 88	(Ch-1)
LVT(3)	N/A	< 65	/ < 65	TBD	< 65	(Ch-1)

(U) Acronyms:  
% - Percentage

10a. (U) Performance Characteristics (Cont'd):

Ao - Operational Availability  
 C2 - Command and Control  
 db - decibels  
 DM3 - Cubic Decimeters  
 DP - Double Pulse  
 hr - Hour  
 IERs - Information Exchange Requirements  
 IF - Interface  
 JTIDS - Joint Tactical Information Distribution System  
 Kbps - Kilobytes per second  
 kg - Kilograms  
 LOS - Line of Sight  
 MCMTOMF - Mean Corrective Maintenance Time for Operational Mission Failures  
 MFHBMCF - Mean Flight Hours Between Mission Critical Failures  
 MFHBOMF - Mean Flight Hours Between Operational Mission Failures  
 min - Minute  
 MJCS - Memorandum Joint Chief of Staff  
 MRT - Mean Repair Time  
 MTBF - Mean Time Between Failures  
 MTBOMF - Mean Time Between Operational Mission Failures  
 MTTR - Mean Time to Repair  
 nm - Nautical miles  
 Non-C2 - Non-Command and Control  
 SMORD - Single MIDS Operational Requirements Document  
 STANAG - Standardization Agreement  
 SSS - System Segment Specification  
 USA - United States Army  
 USAF - United States Air Force  
 USN - United States Navy  
 w - Watts

b. Current Change Explanations --

(U) (Ch-1) The SAR has been updated to reflect the key performance characteristics specified in the Single MIDS Operational Requirements Document (SMORD) dated June 25, 2001, which were incorporated in the MIDS Acquisition Program Baseline July 18, 2002. Many previously reported characteristics have been revised to reflect platform level requirements specified in the SMORD, which are reported herein.

<u>Performance Characteristics</u>	<u>From</u>	<u>To</u>
Interoperability	Not specified	All critical IERs in SMORD
Link-16 Waveform	STANAG 4175	Deleted
Waveform Compatibility	Not specified	STANAG 4175 & JTIDS SSS
Message Standard	STANAG 5516	STANAG 5516 (& 5616 for data fwds) & MIL-STD-6016A
Maximum Power Transmission (w)		

10b. (U) Performance Characteristics (Cont'd):

LVT	200	200 with IF for 1000
LVT(2)	200	200 or 25 selectable
Information Exchange Rate (Kbps)	Not specified	26.735 - 115.2
Coded Data Rate (Kbps)		
Standard Packing	28.8	Deleted
Packed 2 DP	57.6	Deleted
Packed 4 DP	115.2	Deleted
Paired Time Slot Relay Capability	Not specified	Integral and automated
Relay Range (nm)	1200	Deleted
Paired Time Slot Relay Range (nm) (USN Only)	Not specified	500
Repromulgation Relay (nm) MIDS-LVT(2)	Not specified	3 hop with LOS
Communication Range (nm)	300	Deleted
Communication Range		
LVT (USN: C2 to C2)	Not specified	300
LVT (USN: Non-C2 to C2)	Not specified	240
LVT (USN: Non-C2 to Non-C2)	Not specified	265 data & 240 voice
LVT (USN: Surface Platforms)	Not specified	LOS up to 300
LVT (F-16: Non-C2 to C2)	Not specified	200
LVT (F-16: Non-C2 to Non-C2)	Not specified	100
LVT(2)	Not specified	300 with LOS at 200 w
LVT(3) (Non-C2 to C2)	Not specified	200
LVT(3) (Non-C2 to Non-C2)	Not specified	100
Voice Channels	2	Deleted
Voice Channels: LVT (USN)	Not specified	2
Coded Message Error Probability (%)	1	Deleted
Coded Message Error Probability (%)		
LVT	Not specified	1
LVT(2)	Not specified	2
LVT(3)	Not specified	2
Jam Resistance		
LVT (USN) (db)	Not specified	MJCS-194-89
LVT (F-16) (%)	Not specified	< 1 detected error
LVT(2) (%)	Not specified	< 5 detected error
LVT(3) (%)	Not specified	< 1 detected error
Ao	.9	Deleted
Ao		
LVT	Not specified	.90
LVT(2) (Terminal)	Not specified	.90
LVT(3)	Not specified	.95
MTBF (hr) (lab)		
LVT	1000	Deleted
LVT(2)	1000	Deleted
LVT(3)	1500	Deleted
USN	Not specified	1000
USA	Not specified	1000
USAF	Not specified	1000

10b. (U) Performance Characteristics (Cont'd):

MFHBOMB/MTBOMF (hr)		
System	Not specified	25
LVT (Aircraft) (Terminal)	Not specified	220
LVT (Ships) (Terminal)	Not specified	257
LVT(2) (Terminal)	Not specified	393
MTTR (O-level) (min)	30	Deleted
MTTR (O-level) (min)		
LVT(2) (Terminal)	Not specified	30
MCMTOMF		
LVT (USN Aircraft)	Not specified	90
LVT (USN Ships)	Not specified	90
LVT (USAF)	Not specified	MRT < 30
LVT(3)	Not specified	MRT < 30
Volume (dm3)	16.4	Deleted
Volume (Cubic Feet)		
LVT	Not specified	< .6
LVT(2)	Not specified	< 1.4
LVT(3)	Not specified	< .6
Weight (kg)		
LVT	29.5	Deleted
LVT(2)	40	Deleted
LVT(3)	23.6	Deleted
Weight (lbs)		
LVT	Not specified	< 65
LVT(2)	Not specified	< 88
LVT(3)	Not specified	< 65

(S) (Ch-2) The SMORD replaced the classified jam resistance characteristic with unclassified service and platform jam resistance characteristics addressed by (Ch-1).

Performance Characteristics  
Jam Resistance (db)

From	To
(b)(1)	Deleted

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	673.7	721.7
Procurement	443.8	697.7	748.7
Prime Mission Eqmt (PME)	(313.7)		(580.2)
Production Support	(10.5)		(39.4)
Non Recurring			(71.2)
Total Flyaway	(324.2)		(690.8)
Other Wpn Sys	(55.7)		(18.3)
Peculiar Support	(6.6)		(0.5)
Initial Spares	(57.3)		(39.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1992 Base-Year \$	<u>924.9</u>	<u>1371.4</u>	<u>1470.4</u>
Escalation	194.6	250.3	256.1
Development (RDT&E)	(51.9)	(77.9)	(87.3)
Procurement	(142.7)	(172.4)	(168.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>1119.5</u>	<u>1621.7</u>	<u>1726.5</u>

(U) Note: Development and procurement costs have been revised to include the migration of the MIDS-LVT to Joint Tactical Radio System Software Communications Architecture, add the Air Force F/A-22 and B-2 Spirit, and the Army Short-Range Air Defense (SHORAD) System as MIDS platforms, and reflect changes in other platform procurements. Procurement costs reflect terminal development, production and support, and the RDT&E costs for integration and test of MIDS in U.S. Navy platforms. Costs of platform installation and platform kits, and Air Force and Army platform integration and testing of MIDS, are to be included in the respective budgets and baseline agreements of the various platforms that are implementing MIDS.

b. (U) Quantity --

Development (RDT&E)	42	89	120
Procurement	<u>630</u>	<u>2573</u>	<u>2803</u>
Total	<u>672</u>	<u>2662</u>	<u>2923</u>

(U) Note: Procurement quantities include MIDS terminals for Navy ships, F/A-18s and EA-6Bs; Air Force F-15s, F-16s, and F/A-22s; and other Navy, Air force and Army platforms. Three Low Rate Initial Production (LRIP) decisions have been approved to date for a total planned LRIP quantity of 451 terminals; the last decision was LRIP Lot 3 conducted June 26, 2002. The approved LRIP quantity exceeds 10 percent and is justified to support developmental and operational test and training schedules, establish a production capacity, and provide an orderly increase in the production rates of the two U.S. contractors.

c. (U) Foreign Military Sales --

11c. (U) Total Program Cost and Quantity (Cont'd):

The European participants in the MIDS cooperative development program will expend \$329.1M in RDT&E then-year funding. Contributions were determined in accordance with the Program Memorandum of Understanding and accompanying Supplements. RDT&E contributions from the participating nations and/or organizations were France, \$131.5M; Italy, \$102.2M; Germany, \$36.6M; Spain, \$33.3M; and NATO EF2000 and Tornado Management Agency (NETMA), \$25.5M. The estimated European production quantities are 1,157 MIDS-LVTs including spares at a cost of \$436M (then year).

Foreign Military Sales

Quantities/cost (TY \$M)

<u>Prior</u>	<u>CY03</u>	<u>CY04</u>	<u>CY05</u>	<u>CY06</u>	<u>CY07</u>	<u>CY08</u>	<u>To Complete</u>
24/\$7.3							

Prior: Royal Australian Air Force (6), European Participating Air Force (EPAF) (11), Switzerland (7) with DLS

Direct Commercial Sales

Quantities only, cost information is not available.

<u>Prior</u>	<u>CY03</u>	<u>CY04</u>	<u>CY05</u>	<u>CY06</u>	<u>CY07</u>	<u>CY08</u>	<u>To Complete</u>
107							

Prior: United Kingdom (76) and NETMA (28) with DLS, Netherlands (3) with ViaSat

Other Foreign Sales

Quantities/cost (TY \$M).

<u>Prior</u>	<u>CY03</u>	<u>CY04</u>	<u>CY05</u>	<u>CY06</u>	<u>CY07</u>	<u>CY08</u>	<u>To Complete</u>
3/\$1.1							

Prior: EPAF (3) - DLS (2) and ViaSat (1)

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (JUL 2002 AFB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1992 BY\$)	1371.4	1470.4	
(2) Quantity	2662	2923	
(3) Unit Cost	0.515	0.503	-2.33
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1992 BY\$)	697.7	748.7	
(2) Quantity	2573	2803	
(3) Unit Cost	0.271	0.267	-1.48

(U) The current estimates have been revised in consideration of actual contractor costs for recurring and nonrecurring production costs.

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	-12.0	-49.3	-	-61.3
Quantity	+3.2	+466.3	-	+469.5
Schedule	+0.2	+20.4	-	+20.6
Engineering	-	-46.9	-	-46.9
Estimating	+227.2	-57.3	-	+169.9
Other	-	-	-	-
Support	-	-49.6	-	-49.6
Subtotal	+218.6	+283.6	-	+502.2
Current Changes:				
Economic	-0.8	-5.5	-	-6.3
Quantity	+8.9	+96.4	-	+105.3
Schedule	-	+19.9	-	+19.9
Engineering	+50.0	-42.2	-	+7.8
Estimating	-0.7	+8.9	-	+8.2
Other	-	-	-	-
Support	-	-30.1	-	-30.1
Subtotal	+57.4	+47.4	-	+104.8
Total Changes	+276.0	+331.0	-	+607.0
Current Estimate	809.0	917.5	-	1726.5

13a. (U) Cost Variance Analysis (Cont'd):

(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	+2.3	+362.2	-	+364.5
Schedule	+0.2	-	-	+0.2
Engineering	+0.4	-32.6	-	-32.2
Estimating	+189.7	-36.1	-	+153.6
Other	-	-	-	-
Support	-	-39.6	-	-39.6
Subtotal	+192.6	+253.9	-	+446.5
Current Changes:				
Quantity	+7.3	+89.5	-	+96.8
Schedule	-	-	-	-
Engineering	+40.7	-29.2	-	+11.5
Estimating	-	+12.8	-	+12.8
Other	-	-	-	-
Support	-	-22.1	-	-22.1
Subtotal	+48.0	+51.0	-	+99.0
Total Changes	+240.6	+304.9	-	+545.5
Current Estimate	721.7	748.7	-	1470.4

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.9
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.0
Quantity increase of 31 MIDS terminals (USN, USA, USAF). (Quantity)	+7.3	+8.9
Transition to the Joint Tactical Radio System Software Communications Architecture (USN). (Engineering)	+40.7	+50.0
Net reduction for EMD systems engineering support (DA). (Estimating)	-1.0	-1.7
RDT&E Subtotal	+48.0	+57.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-14.2
Economic adjustment for negative program change. (Economic)	N/A	+8.7
Adjustment for Current and Prior Inflation (USN, USA, USAF). (Estimating)	+2.7	+3.0

13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity Increase of 31 MIDS terminals from 85 to 116 (USA). (Quantity)	+6.8	+8.5
Allocation to Schedule variance resulting from Quantity Change (USA). (QR)(Schedule)	0.0	-1.2
Allocation to Engineering variance resulting from Quantity Change (USA). (QR)(Engineering)	+1.8	+2.7
Allocation to Estimating variance resulting from Quantity Change (USA). (QR)(Estimating)	-1.9	+3.3
Stretchout of annual procurement buy profile (USA). (Schedule)	0.0	+0.2
Quantity decrease of 45 MIDS terminals from 1,194 to 1,149 (USN). (Quantity)	-20.6	-31.0
Allocation to Schedule variance resulting from Quantity Change (USN). (QR)(Schedule)	0.0	-2.8
Allocation to Engineering variance resulting from Quantity Change (USN). (QR)(Engineering)	+3.9	+6.4
Allocation to Estimating variance resulting from Quantity Change (USN). (QR)(Estimating)	+4.4	+8.0
Stretchout of annual procurement buy profile (USN). (Schedule)	0.0	+2.0
Quantity increase of 244 MIDS terminals from 1,294 to 1,538 (USAF). (Quantity)	+103.3	+118.9
Allocation to Schedule variance resulting from Quantity Change (USAF). (QR)(Schedule)	0.0	+22.3
Allocation to Engineering variance resulting from Quantity Change (USAF). (QR)(Engineering)	-34.9	-51.3
Allocation to Estimating variance resulting from Quantity Change (USAF). (QR)(Estimating)	-38.6	-52.7
Acceleration of annual procurement buy profile (USAF). (Schedule)	0.0	-0.6
Increased production capacity (USAF). (Estimating)	+3.9	+4.7
Increased production support in accordance with joint service agreement (USN, USA, USAF). (Estimating)	+38.5	+42.6
Net decrease in Initial Spares because of revised procurement policy (USN, USA, USAF). (Support)	-15.3	-20.5
Decrease in Peculiar Support because of revised procurement policy (USN). (Support)	-0.9	-1.1
Net decrease in Other Wpn Sys because of revised procurement policy (USN, USA, USAF). (Support)	-6.7	-9.3

13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation (USN, USAF). (Support)	+0.8	+0.8
Procurement Subtotal	<u>+51.0</u>	<u>+47.4</u>

QR = Quantity 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	-0.023	-1.09	+0.014	-0.013	+0.061	--	-0.027	-1.08	0.591

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	
0.931	-0.020	-0.521	+0.014	-0.032	-0.017	--	-0.028	-0.604	0.327

(U) Note: The baseline includes separate MS III decisions for the LVT(1) and LVT(3) and a separate IOC for each MIDS variant. A MS III decision was originally planned for the Army unique LVT(2) variant but it has been replaced by a Full Rate Production decision planned March 2003.

<u>Milestone III</u>	<u>Date</u>
LVT	Jul 03
LVT(3)	Oct 99 (Actual)
<u>IOC</u>	
LVT	May 03
LVT(2)	Dec 02 (Actual)
LVT(3)	Feb 01 (Actual)

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	DEC 1993	N/A	DEC 1993
Milestone III	N/A	N/A	N/A	JUL 2003
IOC	N/A	N/A	N/A	MAY 2003
Total Cost	N/A	1119.5	N/A	1726.5
Total Quantity	N/A	672	N/A	2923
Prog Acq Unit Cost	N/A	1.7	N/A	0.6

(U) Note: The baseline includes separate MS III decisions for the LVT(1) and LVT(3) and a separate IOC for each MIDS variant. A MS III decision was originally planned for the Army unique LVT(2) variant but it has been replaced by a Full Rate Production decision planned March 2003.

<u>Milestone III</u>	<u>Date</u>
LVT	Jul 03
LVT(3)	Oct 99 (Actual)
<u>IOC</u>	
LVT	May 03
LVT(2)	Dec 02 (Actual)
LVT(3)	Feb 01 (Actual)

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement -- (U) <u>Fighter Data Link:</u> Data Link Solutions, Wayne, NJ N00039-96-C-0038, FFP Award: September 30, 1996 Definitized: September 30, 1996	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$3.1	N/A	6

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$196.6	N/A	757	\$196.6	\$196.6

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The Fighter Data Link (FDL) contract was competitively awarded to Data Link

15. (U) Contract Information (Cont'd):

Solutions (DLS), a joint venture of GEC-Marconi-Hazeltine (GMH) and Rockwell-Collins, on 30 September 1996 and is fully funded by the United States Air Force (USAF). The initial contract qualified and produced a reduced function Link-16 terminal for the F-15C/D aircraft that used the previously developed Joint Tactical Information Distribution System (JTIDS) interface software and supported Air Combat Command's need for reduced function F-15 Link-16 terminals. Production option quantities were initially negotiated for 50, 200, 200, and 50 terminals, but were increased to procure additional terminals needed to complete all F-15E installations. The award of 50 pilot production terminals occurred September 14, 1998. Program Executive Officer for Tactical Aircraft Programs (PEO(T)) authorized Lot 1 award of 200 production terminals on October 20, 1999, which included terminals for USAF F-15C/Ds and Air National Guard F-15A/Bs. Lot 2 was awarded June 21, 2000 for 272 terminals and Lot 3 was awarded June 2001 for 179 terminals, after the F-15 System Program Office (SPO) completed the internal reprogramming needed to complete the planned FDL buy for F-15 A/B/C/D/E fleets. After Lot 3 award, the F-15 SPO determined that additional FDL terminals were required to meet operational requirements. With the advent of Operation Enduring Freedom, the USAF procured 73 additional FDL terminals and associated test equipment to increase manufacturing capacity from 20 deliveries per month to 32 deliveries per month beginning February 2003. In August 2002, 20 FDL terminals were procured for the Roll On Beyond Line of Sight program and in September 2002, 2 more FDL terminals were procured as test assets. In January 2003, 1 FDL terminal was procured as a test asset and 16 Main Terminal Lowest Replaceable Units were procured as spares by Warner Robins to populate the supply support system. To date, 813 terminals are on contract, which includes the requirements for combat coded aircraft, test assets, training assets, and associated spares.

Pilot production deliveries commenced February 2000 and the delivery of all 50 terminals was completed April 2001. Lot 1 production deliveries commenced April 2001 and the delivery of all 200 terminals was completed April 2002. Lot 2 production deliveries commenced April 2002 and 246 terminals have been delivered as of January 31, 2003. A total of 496 terminals have been delivered to date. The USAF achieved the Initial Operational Capability (IOC) for F-15A/B/C/Ds in February 2001 and IOC for F-15E in December 2001.

(U) <u>MIDS Production Contract:</u> Data Link Solutions, Cedar Rapids IA N00039-00-D-2100, FFP Award: January 20, 2000 Definitized: June 7, 2000	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$16.1	N/A	27

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$115.3	N/A	248	\$115.3	\$115.3

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:

The production contract includes First Article Qualification Test (FAQT), nonrecurring engineering, supportability, and the manufacture of 248 MIDS-LVT(1) and associated spares. Foreign Military Sales (FMS) is not included in the supplemental contract cost information. In April 2001, the Government awarded a delivery order to increase production capacity from four terminals to 12 terminals per month starting August 2002. As part of the additional Fighter Data Link (FDL) procurement, an arrangement has been made with the contractor to increase MIDS-LVT(1) capacity to 20 terminals per month in March 2003 and 30 terminals per month when the FDL contract ends. Contractor FAQT completed on schedule, June 1, 2001, and Government FAQT completed August 2001. Data Link Solutions (DLS) submitted their Air Worthiness Certification to the Government on August 31, 2001 and the National Security Agency issued a Communications Security (COMSEC) certification on October 2, 2001. A successful Electromagnetic Capability (EMC) features demonstration was conducted February 2002 but the Federal Aviation Administration / National Telecommunications and Information Administration have not issued final EMC certification. The contractor commenced production deliveries November 2001 and all 45 Low Rate Initial Production (LRIP) Lot 1 terminals have been delivered. Fifty-nine of 133 LRIP Lot 2 terminals have been delivered to date. Overall, DLS is approximately two months ahead of schedule.

(U) <u>MIDS Production Contract:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
ViaSat, Carlsbad, CA			
N00039-00-D-2101, FFP	\$23.4	N/A	27
Award: January 20, 2000			
Definitized: July 12, 2000			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$100.7	N/A	184	\$100.7	\$100.7

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

15. (U) Contract Information (Cont'd):

(U) Contract Comments:

The production contract includes First Article Qualification Test (FAQT), nonrecurring engineering, supportability, and the manufacture of 134 MIDS-LVT(1), 50 MIDS-LVT(2) and associated spares. Foreign Military Sales is not included in the supplemental contract cost information. In April 2001, the Government awarded a delivery order to increase production capacity from 12 terminals to 24 terminals per month starting August 2002. ViaSat notified the Government that it completed contractor FAQT on March 15, 2002. To reduce additional delays in U.S. platform integration and test, the Government conducted concurrent risk reduction testing with the contractor and was able to complete Government FAQT in 30 days vice a full 60-day effort. ViaSat submitted their Air Worthiness Certification to the Government and the National Security Agency has issued Communications Security (COMSEC) certification for both the MIDS-LVT(1) and MIDS-LVT(2) variants. Deliveries commenced in May 2002 but at a slower rate than required. A revised terminal delivery recovery plan was negotiated and placed on contract December 2002.

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> (FY90-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-11)	<u>Total</u>
RDT&E	745.8	23.7	26.9	12.6	809.0
Procurement	471.4	71.0	72.1	303.0	917.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1217.2	94.7	99.0	315.6	1726.5

(U) Appropriation data for the MIDS-LVT includes Defense Emergency Response Funds for appropriations 1506 (24 F/A-18 terminals, \$7.4M), 3010 (8 Air Force Tactical Data Link terminals, \$2.5M) and 3080 (92 FDL terminals and associated NRE to increase FDL manufacturing capacity from 20 terminals per month to 32 terminals per month, \$22.4M). Funding supports Homeland Defense and Operation Noble Eagle.

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- MIDS-LVT

Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				9.4	9.0
1991				5.0	5.0
1992				16.2	16.5
1993				22.9	23.9
1994				21.9	23.3
1995				45.8	49.6
1996				38.8	42.7
1997				33.1	36.9
1998				40.3	45.2
1999				24.6	27.9
2000				33.8	39.0
2001				10.4	12.1
2002				9.4	11.1
2003				5.7	6.8
2004				4.6	5.6
2005				2.7	3.3
Subtotal	36			324.6	357.9

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 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				25.3	28.2
1998				35.5	39.8
1999				40.0	45.4
2000				54.1	62.3
2001				34.1	39.8
2002				23.4	27.6
2003				15.1	18.0
2004				14.8	17.9
2005				19.2	23.6
2006				10.1	12.6
Subtotal	21			368.0	417.6

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test - Eval, Army

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				0.4	0.5
1998				2.1	2.4
1999				4.6	5.2
2000					
2001					
2002				2.4	2.8
2003				0.4	0.5
Subtotal	15			9.9	11.4

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				3.3	3.7
1998				6.3	7.1
1999					
2000				4.3	5.0
2001				2.1	2.5
2002				2.1	2.5
2003				0.9	1.1
2004				0.2	0.2
Subtotal	48			19.2	22.1

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	15	4.2	3.1	7.7	8.8
2000					
2001	15		2.8	3.6	4.2
2002				0.3	0.3
2003	7	0.1	1.8	1.6	1.9
2004					
2005	5		0.7	1.2	1.5
2006	6		0.8	1.4	1.8
2007	11		1.8	2.7	3.4
2008	12		2.5	3.6	4.7
2009	4		1.1	2.0	2.7
2010				0.8	1.1

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MIDS-LVT, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	75	4.3	14.6	24.9	30.4

(U) Note: The Defense Agencies appropriation provides for the procurement of the Army unique MIDS-LVT(2) variant for the Patriot Missile and Theater High Altitude Area Defense (THAAD) Systems.

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	16	0.7	6.1	6.8	7.8
2000	38	31.4	14.8	52.4	61.0
2001	64	1.4	19.0	21.3	25.1
2002	84	1.7	23.9	32.0	38.0
2003	84	1.0	24.4	27.4	33.0
2004	118	0.3	30.4	31.4	38.4
2005	124	0.2	30.9	31.8	39.6
2006	100	0.1	25.3	26.1	33.0
2007	118	0.1	28.0	28.7	37.0
2008	122	0.1	31.1	31.9	41.9
2009	160	0.2	36.1	37.1	49.5
2010	42	0.1	11.8	12.7	17.2
2011	28		8.1	8.8	12.2
Subtotal	1098	37.3	289.9	348.4	433.7

(U) NOTE: This USN appropriation identifies the MIDS-LVT(1) that are planned for the F/A-18C/D/E/F and the EA-6B.

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	2		0.4	0.4	0.5
2003	6		1.3	1.3	1.7
2004	4		0.8	0.8	1.1
2005	3		0.6	0.6	0.8
2006	3		0.6	0.6	0.8
2007	5		1.0	1.0	1.4
2008	7		1.4	1.4	2.0
2009	7		1.4	1.4	2.0

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MIDS-LVT, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	37		7.5	7.5	10.3

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	3		1.0	1.0	1.1
2000					
2001					
2002	2		0.5	0.5	0.6
2003	4		1.1	1.1	1.3
2004	5		1.2	1.2	1.4
Subtotal	14		3.8	3.8	4.4

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001	1		0.2	0.2	0.2
2002					
2003	3		0.7	0.7	0.8
2004	7		1.6	1.6	1.9
2005	6		1.3	1.3	1.6
2006	3		0.6	0.6	0.8
2007	4		0.9	0.9	1.1
2008	7		1.5	1.5	1.9
2009	4		0.9	0.9	1.2
2010	6		1.3	1.3	1.8
Subtotal	41		9.0	9.0	11.3

(U) Note: The Army appropriation provides for the procurement of the Army unique MIDS-LVT(2) variant for the Short-Range Air Defense (SHORAD) System.

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001	28	3.7	7.2	16.4	19.3
2002	116	0.1	27.0	33.2	39.5
2003	137	0.2	29.6	32.1	38.7
2004	101	0.2	21.6	23.0	28.2
2005	104	0.2	21.6	23.0	28.6
2006	118	0.1	24.3	25.5	32.3
2007	103		21.0	22.4	28.9
2008	47		9.6	10.5	13.8
2009	27		5.3	6.1	8.1
2010	4		0.9	1.8	2.4
Subtotal	785	4.5	168.1	194.0	239.8

(U) NOTE: This USAF appropriation identifies the MIDS-LVT(1) that are planned for the F-16, F/A-22, B-2, and the Airborne Laser.

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	6	2.7		2.7	3.0
1997		0.3		0.3	0.3
1998	73	13.3	16.3	30.4	34.7
1999	162		28.8	30.6	35.3
2000	274	0.4	43.2	46.9	54.8
2001	143	3.7	23.0	27.6	32.6
2002	95	4.7	15.4	20.1	23.9
2003				2.5	3.0
Subtotal	753	25.1	126.7	161.1	187.6

(U) NOTE: This USAF appropriation identifies the MIDS FDL terminals for the F-15C/D/E that are being procured on a separate contract. The FY96 funding (\$3.0M) identified above report the Air Force funds contributed to the qualification and build of six FDL terminals. Additional funds in excess of \$8M were contributed by the contractor, Data Link Solutions, for completion of the full qualification program requirements.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	111	4.3	14.6	349.5	388.3
Navy	1170	37.3	301.2	727.7	866.0

16b. (U) Program Funding Summary (Cont'd):

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	56		9.0	18.9	22.7
USAF	1586	29.6	294.8	374.3	449.5
<b>Grand Total</b>	<b>2923</b>	<b>71.2</b>	<b>619.6</b>	<b>1470.4</b>	<b>1726.5</b>

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	71	71
Procurement	528	547

(U) Percent Total Program Quantities Delivered: 21.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1110.4

(U) Percent Total Program Expended: 64.3%

(U) Note: Delivery information pertains to U.S. quantities only. RDT&E deliveries are from MIDSCO, Inc., Data Link Solutions (DLS), and ViaSat. Procurement deliveries are from DLS for the MIDS-LVT and MIDS-LVT(3), and from ViaSat for the MIDS-LVT and MIDS-LVT(2).

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, updated December 2002, depicts a 33-year support period of 2803 MIDS-LVT terminals installed on numerous U.S. platforms associated with each Service's Link-16 requirement. This period includes a phase-in, steady state, and phase-down profile with a terminal operational life estimated to be 20 years. The annual operating hours per aircraft for peacetime deployment are estimated to be approximately 400. The annual operating hours per ship for peacetime deployment are estimated to be 3977. The annual operating hours per Army Ground Air Defense station are estimated to be 2212. For Navy aircraft and Army platforms O&S is a three level structure (i.e., Organizational, Intermediate/Direct Support, and Depot). For Navy ships and Air Force aircraft platforms it is a two level structure (i.e., Organizational and Depot). Navy aircraft support costs assume the use of the Consolidated Automated Support System at the Intermediate level 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 the Joint Tactical Information and Distribution System (JTIDS) and the AN/ARC-182 radio. The MIDS-LVT terminal does not replace an existing DOD system in that it provides Link-16 capability to platforms that were unable to employ JTIDS due to space and weight constraints; there is no

18a. (U) Operating and Support Costs (Cont'd):

antecedent system.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Cost Element	MIDS-LVT Avg Annual Cost per Terminal	No Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.2	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.7	N/A
Contractor Support	4.3	N/A
Sustaining Support	1.3	N/A
Indirect Costs	0.0	N/A
Other ILS	0.0	N/A
Total	6.5	N/A

Total O&S Cost	MIDS-LVT	No Antecedent System
BYS (In Millions)	360.5	N/A
TYS (In Millions)	558.0	N/A

Report Creation Date: 03/10/2003 9:28:01 AM

AF-13 JASSM

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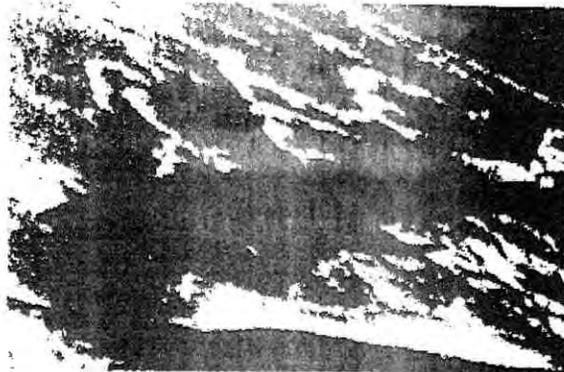
SELECTED ACQUISITION REPORT (RCS: DD-A&T(QGA)823)

PROGRAM: JASSM

AS OF DATE: December 31, 2002

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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:

AAC/YV  
JASSM System Program Office  
102 West D Ave, Suite 300  
Eglin AFB, FL 32542-6807

Mr. Gerald L. Freisthler  
Assigned: June 16, 2002  
DSN 872-4785 x 3204  
COMM 850-882-4785 x 3204  
gerry.freisthler@eglin.af.mil

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0207325F
- (U) PE 0604312N

PROCUREMENT:

- (U) APPN 1507 ICN 0203270N (Navy)
- (U) APPN 3020 ICN 0207325F (Air Force)

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DIRECTORATE FOR FREEDOM OF INFORMATION  
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DEPARTMENT OF DEFENSE

~~Classified by JASSM Security Classification Guide, Part 1, Dec 01, 2001  
Downgrade instructions: E.O. 12958, Section 1.5.(e)  
Declassify on: OADR~~

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03-C-0287

JASSM, December 31, 2002

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Approved Acquisition Program Baseline (Development) dated November 9, 1998.

Approved Program:

(U) CAE Approved Acquisition Program Baseline (APB) dated February 10, 2003.

**6. (U) Mission and Description:**

(U) The Joint Air-to-Surface Standoff Missile (JASSM) is a next generation air-to-surface 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 Extended Range (JASSM-ER) increased standoff range will allow the attack of high value targets with precision, deeper into enemy territory, while minimizing the threat to the launch aircraft. The JASSM does not replace any existing weapon system.

**7. (U) Executive Summary:**

(U) The JASSM test program was put on hold to investigate two free flight anomalies. The PEO decertified the system for free flight test on October 24, 2002. An Independent Review Team (IRT) was established to ensure that JASSM missiles are ready to resume testing. The IRT verified that we are ready to proceed with testing on January 9, 2003. We estimate we will be back in free flight testing in February 2003.

The Air Force Operational Test and Evaluation Center (AFOTEC) launched OT-3 on August 29 at the White Sands Missile Range (WSMR). The second of six missions planned by the operational testers was a combined test with the Defense Threat Reduction Agency. The JASSM was launched off an operational B-52 from Barksdale AFB, LA, as part of a 20 hour long-range bomber sortie. Released out of the planned launch zone, but within range, the missile began to fly an internally recalculated path to the target. As the missile turned to get on course, it approached the range boundary. WSMR safety terminated the flight.

The second of three planned developmental missiles for the Block 1A JASSM configuration, DT-10A, was released from an F-16 at WSMR on September 13. The inert Lot 2 missile flew through five turn points which included a GPS jamming area, armed and impacted the designated target as planned. All Block 1A components functioned properly. This marked the last developmental release from an F-16 aircraft.

AFOTEC flew a repeat of the OT-3 mission, OT-3R, on October 10. The JASSM was again launched from an operational B-52. The missile flew the planned route

7. (U) Executive Summary (Cont'd):

and penetrated the target as predicted, but the warhead failed to detonate. (The methodology employed on this target was an experimental effort to test warhead capability beyond its design limits.) Recovery efforts have been successful and the fuze and warhead returned to Lockheed for failure analysis. Analysis showed the fuze failed due to a very high side load. The fuze was armed as it struck the top of the target and was not armed once it passed through the floor and came to rest in soil. Based on the assessment, the failure is not considered an issue for the JASSM program, which has a requirement to detonate only in the target volume for this target type and not under the floor as attempted in the mission.

The planned final developmental missile for the Block 1A JASSM configuration, DT-11A, was released from a B-52 at WSMR on October 24. Shortly after safely separating from the launch aircraft, the missile departed controlled flight and impacted on the range. Missile hardware was recovered and failure analysis is concentrating on the wing elevon actuator. Several mechanical changes within the actuator have been identified. Prove-out of proposed changes are underway.

As a direct result of these two flight anomalies, Ms. Judy Stokley, Air Force Program Executive Officer for Weapons (AFPEO/WP), decertified JASSM for any further operational testing until a thorough review of the program was conducted and the root cause of the failures was determined and fixes were implemented.

Three technical and programmatic reviews were conducted from December into early January culminating in an Independent Review chaired by Lt Gen (ret) Tom Ferguson. Gen Ferguson's team recommended entry back into testing. As a result, the test program is back on track with JASSM's last developmental test flight, DT-12A, scheduled for late February. A successful DT-12A will pave the road back into operational flight test scheduled to begin late March and finish mid-July 2003. JASSM's Milestone III is scheduled for late November 2003 for a full rate production decision leading to a Lot 3 full rate production contract award in December 2003 with deliveries to begin in January 2005. November 18 marked the signing of the Lot 2 low rate initial production contract. The 100 JASSMs will contain selective availability anti-spoofing module (SAASM) receivers. First deliveries are expected in March 2004.

The Air Force has funded a \$141.0M JASSM Extended Range Preplanned Product Improvement (P3I) program, beginning in FY04. The go-ahead is based on three criteria established by the Secretary of the Air Force. First, the baseline missile must have a successful Initial Operational Test and Evaluation (IOT&E) program. Second, the contractor must demonstrate the ability to produce the baseline missile. Finally, the contractor and the Air Force must develop an acceptable business case. Based on user requirements, we have replanned 1300 baseline JASSMs to 1300 more capable and expensive JASSM-ERs. An additional \$10M was appropriated by Congress for risk reduction activities associated with an accelerated start for an extended range JASSM.

7. (U) Executive Summary (Cont'd):

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 0	SEP 1995	SEP 1995	SEP 1995
Milestone I	JUN 1996	JUN 1996	JUN 1996
PDRR Contract Award	JUN 1996	JUN 1996	JUN 1996
Milestone II	NOV 1998	NOV 1998	NOV 1998
EMD Contract Award	NOV 1998	NOV 1998	NOV 1998
LRIP Decision/Contract Award	JAN 2001	JAN 2001	DEC 2001
Lot II Contract Award	JAN 2002	JAN 2002	NOV 2002
Milestone III	JUL 2002	OCT 2003	NOV 2003 (Ch-1)
RAA/B-52	SEP 2002	SEP 2002	SEP 2003
RAA/F-16	DEC 2003	DEC 2003	SEP 2004

(U) Notes: Approved APB thresholds for LRIP Decision/Contract Award, RAA/B-52 and RAA/F-16 are one year, not six months. All Current Estimates are within approved thresholds.

Acronyms

PDRR - Program Definition and Risk Reduction  
 RAA - Required Assets Available  
 RAA for the B-52 is 42 missiles

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JASSM, December 31, 2002

9a. (U) Schedule (Cont'd):

RAA for the F-16 is 25 missiles

AS AMENDED

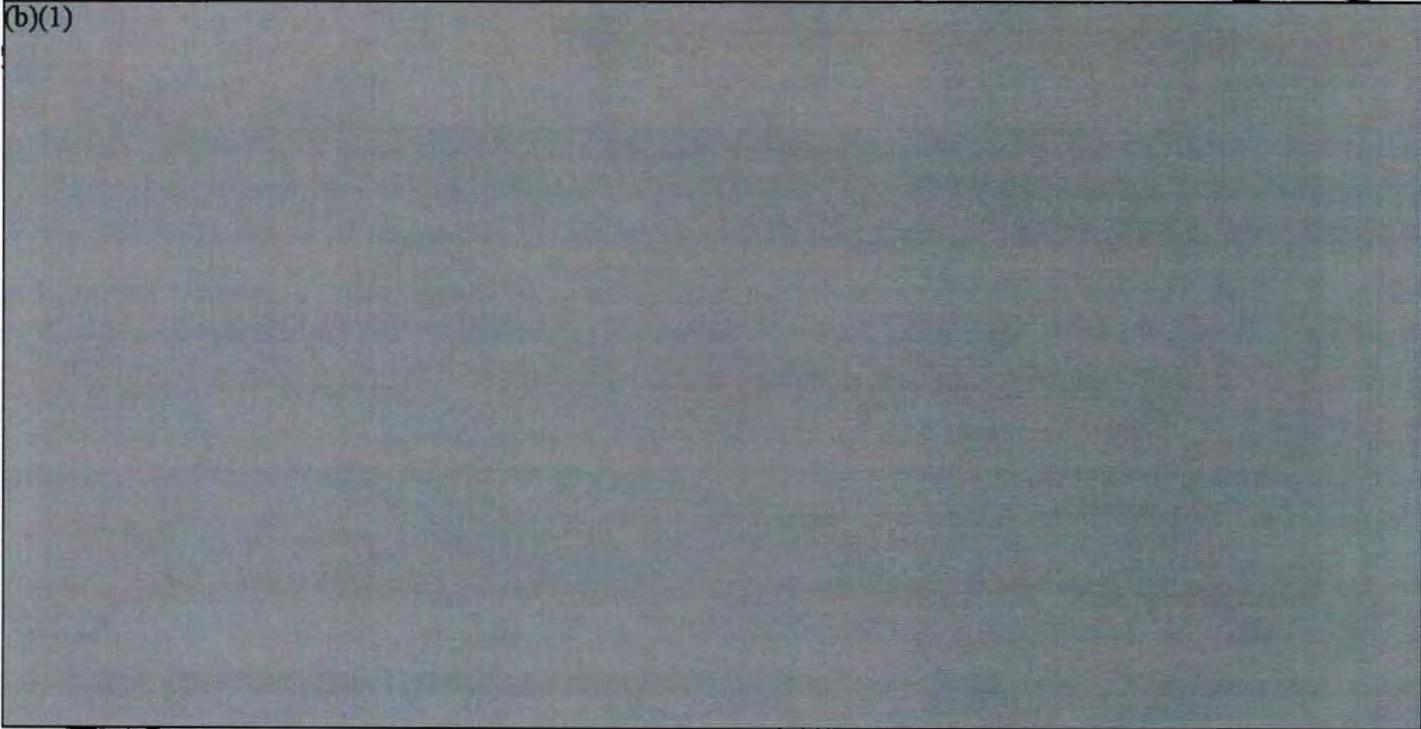
b. Current Change Explanations --

(U) (Ch-1) Milestone III has moved from October 2003 to November 2003 due to the stop test in Operational Test and Evaluation.

10. (U) Performance Characteristics:

a. Performance --

(b)(1)



b. Current Change Explanations -- None

- 5 -

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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)	771.1	1070.5	1081.8
Procurement	960.0	2270.9	2270.9
Flyaway	(914.3)		(2186.2)
Other Wpn System Costs	(45.7)		(84.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	18.4	18.4	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1995 Base-Year \$	<u>1749.5</u>	<u>3359.8</u>	<u>3352.7</u>
Escalation	323.8	711.0	698.1
Development (RDT&E)	(67.5)	(107.1)	(100.9)
Procurement	(249.6)	(597.2)	(597.2)
Construction (MILCON)	(6.7)	(6.7)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2073.3</u>	<u>4070.8</u>	<u>4050.8</u>

(U) Note: Procurement funding does not include Seek Eagle funding of \$11.6M (\$.7M in FY02, \$3.7M in FY03, \$1.4M in FY04, \$2.8M in FY05, and \$2.8M in FY07). Exit criteria for Milestone III were approved at the LRIP decision.

Due to OSD plus-ups in FY08 and FY09, the quantities were increased from 3700 to 3826 for the Air Force and from 483 to 514 for the Navy.

b. (U) Quantity --

Development (RDT&E)	69	94	94
Procurement	2400	3826	4340
Total	<u>2469</u>	<u>3920</u>	<u>4434</u>

(U) Note: Total Program Quantity includes 88 fully configured RDT&E units for EMD (82 for the Air Force and six for the Navy) An additional six units are planned for JASSM Extended Range development.

176 missiles were approved for low rate initial production on December 21, 2001. This is less than ten percent of the total planned procurement.

c. (U) Foreign Military Sales --

The DoD Executive Committee chaired by OSD (AT&L) approved a foreign military sales version of JASSM for Tier I and Tier II countries on September 25, 2002. Each case will be separately approved.

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	3359.8	3352.7	
(2) Quantity	3920	4434	
(3) Unit Cost	0.857	0.756	-11.79
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	2270.9	2270.9	
(2) Quantity	3826	4340	
(3) Unit Cost	0.594	0.523	-11.95

(U) The increase in the Base Year 1995 unit prices is driven by the January 2003 inflation rates, which are lower than the 2002 rates. JASSM has Then Year firm fixed prices for the first five lots. The remaining production lots prices are the result of price based acquisition estimating. The number of constant dollars required increases as inflation decreases, while the current dollars remain the same.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	838.6	1209.6	25.1	2073.3
Previous Changes:				
Economic	-26.8	-33.7	-	-60.5
Quantity	+16.2	+712.6	-	+728.8
Schedule	+96.9	+118.5	-	+215.4
Engineering	-56.3	-	-	-56.3
Estimating	+167.9	+71.5	-25.1	+214.3
Other	-	-	-	-
Support	-	+48.2	-	+48.2
Subtotal	+197.9	+917.1	-25.1	+1089.9
Current Changes:				
Economic	-5.1	-47.2	-	-52.3
Quantity	+6.8	+433.0	-	+439.8
Schedule	-	+1.8	-	+1.8
Engineering	+142.2	+296.4	-	+438.6
Estimating	+2.3	+53.3	-	+55.6
Other	-	-	-	-
Support	-	+4.1	-	+4.1
Subtotal	+146.2	+741.4	-	+887.6
Total Changes	+344.1	+1658.5	-25.1	+1977.5
Current Estimate	1182.7	2868.1	-	4050.8

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	771.1	960.0	18.4	1749.5
Previous Changes:				
Quantity	+14.7	+489.0	-	+503.7
Schedule	+87.6	+88.6	-	+176.2
Engineering	-47.4	-	-	-47.4
Estimating	+125.5	+85.5	-18.4	+192.6
Other	-	-	-	-
Support	-	+36.0	-	+36.0
Subtotal	+180.4	+699.1	-18.4	+861.1
Current Changes:				
Quantity	+6.0	+335.4	-	+341.4
Schedule	-	+1.7	-	+1.7
Engineering	+122.2	+229.9	-	+352.1
Estimating	+2.1	+41.8	-	+43.9
Other	-	-	-	-
Support	-	+3.0	-	+3.0
Subtotal	+130.3	+611.8	-	+742.1
Total Changes	+310.7	+1310.9	-18.4	+1603.2
Current Estimate	1081.8	2270.9	-	3352.7

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&amp;E</u>		
	FY 2003 escalation indices are lower than the previous year. (Economic)	N/A	-5.1
	Six additional DT/OT test units for JASSM-ER (Quantity)	+6.0	+6.8
	JASSM-ER development (Engineering)	+122.2	+142.2
	Adjustment for Current and Prior Inflation. (Estimating)	+2.1	+2.3
	RDT&E Subtotal	+130.3	+146.2
(2)	<u>Procurement</u>		
	FY 2003 escalation indices are lower than the previous year. (Economic)	N/A	-47.2
	Total Quantity Variance associated with increase of 126 Air Force missiles from 3700 to 3826	+55.5	+77.3
	Quantity increase of 126 Air Force missiles from 3700 to 3826 due to OSD plus-up in FY08 and FY09. (Quantity)	+52.1	+72.6
	Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	+1.7	+2.9
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+1.7	+1.8
	Acceleration of annual procurement buy profile. (Schedule)	0.0	-1.1
	JASSM-ER additional capability engine and fuel. (Engineering)	+229.9	+296.4
	Addition of Navy procurement - 514 missiles from 0 to 514 (Quantity)	+283.3	+360.4
	Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+1.1
	Adjustment to account for assumed inflation decreases to fixed price procurement. (Estimating)	+39.2	+50.4
	Change in Other Wpn System Costs due to an additional year (Support)	-3.0	+4.1
	Procurement Subtotal	+611.8	+741.4

QR = Quantity 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	
0.840	-0.025	-0.109	+0.049	+0.086	+0.061	--	+0.012	+0.074	0.914

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	
0.504	-0.019	-0.039	+0.028	+0.068	+0.029	--	+0.012	+0.157	0.661

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PGE)	
Milestone I	JUN 1996	JUN 1996	N/A	JUN 1996
Milestone II	JUN 1998	NOV 1998	N/A	NOV 1998
Milestone III	APR 2001	JUL 2002	N/A	NOV 2003
IOC	JUN 2001	SEP 2002	N/A	SEP 2003
Total Cost	811.3	2073.3	N/A	4050.8
Total Quantity	44	2469	N/A	4434
Prog Acq Unit Cost	18.4	0.8	N/A	0.9

15. (U) Contract Information (Then-Year Dollars in Millions):

(U) The \$13.2M difference between the estimated price at completion for the contractor and the program manager represents planned scope increases, operational risk reduction and problem resolutions that are not yet on contract.

a. RDT&E --

(U) JASSM EMD:  
Lockheed Martin, Orlando, FL  
F08626-96-C-0002, CPAF  
Award: November 13, 1998  
Definitized: November 13, 1998

Initial Contract Price		
Target	Ceiling	Qty
\$172.0	N/A	0

Current Contract Price

Target	Ceiling	Qty
\$412.1	N/A	0

Estimated Price At Completion

Contractor	Program Manager
\$427.6	\$440.8

15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-16.3	\$-3.6
Cumulative Variances To Date (12/31/02)	\$-17.2	\$-3.7
Net Change	\$-0.9	\$-0.1

Explanation of Change:

(U) The unfavorable schedule variance is due to Troy not keeping pace with missile build plans due to field returns and holds due to flight failures.

The unfavorable cost variance is attributable to additional flight failure analysis, field returns and rework at Troy (rain/hail damage, bubbling, fuze, wing actuator removal and replacement).

(U) Contract Comments:

The increase of \$8.1M on the contract since the previous SAR is due primarily to an increase in EMD scope. This includes an electronic safe and arm fuze study and a SAASM black key study as well as the F/A-18 integration bridge effort.

b. Procurement --

(U) JASSM LRIP (Lot 1): Lockheed Martin, Orlando, FL F08635-02-C-0026, FFP Award: January 14, 2002 Definitized: January 14, 2002	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$36.2	N/A	76

<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>
\$36.2	N/A	76	\$36.2	\$36.2

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

JASSM Lot 1 was awarded in January, following the LRIP decision, for 76 units.

15. (U) Contract Information (Cont'd):

(U) JASSM LRIP (Lot 2):	Initial Contract Price		
Lockheed Martin, Orlando, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F08635-03-C-0010, FFP	\$36.1	N/A	100
Award: November 18, 2002			
Definitized: November 18, 2002			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$36.1	N/A	100	\$36.1	\$36.1

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Lot 2 was awarded on 18 November 2002 for 100 units.

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 (FY96-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-15)</u>	<u>Total</u>
RDT&E	909.8	57.0	73.6	142.3	1182.7
Procurement	92.2	101.1	145.4	2529.4	2868.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1002.0	158.1	219.0	2671.7	4050.8

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- JASSM

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				4.9	5.2
1999				1.7	1.8
2000				3.1	3.4
2001				1.8	2.0
2002				1.7	1.9
2003				13.3	14.9
2004				22.7	25.8
2005				24.0	27.7
2006				18.6	21.8
2007				12.4	14.8
2008				12.4	15.1
2009				12.5	15.4
Subtotal	6			129.1	149.8

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				26.7	27.6
1997				153.5	160.7
1998				155.4	163.8
1999				114.3	121.7
2000				142.8	154.4
2001				108.2	118.6
2002				74.9	82.8
2003				45.6	51.0
2004				27.5	31.2
2005				39.8	45.9
2006				52.6	61.6
2007				11.4	13.6
Subtotal	88			952.7	1032.9

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007	30		16.3	16.3	19.7
2008	111		58.6	58.6	72.1

16b. (U) Program Funding Summary (Cont'd):

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	520		283.3	412.4	510.2
USAF	3914		1902.9	2940.3	3540.6
Grand Total	4434		2186.2	3352.7	4050.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	45	45
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 1.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 837

(U) Percent Total Program Expended: 20.7%

(U) Expenditures reflect Program Office information as of 31 December 2002.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The JASSM O&S estimate includes only Air Force requirements. The Navy requirements are not yet defined. The sustainment and readiness plan/estimate for JASSM has evolved to one of total Contractor Logistics Support (CLS). Previous classifications of sustainment functions have now been realigned to reflect this logistics strategy. A 15-year bumper-to-bumper warranty is assumed with a 20-year shelf life and the subsequent demilitarization of the weapon. The JASSM program office will function as the ALC. The estimate was updated as the result of the quantity increase.

There is no antecedent system for JASSM.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	JASSM O&S Per Missile	N/A
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	2.0	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.0	N/A

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	JASSM O&S Per Missile	N/A
Total	2.0	N/A

Total O&S Cost	JASSM	N/A
BY\$ (In Millions)	256.3	N/A
TY\$ (In Millions)	399.6	N/A

Report Creation Date: 03/20/2003 8:22:54 AM

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AF-15 JPATS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: JPATS

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): Joint Primary Aircraft Training System/JPATS

2. DoD Component: USAF

Joint Participants:  
USAF/USN

3. Responsible Office and Telephone Number:

Aeronautical Systems Center/YT	COL TONI A. ARNOLD
Building 11A Room 2011	Assigned: April 4, 2001
1970 Monahan Way	DSN 785-2896; COMM (937) 255-2896
WPAFB, OH 45433-7211	Toni.Arnold@wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0603208N  
PE 0604233F (Shared)

PROCUREMENT:  
APPN 3010 ICN 0804740F (Air Force)  
APPN 1506 ICN 0804745N (Navy)

MILCON:  
PE 0804741F  
PE 0805796N

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DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

SAF/PAS

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03-C-025-1

5. References:

SAR Baseline (Production Estimate):

CAE approved Acquisition Program Baseline dated February 28, 2003.

Approved Program:

CAE Approved Acquisition Program Baseline (APB) dated February 12, 2002.

6. Mission and Description:

The Joint Primary Aircraft Training System (JPATS) is a USAF/USN program to replace USAF's T-37B aircraft, USN's T-34C aircraft, and the 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 represents a systems approach to aviator training requiring the purchase of air vehicles (782 production units), aircrew training devices (122), associated ground based training devices, an integrated training management system, instructional courseware, and contractor logistic support. The USAF will train at 6 bases and the USN at 3 bases. Each operational training location will be equipped with a full complement of operational flight trainers, instrument flight trainers, unit training devices and egress training devices. Courseware is being developed for the T-6A and converted from existing courseware for other platforms where appropriate. The Training Integrated Management System (TIMS) will provide a training and scheduling capability which will tie the efforts and activities of all AETC and CNATRA operating locations together.

The USAF will have contractor logistics support for most of the off-aircraft equipment maintenance. The on-aircraft equipment maintenance will be performed by third party contractor or organically supported. The USN will employ total contractor logistics support (CLS) for the entire aircraft. The GBTS will be a total contractor logistic support effort for both services.

7. Executive Summary:

Initial Operational Capability (IOC): The commander of the Air Education and Training Command (AETC) declared Air Force IOC for the JPATS on July 12, 2002.

Multi-service Operational Test and Evaluation (MOT&E(S)): MOT&E(S) started June 14, 2002 and was completed on December 12, 2002. Areas evaluated include: courseware, Aircrew Training Devices (ATDs), Operational Support System (OSS), and the T-6A. AFOTEC gave interim status briefings on August 23, September 27, and December 18, 2002 with no major deficiencies identified. Air Force Operational Test and Evaluation Center (AFOTEC) noted that TIMS lacks stabilized software and that this prevented a realistic operational evaluation. While the majority of TIMS software is stable, contract personnel were on site assisting in site activation and making some software modifications. TIMS improvement will continue and while TIMS currently meets design objectives the

JPATS, December 31, 2002

7. Executive Summary (Cont'd):

contractor and the SPO will continue to accommodate emerging user desires and have a stable TIMS environment for the upcoming Follow-on Test and Evaluation.

Overall Aircraft Deliveries: During the year we delivered 47 additional T-6A Texan II's (41 to AETC and 6 to the Chief of Naval Air Training (CNATRA)) for a total of 104 aircraft delivered; 13 aircraft ahead of contract delivery schedule as of December 31, 2002.

Lot 10 Production Option: Awarded Lot 10 production option for 35 Air Force aircraft in November 2002; award options for Lot 10 ATDs and four additional Navy aircraft during February 2003.

NAS Pensacola Aircrew Training Devices (ATDs): The acceptance test procedures were completed on the first set of ATDs at NAS Pensacola in November 2002. On track for July 2003 Required Asset Availability (RAA) at NAS Pensacola.

Navy aircraft deliveries: The first two Navy aircraft were accepted on August 24, 2002 and were delivered to NAS Pensacola on November 1, 2002. Four additional Navy aircraft were accepted during December 2002.

First Environmental Control System (ECS) Upgrade Production Line Deliveries: The first production aircraft was delivered with the upgraded ECS in June 2002. All subsequent deliveries had the upgraded ECS system. Fielded aircraft are being retrofit in a mod line at RAC. As of the end of the year 13 aircraft have been retrofit. The retrofit line is scheduled to be complete by the end of the calendar year 2003 (CY03).

UHF Dual Antenna Modification: The corrective action for the UHF blanking identified during the MOT&E(A) resulted in the installation of a second UHF antenna on the turtle deck aft of the canopy. Production cut-in was on PT-103. Retrofits are being completed during ECS upgrade.

UHF Radio Drift: RAC and Honeywell identified a problem with UHF radios on 5 aircraft which have since been repaired. The problem was traced to unshielded wire from the UHF backup control head to the UHF transmitter. On track for production cut-in and retrofit of shielded wire.

Landing Gear Push Rods: Current landing gear push rod end has an unreliable swage design on the rod end bearing. A rod end failure in flight precluded gear extension in a November 2001 incident. The interim solution was to direct through/post flight inspections. The final solution is to change the design of the tie rod end. The new design is complete with the first article test unit completed on August 8, 2002. AFOTEC and Operational Test and Evaluation (OPTEVFOR) conducted a successful assessment during October 2002. FAA has certified the part. Production cut-in occurred on PT-106. A service instruction has been prepared for field retrofit. New rod ends were delivered to the field for retrofit in early CY03.

Oil Cooler: Preliminary test of the proposed oil cooler improvement identified higher than expected return side back pressure. The cooler has been redesigned

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**7. Executive Summary (Cont'd):**

to correct the high back pressure while providing adequate cooling. Redesigned units are to be made for qualification and FAA certification early CY03. Thirty redesigned prototype units are planned for field use by early summer CY03. Production and retrofit contract is planned for mid CY03 after qualification testing is completed.

**Contract Modification and Early Aircraft Deliveries:** The SPO and RAC agreed to change the aircraft production contract from award fee to a performance incentive fee structure. The reason for the change is that the old contract delivery schedule did not provide sufficient margin between aircraft availability and aircraft requirements (training and retrofit) in the December 2002 through February 2003 time frame. The SPO chose to incentivize early deliveries to ensure a sufficient margin of aircraft availability. PT-75 and on were delivered ahead of contract schedule as a direct result of this contract incentive. An additional benefit of the accelerated aircraft delivery schedule was that a greater number of aircraft with the upgraded environmental control system (ECS) were involved in the MOT&E(S).

**Training Integration Management System (TIMS) Delivery and Required Asset Availability (RAA):** The SPO, AETC and CNATRA completed testing of the TIMS at Randolph AFB on May 17, 2002. The TIMS was accepted June 12, 2002. The TIMS is the last piece of equipment required for meeting the APB milestone for Required Asset Availability.

**Test and Evaluation Master Plan (TEMP):** The JPATS TEMP was approved on August 29, 2002.

**Student Training:** Graduated the tenth student class at Moody AFB on January 17, 2003.

**Start of Student Training at Laughlin AFB:** Started student training at Laughlin AFB January 8, 2003.

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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone O/I	JAN 1993	JAN 1993	JAN 1993
Aircraft Critical Design Review (CDR)	JUN 1996	JUN 1996	NOV 1996
Start MOT&E	APR 2000	APR 2000	JUN 2000
Milestone III	NOV 2001	NOV 2001	DEC 2001
AF Req'd Asset Availability	JUN 2002	JUN 2002	JUN 2002
Navy Req'd Asset Availability	AUG 2003	AUG 2003	AUG 2003

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Syllabus Maneuvers	Accomplish all	Accomplish all	Demonstrated	Demonstrated
Mission Profiles (Contact, Familiarization, Precision Aerobatics, Instrument, and Navigation - High and Low)	five mission profiles	five mission profiles	all five mission profiles	all five mission profiles
Sustained Speed at 1000 ft MSL, hot day (KTAS)	270	270 / 250 (270 / Dash)	250 (270 Dash)	250 (270 Dash)

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Operational G Envelope (Gs)	+7 to -3 sym-metric	+7 to -3/ +6 to -3 sym-metric / metric; / +4 to 0 / asym-metric	+7 to -3.5 sym-metric +4.0 to 0 asym-metric	+7 to -3.5 sym-metric +4.0 to 0 asym-metric
Pressurization (PSI Differential)	5.0	5.0 / 3.5	3.5	3.5
Bird Strike Capability (4 lb bird, no catastrophic damage) (KTAS)	Max Low Airspeed	Max Low / 270 Airspeed/	270	270
Ejection Seat with Survival Kit (Altitude/Airspeed in Knots)	0/0	0/0 / 0/60	0/0	0/0
Able To Perform an Engine Out Landing	Unprepared surface	Unpre- / Runway / surface /	Runway	Runway
Anthropometric Accommodation (Sitting Height in inches)	31.0 to 40.0	31.0 to / 32.8 to 40.0 / 40.0	31.0 to 40.0	31.0 to 40.0
Cockpit Configuration	Inter-change-able Instruc-tor/ Student	Inter- / Yes change- / Instruc- / Student /	Inter- change- able Instruc- tor/ Student	Inter- change- able Instruc- tor/ Student
Cockpit Seating Configuration	0 Degree Over-the -Nose Visi-bility from the Rear Cockpit at Design Eye Height	0 Degree/ Stepped Over-the/ Tandem -Nose / Visi- bility / from the/ Rear Cockpit / at / Design / Eye / Height	Stepped Tandem	Stepped Tandem
Exterior Noise	FAR Part 36, Most Restrictive App-	FAR Part/ FAR Part 36, Most/ Restrictive / App-	FAR Part 36, Most Restrictive App-	FAR Part 36, Most Restrictive App-

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Takeoffs/Touch & Go/Land (Wx, Weight, Configuration) at Main Operating Bases (Runway Length - FT)	licable Standard 4000	licable / licable Standard/ 4000 / 5000	licable Standard 4000	licable Standard 4000
IFR Certified Instrumentation	All Digital except Backups	All / IFR Digital / Cert- except / Backups	IFR Cert- ified (Select- able EADI/ EHSI)	IFR Cert- ified (Select- able EADI/ EHSI)
Visual System For IFT/OFT	Yes	Yes / Provide a visual field of view commensurate with the JPPT syllabus training requirements	Provide a visual field of view commensurate with the JPPT syllabus training requirements	Provide a visual field of view commensurate with the JPPT syllabus training requirements

Demonstrated performance for JPATS meets or exceeds all Key Performance Parameters.

b. Current Change Explanations -- None

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)	289.2	289.2	296.8
Procurement	4177.1	4177.1	4385.9
Navy	(1399.2)		(1481.4)
Air Force	(1878.1)		(1916.2)
Total Flyaway	(3277.3)		(3397.6)
Navy GBTS	(163.4)		(169.7)
Air Force GBTS	(230.5)		(211.2)
Navy Mission Support	(35.8)		(37.5)
Air Force Mission Support	(80.8)		(73.0)
Air Force Other Support	(46.3)		(67.1)
Navy Other Support	(29.1)		(95.1)
Navy (A/V Support & ILS)	(47.4)		(52.9)
AF (A/V Support & ILS)	(143.3)		(129.6)
Total Other Wpn Sys	(776.6)		(836.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(123.2)		(152.2)
Construction (MILCON)	62.7	62.7	36.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	<u>4529.0</u>	<u>4529.0</u>	<u>4718.7</u>
 Escalation	 512.1	 512.1	 381.7
Development (RDT&E)	(-13.7)	(-13.7)	(-11.4)
Procurement	(522.1)	(522.1)	(392.7)
Construction (MILCON)	(3.7)	(3.7)	(0.4)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>5041.1</u>	<u>5041.1</u>	<u>5100.4</u>
 b. Quantity --			
Development (RDT&E)	1	1	1
Procurement	782	782	782
Total	<u>783</u>	<u>783</u>	<u>783</u>

Note: Approved Program (APB) and Current Estimate reflect Milestone III data with a FY02 base year. Program growth is due to changes in Navy buy schedule, unprogrammed addition of Navy spares funds and joint program modifications.

c. Foreign Military Sales --

No direct foreign military sales. Flying hour cost and ATD usage for the Euro-NATO Joint Jet Pilot Training program are funded on a per unit used basis.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (FEB 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	4529.0	4718.7	
(2) Quantity	783	783	
(3) Unit Cost	5.784	6.026	+4.18
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	4177.1	4385.9	
(2) Quantity	782	782	
(3) Unit Cost	5.342	5.609	+5.00

Note: Program growth is due to changes in Navy buy schedule, unprogrammed addition of Navy spares funds and joint program modifications.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
<u>Production Estimate</u>	275.5	4699.2	66.4	5041.1
Previous Changes:				
Economic	-0.8	-91.0	-0.6	-92.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.7	+77.2	+0.1	+78.0
Other	-	-	-	-
Support	-	-	-	-
<u>Subtotal</u>	-0.1	-13.8	-0.5	-14.4
Current Changes:				
Economic	+2.0	-64.0	-0.5	-62.5
Quantity	-	-	-	-
Schedule	-	+42.7	-	+42.7
Engineering	+8.0	-	-	+8.0
Estimating	-	+14.3	-29.0	-14.7
Other	-	-	-	-
Support	-	+100.2	-	+100.2
<u>Subtotal</u>	+10.0	+93.2	-29.5	+73.7
<u>Total Changes</u>	+9.9	+79.4	-30.0	+59.3
<u>Current Estimate</u>	285.4	4778.6	36.4	5100.4

13a. Cost Variance Analysis (Cont'd):

Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	289.2	4177.1	62.7	4529.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.6	+67.6	+0.1	+68.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.6	+67.6	+0.1	+68.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+7.0	-	-	+7.0
Estimating	-	+52.7	-26.8	+25.9
Other	-	-	-	-
Support	-	+88.5	-	+88.5
Subtotal	+7.0	+141.2	-26.8	+121.4
Total Changes	+7.6	+208.8	-26.7	+189.7
Current Estimate	296.8	4385.9	36.0	4718.7

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>RDT&amp;E</u>		
Revised escalation rates (Economic)	N/A	+2.0
Establishes recurring engineering development line for ECPs. (Engineering)	+7.0	+8.0
RDT&E Subtotal	+7.0	+10.0
(2) <u>Procurement</u>		
Revised escalation rates (Economic)	N/A	-64.0
Rephasing of Navy production requirements (Schedule)	N/A	+42.7
Increased Air Force and Navy support, Navy initial spares, and modification requirements (Support)	+88.5	+100.2
Revised Navy procurement cost estimate (Estimating)	+52.7	+14.3
Procurement Subtotal	+141.2	+93.2
(3) <u>MILCON</u>		
Revised escalation indices (Economic)	N/A	-0.5

**13b. Cost Variance Analysis (Cont'd):**

b. Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Downscaling of building requirements (Estimating)	-26.8	-29.0
MILCON Subtotal	-26.8	-29.5

\$9.6M through the FYDP maintains recurring engineering development. Anticipate \$2M per year after FYDP.

**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
PAUC Changes										Cur Est
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
6.44	-0.198	--	+0.055	+0.010	+0.081	--	+0.128	+0.076		6.51

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate										PUC
PUC Changes										Cur Est
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
6.01	-0.198	--	+0.055	--	+0.117	--	+0.128	+0.102		6.11

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	JAN 1993	JAN 1993	JAN 1993
Milestone II	N/A	AUG 1995	DEL	AUG 1995
Milestone III	N/A	SEP 1999	NOV 2001	DEC 2001
IOC	N/A	JUN 2002	JUN 2002	JUN 2002
Total Cost	N/A	4050.6	5041.1	5100.4
Total Quantity	N/A	712	783	783
Prog Acq Unit Cost	N/A	5.7	6.4	6.5

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
 JPATS Lot VII (GBTS):  
 Raytheon Aircraft Company, Wichita KS  
 F33657-94-C-0006, FFP/FFIF  
 Award: December 15, 1999  
 Definitized: December 15, 1999

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$38.2	\$39.9	0	\$27.6	\$27.6
Previous Cumulative Variances			N/A	
Cumulative Variances To Date			N/A	
Net Change			\$6.4	\$-0.7
			\$6.4	\$-0.7

Explanation of Change:

Quantities were originally used to reflect aircraft quantities when aircraft were included in this lot. Aircraft were moved to a commercial contract and quantity was reduced to zero. Because of the differences in scope of the various Aircrew Training Devices (ATDs), a single quantity value has little meaning. Quantities of ATDs remaining on this lot are:

Air Force = 3 Unit Training Devices (UTDs), 3 Operational Flight Trainers (OFTs) and 2 Instrument Flight Trainers (IFTs).  
 Navy = 3 Training Integration Management Systems/Computer Based Training Systems (TIMS/CBTSS), 1 Modification and Upgrade Support System (MUSS), and 1 UTD.

This lot is over 95% complete and will not be reported in the next report.

JPATS Lot VIII (GBTS):  
 Raytheon Aircraft Company, Wichita KS  
 F33657-94-C-0006, FFP  
 Award: February 4, 2001  
 Definitized: February 4, 2001

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$44.4	\$45.9	0	\$27.9	\$27.9

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$9.5	\$-4.3
Net Change	\$9.5	\$-4.3

Explanation of Change:

Quantities were originally used to reflect aircraft quantities when aircraft were included in this lot. Aircraft were moved to a commercial contract and quantity was reduced to zero. Because of the differences in scope of the various Aircrew Training Devices (ATDs), a single quantity value has little meaning.

Quantities of ATDs remaining on this lot are:  
 Air Force equipment = 2 OFT, 3 IFT, 3 UTD, and 1 TMS/CBTS; and the following Navy equipment = 1 UTD.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
JPATS Lot VII (Comcl AV): Raytheon Aircraft Company, Wichita KS F33657-00-C-2192, FFP Award: December 15, 2000 Definitized: December 15, 2000	\$101.2	\$101.2	40

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$101.2	\$101.2	40	\$101.2	\$101.2

Explanation of Change:

**Lot VII (Commercial)**

This lot is subject to commercial pricing. All Lot VII aircraft dollars and aircraft quantities from contract F33657-94-C-0006 were transferred to a stand-alone commercial contract.

The last aircraft in this lot was delivered in February 2003. This lot will not be included in subsequent reports.

Cost and Schedule variance reporting is not required on this FFP contract.

15. Contract Information (Cont'd):

<p><u>Lot VIII (Compl AV):</u>                  Raytheon Aircraft, Wichita, KS                  F33657-00-C-2192, FFP                  Award: April 2, 2001                  Definitized: April 2, 2001</p>	<table border="0"> <tr> <th colspan="3">Initial Contract Price</th> </tr> <tr> <th><u>Target</u></th> <th><u>Ceiling</u></th> <th><u>Qty</u></th> </tr> <tr> <td>\$148.4</td> <td>\$148.4</td> <td>59</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$148.4	\$148.4	59
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$148.4	\$148.4	59								

<table border="0"> <tr> <th colspan="3">Current Contract Price</th> </tr> <tr> <th><u>Target</u></th> <th><u>Ceiling</u></th> <th><u>Qty</u></th> </tr> <tr> <td>\$148.4</td> <td>\$148.4</td> <td>59</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$148.4	\$148.4	59	<table border="0"> <tr> <th colspan="2">Estimated Price At Completion</th> </tr> <tr> <th><u>Contractor</u></th> <th><u>Program Manager</u></th> </tr> <tr> <td>\$148.4</td> <td>\$148.4</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$148.4	\$148.4
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$148.4	\$148.4	59														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$148.4	\$148.4															

Explanation of Change:

**Lot VIII (Commercial)**

This lot is subject to commercial pricing. All Lot VIII aircraft dollars and aircraft quantities from contract F33657-94-C-0006 were transferred to a stand-alone commercial contract.

Cost and Schedule variance reporting is not required on this FFP contract.

<p><u>Lot 9 Production:</u>                  Raytheon Aircraft, Wichita, KS                  F33657-01-C-0022, FFP                  Award: December 28, 2001                  Definitized: December 28, 2001</p>	<table border="0"> <tr> <th colspan="3">Initial Contract Price</th> </tr> <tr> <th><u>Target</u></th> <th><u>Ceiling</u></th> <th><u>Qty</u></th> </tr> <tr> <td>\$193.3</td> <td>\$193.3</td> <td>40</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$193.3	\$193.3	40
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$193.3	\$193.3	40								

<table border="0"> <tr> <th colspan="3">Current Contract Price</th> </tr> <tr> <th><u>Target</u></th> <th><u>Ceiling</u></th> <th><u>Qty</u></th> </tr> <tr> <td>\$193.3</td> <td>\$193.3</td> <td>47</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$193.3	\$193.3	47	<table border="0"> <tr> <th colspan="2">Estimated Price At Completion</th> </tr> <tr> <th><u>Contractor</u></th> <th><u>Program Manager</u></th> </tr> <tr> <td>\$193.3</td> <td>\$193.3</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$193.3	\$193.3
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$193.3	\$193.3	47														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$193.3	\$193.3															

Explanation of Change:

**Lot 9 (Commercial)**

This lot is subject to commercial pricing.

Cost and Schedule variance reporting is not required on this FFP contract.

15. Contract Information (Cont'd):

<p><u>Lot 10 Production:</u>                  Raytheon Aircraft, Wichita, KS                  F33657-01-C-0022, FFP                  Award: February 28, 2003                  Definitized: February 28, 2003</p>	<table border="0"> <tr> <td colspan="3" style="text-align: center;">Initial Contract Price</td> </tr> <tr> <td style="text-align: center;"><u>Target</u></td> <td style="text-align: center;"><u>Ceiling</u></td> <td style="text-align: center;"><u>Qty</u></td> </tr> <tr> <td style="text-align: center;">\$181.7</td> <td style="text-align: center;">\$181.7</td> <td style="text-align: center;">35</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$181.7	\$181.7	35
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$181.7	\$181.7	35								

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	39	\$206.4	\$206.4

Explanation of Change:

Lot 10 (Commercial)

This the first time this lot has been reported in a SAR report.

This lot is subject to commercial pricing.

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 (FY92-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-15)</u>	<u>Total</u>
RDT&E	271.5	1.9	1.9	10.1	285.4
Procurement	1253.1	294.6	303.9	2927.0	4778.6
MILCON	28.4	4.0	2.0	2.0	36.4
O&M	-	-	-	-	-
Total	1553.0	300.5	307.8	2939.1	5100.4

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- JPATS

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				4.0	3.6
1995				4.0	3.7
1996				1.2	1.1
1997				1.8	1.7
1998				0.3	0.3
1999				0.6	0.6
2000				0.3	0.3
Subtotal				12.2	11.3

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				1.0	0.9
1993				2.1	1.9
1994				2.9	2.6
1995				38.4	35.4
1996				28.8	27.0
1997				43.0	40.9
1998				51.5	49.3
1999				39.6	38.3
2000				37.0	36.4
2001				23.9	23.8
2002				1.8	1.8
2003				1.9	1.9
2004				1.8	1.9
2005				1.8	1.9
2006				1.6	1.7
2007				1.8	2.0
2008				1.9	2.1
2009				1.9	2.1
2010				1.9	2.2
Subtotal	1			284.6	274.1

16b. Program Funding Summary (Cont'd):

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	12		30.6	56.3	56.1
2001	24		60.7	80.3	80.6
2002	7		30.1	37.3	37.8
2003	4		18.3	28.7	29.5
2004				2.8	2.9
2005				3.0	3.2
2006				1.6	1.7
2007	24		107.6	141.7	155.4
2008	48		216.2	274.0	306.1
2009	48		224.4	272.9	310.3
2010	48		227.4	282.6	327.2
2011	48		230.0	268.9	316.8
2012	48		236.4	265.8	318.9
2013	17		99.7	165.5	202.1
2014				73.0	90.8
Subtotal	328		1481.4	1954.4	2239.4

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	9		63.4	85.3	80.4
1996	4		14.4	15.6	14.9
1997	11		39.1	62.6	60.4
1998	22		67.1	74.0	71.9
1999	22		63.9	109.8	107.8
2000	29		73.2	107.8	107.4
2001	34		88.8	138.9	139.5
2002	40		178.1	219.7	222.8
2003	35		164.4	237.6	244.0
2004	52		242.4	279.7	291.7
2005	53		251.2	283.7	300.7
2006	54		258.4	294.3	317.3
2007	50		230.9	267.2	293.1
2008	39		180.9	214.6	239.7
2009				12.9	14.7
2010				11.8	13.7
2011				7.0	8.2
2012				3.5	4.2
2013				2.1	2.6
2014				1.8	2.2
2015				1.6	2.0

16b. Program Funding Summary (Cont'd):

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	454		1916.2	2431.5	2539.2

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				1.4	1.4
1999				1.4	1.4
2000				5.2	5.2
2001				5.4	5.4
2002					
2003					
2004				3.8	4.0
Subtotal				17.2	17.4

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				2.6	2.5
1999				3.4	3.3
2000				3.2	3.2
2003				5.8	6.0
2005				1.9	2.0
2006				1.9	2.0
Subtotal				18.8	19.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	328		1481.4	1983.8	2268.1
USAF	455		1916.2	2734.9	2832.3
Grand Total	783		3397.6	4718.7	5100.4

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	90	103

Percent Total Program Quantities Delivered: 13.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 737.1

Percent Total Program Expended: 14.5%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The operations and support costs are based on the purchase of 782 operational 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 seven 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.

The JPATS logistics support concept assumes that organizational, intermediate and depot support are CLS. Therefore there is no additional cost for intermediate or depot level maintenance. Maintenance costs for contract support include contract labor, materials, and overhead incurred in providing the logistics support required by an aircraft system, subsystem or associated support equipment. GBTS CLS support is provided separately.

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.

This reflects the information briefed by the AF Cost Analysis Improvement Group prior to the Milestone III decision reflecting the JPATS Most Probable Life Cycle Cost supporting the Full Rate Production Decision on November 6, 2001.

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.

O&S cost elements are combined Air Force and Navy requirements for the Air Vehicle and GBTS for a typical steady state operating year (post FOC) in Base

18a. Operating and Support Costs (Cont'd):

Year 2002 dollars. Source for all costs is the JPATS Milestone III Cost Analysis Improvement Group (CAIG) briefing, 6 November 2001.

b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	JPATS per steady state operating year	T-37/T-34 N/A
Mission Pay & Allowances	125.2	0.0
Unit Level Consumption	22.6	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	176.1	0.0
Sustaining Support	75.9	0.0
Indirect Costs	31.2	N/A
Total	431.0	0.0

Total O&S Cost	JPATS	T-37/T-34
BY\$ (In Millions)	9426.4	N/A
TY\$ (In Millions)	14036.3	N/A

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A-21 SMART-T

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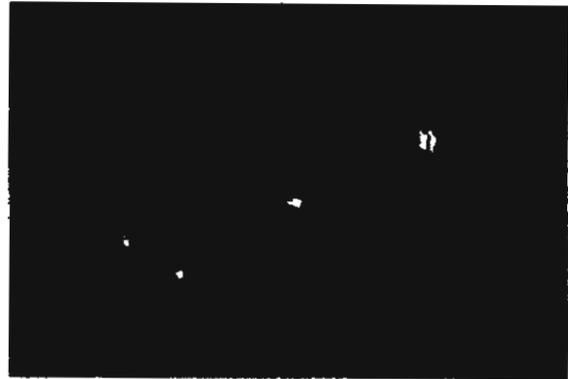
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SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 82 AND SECURITY REVIEW  
PROGRAM: SMART-T  
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): AN/TSC-154/Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)

2. DoD Component: Army

Joint Participants:

U.S. Air Force, U.S. Marine Corps, Joint Communications Support Element, Other DoD

3. Responsible Office and Telephone Number:

Project Manager WIN-T	COL Thomas Cole
PEO C3T	Assigned: July 12, 2002
ATTN: SFAE-C3T-WIN	DSN 992-4740; COMM (732) 532-4740
Fort Monmouth, NJ 07703-5506	thomas.cole@c3small.monmouth.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0303142A (Shared) (Army)

PROCUREMENT:

APPN 1109 ICN 041321 (Navy) (Shared) USMC Terminal Buy  
 APPN 3080 ICN 21131F (Air Force) (Shared)  
 APPN 2035 ICN 28612A (Army)  
 APPN 3080 ICN 33601F (Air Force)  
 APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy  
 APPN 2035 ICN BB5777 (Army)  
 APPN 2035 ICN BC4002\* (Army)  
 APPN 2035 ICN BS9720 (Army)  
 APPN 9992 ICN DERF

\* Item Control Number BC4002 (Army) also used to fund the procurement of 8

\*\*\* UNCLASSIFIED \*\*\*

03-C-0415

**4. Program Elements/Procurement Line Items (Cont'd):**

SMART-T terminals for the White House Communications Agency (WHCA).

**5. References:**

SAR Baseline (Production Estimate):

AAE Approved Acquisition Program Baseline (APB) dated February 19, 1999.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated March 20, 2003.

**6. Mission and Description:**

The SMART-T provides range extension capability to the Army's Mobile Subscriber Equipment (MSE) and Future Warfighter Information Network-Tactical (WIN-T). Specifically, it provides a satellite interface to permit uninterrupted voice/data communication as advancing forces move beyond the line-of-sight capability of terrestrial communications systems. This program supports Echelons Corps and Below (ECB) and special contingency operations. SMART-T 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 can also be used in a fixed configuration. These terminals increase the tactical utility of the Milstar System. The Marines, Air Force and other DoD customers also use the SMART-T. The SMART-T terminals will be modified to communicate over the Advanced Extremely High Frequency (AEHF) satellites.

**7. Executive Summary:**

The Joint Terminal Engineering Office (JTEO) successfully conducted a Medium Data Rate (MDR) Interoperability Test during the period Feb 26-28, 2002. The test was conducted utilizing Navy MDR terminals, SMART-T terminals and Milstar Flight #5. The data collected from this test was supplied to the Joint Interoperability Test Center (JITC) to develop a JITC Interoperability Certification letter; this letter was signed Oct 3, 2002. The terminals also performed the range extension mission for the 334th Signal Company in support of the Stryker Brigade Combat Team-1. SMART-T also supported verification of Flight #5 functionality/multi-service Milstar interoperability from Jan-Mar 2002.

Conditional Materiel Release was obtained May 16, 2002. Full Materiel Release is scheduled for Sep 2003 following the retrofit of fielded terminals.

All technical and training issues identified in the SMART-T Follow-on Test and

**7. Executive Summary (Cont'd):**

Evaluation (FOT&E) Test Report have been investigated and an Engineering Change Proposal (ECP) was awarded to Raytheon on Aug 9, 2002 to address the changes. Detailed planning is underway to retrofit fielded terminals.

SMART-T production deliveries are on schedule. To date, 210 of the total requirement of 324 SMART-T terminals have been procured and 116 have been fielded (71 Army, 29 Air Force and 16 Marine Corps).

The Advanced Extremely High Frequency (AEHF) terminal development effort is progressing satisfactorily. The program is still awaiting completion of Information Security (INFOSEC) requirements from the National Security Agency (NSA). Project Manager, Warfighter Information Network-Tactical (PM WIN-T) has been working with NSA to finalize the requirements for INFOSEC to be used during AEHF SMART-T development. These requirements have been under review with NSA and are expected to be finalized in the Mar 2003 timeframe.

The FY 2003 SMART-T terminal buy was awarded on Dec 30, 2002; sixteen (16) terminals were procured for the Army, Marine Corps and Joint Communications Support Element. An associated spares award was executed in Jan 2003.

This is the final SAR submission for SMART-T. The SMART-T program was removed from the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) FY 2003 Major Defense Acquisition Program (MDAP) List, dated Dec 17, 2002.

**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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
MDR Study	FEB 1991	FEB 1991	FEB 1991
Market Survey	SEP 1991	SEP 1991	SEP 1991
LDR Technology Demonstrated (SCOTT Terminal Acceptance)	DEC 1991	DEC 1991	DEC 1991
Milestone II ASARC Review	MAY 1992	MAY 1992	MAY 1992
Development Contract Award	NOV 1992	NOV 1992	NOV 1992
Preliminary Design Review	MAY 1993	MAY 1993	MAY 1993
Critical Design Review	MAR 1994	MAR 1994	MAR 1994
DT&E			
Start	SEP 1994	SEP 1994	SEP 1994
Complete	DEC 1995	DEC 1995	DEC 1995
EDM Deliveries	FEB 1996	FEB 1996	FEB 1996
LRIP Decision	JAN 1996	JAN 1996	JAN 1996
Low Rate Production Contract Award	FEB 1996	FEB 1996	FEB 1996
FAT			
Start	SEP 1997	SEP 1997	SEP 1997
Complete	JUN 1998	JUN 1998	JUN 1998
LRIP First Delivery	MAR 1998	MAR 1998	APR 1998
LDR IOT&E			
Start	JUN 1998	JUN 1998	MAY 1998
Complete	JUN 1998	JUN 1998	JUN 1998
Milestone III ASARC Review	NOV 1998	NOV 1998	NOV 1998
Full Scale Production Award	NOV 1998	NOV 1998	JAN 1999
MDR FOT&E			
Start	SEP 1999	MAR 2001	JUL 2001
Complete	NOV 1999	APR 2001	SEP 2001
Terminal IOC	DEC 1999	AUG 2001	JUL 2001
DAMA ECP Award	JAN 1999	JAN 1999	JUL 1999
AEHF Development Initiated	JAN 2002	JAN 2002	FEB 2000
AEHF Production of Retrofit Kits	JAN 2005	MAR 2006	MAR 2006 (Ch-1)

ACRONYMS:

- AEHF - Advanced Extremely High Frequency
- ASARC - Army Systems Acquisition Review Council
- DAMA - Demand Assigned Multiple Access
- DT&E - Development Test and Evaluation
- ECP - Engineering Change Proposal
- EDM - Engineering Development Model
- FAT - First Article Test
- FOT&E - Follow-On Test and Evaluation
- IOC - Initial Operational Capability
- IOT&E - Initial Operational Test and Evaluation
- LDR - Low Data Rate
- LRIP - Low Rate Initial Production
- MDR - Medium Data Rate
- SCOTT - Single Channel Objective Tactical Terminal

9a. Schedule (Cont'd):

Note: Terminal IOC is the date when initial training and provisioning was completed.

b. Current Change Explanations --  
The following schedule change explanation is provided:

(Ch-1) AEHF Production of Retrofit Kits (Start): The realignment of AEHF development, scheduled to synchronize the satellite and terminal schedules, will delay the start of AEHF Production of Retrofit Kits from Jan 2005 to Mar 2006.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Set-up Benign Environment (min)	30	30 / 30	20	20
Set-up MOPP 4 Gear (min)	45	45 / 45	20	20
Tear-down Benign Environment (min)	30	30 / 30	13	13
Tear-down MOPP 4 Gear (min)	45	45 / 45	12	12
MTBF (hrs) (80%LCL)/ (Point estimate)	800	800 / 400	800	800
Aggregate Data Rate (kbps)	1544	1544 / 1024	2240	2240
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	2486
TRANSEC with Over the Air Rekey Capability	Required	Required/ Required	Demo'd	Required
Bit Error Rate (BER) Airlift	10 <sup>-5</sup>	10 <sup>-5</sup> / 10 <sup>-3</sup>	10 <sup>-5</sup>	10 <sup>-5</sup>
Transportability System Only (By)	UH-60	UH-60 / UH-60	UH-60	UH-60
System and HMMWV (By)	CH-47	CH-47 / CH-47	CH-47	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

10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	20-30	20-30	/ 20-30	20-30	20-30
Back-up (Vehicular) (Volts)					
DAMA	N/A	N/A	/ N/A	N/A	N/A
Reduce satellite resources req'd to support MSE by a factor of	3	N/A	/ N/A		
AEHF					
Aggregate Data Rate (Mbps)	8	9.728	/ 8.072	TBD	8.072 (Ch-1)
Configuration	Full System on HMMWV (1097)	Full System on HMMWV/ (1097)	/ Full System on HMMWV (1097)	TBD	Full System on HMMWV (1097)
Bit Error Rate (BER)	10-7	10-8	/ 10-8	TBD	10-8
Interface Capability	WIN based MSE	WIN based MSE	/ WIN based MSE	TBD	WIN Based MSE

ACRONYMS:

AEHF - Advanced Extremely High Frequency  
DAMA - Demand Assigned Multiple Access  
HMMWV - High Mobility Multi-Purpose Wheeled Vehicle  
kbps - Kilobits per second  
LCL - Lower Confidence Level  
min - Minutes  
mbps - Megabits per second  
MOPP - Mission Oriented Protective Posture  
MSE - Mobile Subscriber Equipment  
MTBF - Mean Time Between Failure  
NTE - Not To Exceed  
TRANSEC - Transmission Security

b. Current Change Explanations --

(Ch-1) The aggregate data rate for the AEHF terminal is changed from 8.0Mbps to 8.072Mbps; this change is a clarification of the requirement.

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)	315.2	343.8	336.3
Procurement	451.3	645.3	592.7
Recurring Rollaway	(265.5)		(348.0)
Other Rollaway	(126.3)		(165.4)
			(0.0)
			(0.0)
Total Rollaway	(391.8)		(513.4)
Support Cost	(17.9)		(21.5)
Other System Cost	(18.5)		(22.8)
Total Other Wpn Sys	(36.4)		(44.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(23.1)		(35.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1999 Base-Year \$	<u>766.5</u>	<u>989.1</u>	<u>929.0</u>
 Escalation	 13.9	 61.6	 42.0
Development (RDT&E)	(-7.9)	(-2.1)	(-4.3)
Procurement	(21.8)	(63.7)	(46.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>780.4</u>	<u>1050.7</u>	<u>971.0</u>
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>313</u>	<u>324</u>	<u>301</u>
Total	<u>313</u>	<u>324</u>	<u>301</u>

The unit of measure for SMART-T is terminals.

Note: The RDT&E quantities exclude 12 Engineering Manufacturing Development (EMD) terminals produced under the SMART-T Development contract that are not fully configured and will not be fielded. In addition, the RDT&E quantities also exclude 3 EMD Advanced EHF upgrade terminals that are not fully configured and 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.

The all-Service Acquisition Objective terminal quantity approved by the AAE is 324.

c. Foreign Military Sales -- None.

11d. Total Program Cost and Quantity (Cont'd):

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1999 BY\$)	989.1	929.0	
(2) Quantity	324	301	
(3) Unit Cost	3.053	3.086	+1.08
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1999 BY\$)	645.3	592.7	
(2) Quantity	324	301	
(3) Unit Cost	1.992	1.969	-1.15

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	307.3	473.1	-	780.4
Previous Changes:				
Economic	-	+0.3	-	+0.3
Quantity	-	+70.0	-	+70.0
Schedule	-	+1.6	-	+1.6
Engineering	-	-31.5	-	-31.5
Estimating	+0.2	-48.9	-	-48.7
Other	-	-	-	-
Support	-	+2.4	-	+2.4
Subtotal	+0.2	-6.1	-	-5.9
Current Changes:				
Economic	-1.0	-7.6	-	-8.6
Quantity	-	-82.5	-	-82.5
Schedule	-	+1.0	-	+1.0
Engineering	-	+1.6	-	+1.6
Estimating	+25.5	+240.7	-	+266.2
Other	-	-	-	-
Support	-	+18.8	-	+18.8
Subtotal	+24.5	+172.0	-	+196.5
Total Changes	+24.7	+165.9	-	+190.6
Current Estimate	332.0	639.0	-	971.0

13a. Cost Variance Analysis (Cont'd):

Summary (FY 1999 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	315.2	451.3	-	766.5
Previous Changes:				
Quantity	-	+63.5	-	+63.5
Schedule	-	-	-	-
Engineering	-	-29.8	-	-29.8
Estimating	-2.4	-52.5	-	-54.9
Other	-	-	-	-
Support	-	+2.3	-	+2.3
Subtotal	-2.4	-16.5	-	-18.9
Current Changes:				
Quantity	-	-76.2	-	-76.2
Schedule	-	-	-	-
Engineering	-	+1.3	-	+1.3
Estimating	+23.5	+215.3	-	+238.8
Other	-	-	-	-
Support	-	+17.5	-	+17.5
Subtotal	+23.5	+157.9	-	+181.4
Total Changes	+21.1	+141.4	-	+162.5
Current Estimate	336.3	592.7	-	929.0

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-1.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.7
Increase to complete AEHF Development (Estimating)	+22.8	+24.8
RDT&E Subtotal	+23.5	+24.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-8.1
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Adjustment to reconcile Quantity and Estimating error from previous SAR. (Estimating)	+63.4	+67.9
(Quantity)	-63.4	-67.9
Quantity decrease of 4 USMC units from 40 to 36. (Quantity)	-3.3	-3.5
Allocation to Engineering variance resulting from USMC Quantity Change. (QR)(Engineering)	+0.1	+0.2
Allocation to Estimating variance resulting from USMC Quantity Change. (QR)(Estimating)	+0.3	+0.2

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity decrease of 19 Army units from 247 to 228. (Quantity)	-15.2	-17.1
Allocation to Engineering variance resulting from Army Quantity Change. (QR)(Engineering)	+1.2	+1.4
Allocation to Estimating variance resulting from Army Quantity Change. (QR)(Estimating)	+2.0	+2.2
Stretchout of annual Army procurement buy profile. (Schedule)	0.0	+1.0
Decrease due to revised Unit Cost associated with JCSE buy. (Estimating)	-1.1	-1.2
Increase for JCSE AEHF Mod Kit. (Estimating)	+2.5	+2.7
Adjustment for Current and Prior Inflation (JCSE). (Estimating)	+0.4	+0.4
Decrease in Unit Cost associated with USMC buy. (Estimating)	-5.2	-5.4
Adjustment for Current and Prior Inflation (Army). (Estimating)	+1.0	+1.0
Increase for Army AEHF Mod Kits. (Estimating)	+147.3	+167.4
Adjustment for Current and Prior Inflation (USMC). (Estimating)	-0.1	-0.1
Increase for USAF AEHF Mod Kits. (Estimating)	+2.6	+3.1
Increase of 4 Other Procurement Funding units from 0 to 4. (Quantity)	+5.7	+6.0
Increase for Other Procurement Funded AEHF Mod Kits. (Estimating)	+2.2	+2.5
Increase due to AEHF Mod Kit Procurement. (Support)	+17.5	+18.8
Procurement Subtotal	<u>+157.9</u>	<u>+172.0</u>

QR = Quantity related changes.

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	
2.49	-0.028	+0.058	+0.009	-0.099	+0.723	--	+0.070	+0.733	3.23

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	
1.51	-0.024	+0.018	+0.009	-0.099	+0.637	--	+0.070	+0.611	2.12

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	MAY 1992	MAY 1992	MAY 1992
Milestone III	N/A	SEP 1998	NOV 1998	NOV 1998
IOC	N/A	DEC 1999	DEC 1999	JUL 2001
Total Cost	N/A	1027.2	780.4	971.0
Total Quantity	N/A	364	313	301
Prog Acq Unit Cost	N/A	2.8	2.5	3.2

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --  
 AEHF Development:  
 Raytheon Company, Marlborough, MA  
 DAAB07-96-C-A757, CPFF  
 Award: March 29, 2001  
 Definitized: March 29, 2001

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$62.6	N/A	0	\$61.7	\$62.6

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.0	\$0.2
Cumulative Variances To Date (12/31/02)	<u>\$0.9</u>	<u>\$-0.2</u>
Net Change	\$-0.1	\$-0.4

Explanation of Change:

The unfavorable cost variance is not considered significant.

The unfavorable schedule variance is due to a slight schedule delay in the completion of the development specifications.

Contract Comments:

The Current Contract Price is higher than the Initial Contract Price due to increased requirements and the extension of the development schedule to synchronize the satellite and terminal schedules.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
b. Procurement -- SMART-T LRIP/FRP: Raytheon Company, Marlborough, MA DAAB07-96-C-A757, FFP Award: February 7, 1996 Definitized: N/A	\$212.8	N/A	387

<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>
\$145.1	N/A	141	\$145.1	\$145.1

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

The Current Contract Price is lower than the Initial Contract Price due to reduced requirements for other services, termination of the DAMA production modification and the Jan 2001 expiration of the last production quantity option. Contract options have been exercised for a total of 141 terminals. The production portion of this contract is more than 90% complete.

The Follow-On Production contract, awarded on Jun 28, 2002, will be used to procure the remaining SMART-T terminal requirements.

15. Contract Information (Cont'd):

<u>Follow-on Production:</u>			Initial Contract Price		
Raytheon Company, Marlborough, MA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAB07-02-D-D010, FFP	\$158.2	N/A	160		
Award: June 28, 2002					
Definitized: June 28, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$158.2	N/A	160	\$158.2	\$158.2	

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

This contract was awarded to complete the SMART-T terminal buyout. Contract options will be exercised for a total of 160 terminals.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-18)</u>	<u>Total</u>
RDT&E	293.0	26.2	12.8	-	332.0
Procurement	298.2	50.4	59.2	231.2	639.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	591.2	76.6	72.0	231.2	971.0

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- SMART-T

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				22.1	20.0
1993				47.7	44.3
1994				60.0	56.7
1995				31.2	30.1
1996				20.9	20.5
1997				16.0	15.9
1998				16.9	16.9
1999				23.1	23.4
2000				13.2	13.5
2001				16.1	16.7
2002				17.5	18.4
2003				15.6	16.6
2004				24.3	26.2
2005				11.7	12.8
Subtotal				336.3	332.0

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000					
2002	2		1.7	1.7	1.8
2003	2		3.1	3.1	3.3
2004				0.2	0.2
2005				0.2	0.2
2006			0.9	0.9	1.0
2007			0.9	0.9	1.0
Subtotal	4		6.6	7.0	7.5

This appropriation funds the JCSE requirements (4). There are recurring rollaway costs displayed with no quantities in the AEHF Mod Kits production years FY 2006 and FY 2007.

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SMART-T, December 31, 2002

16b. Program Funding Summary (Cont'd):

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	24		13.8	14.7	15.0
2000					
2001					
2002	1		1.1	1.1	1.2
2003	11		13.0	14.3	15.3
Subtotal	36		27.9	30.1	31.5

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	20	22.9	26.5	52.0	51.4
1997	23	18.6	11.3	34.7	34.7
1998		15.2		21.6	21.8
1999	45	25.8	25.7	56.1	57.3
2000		0.9		0.9	0.9
2001	29	2.1	25.6	34.0	35.5
2002	17	4.2	14.9	20.8	21.9
2003	3	6.6	3.4	11.2	11.9
2004	39	11.5	31.3	45.8	49.6
2005	52	11.3	38.7	53.7	59.0
2006		8.9	49.7	65.5	73.3
2007		7.3	33.4	47.7	54.3
2008		7.2	33.6	51.4	59.6
2009		2.9		10.3	12.2
2010		2.2		2.2	2.6
2011		2.0		2.0	2.5
2012		2.1		2.1	2.6
2013		2.1		2.1	2.6
2014		2.1		2.1	2.7
2015		2.1		2.1	2.7
2016		2.1		2.1	2.8
2017		2.1		2.1	2.8
2018		2.1		2.1	2.9
Subtotal	228	164.3	294.1	524.6	567.6

The 2035 appropriation funds the Army requirements (220) and the White House Communications Agency (8). There are recurring rollaway costs displayed with no quantities in the AEHF Mod Kits production years FY 2006-FY 2008.

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16b. Program Funding Summary (Cont'd):

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	9		4.7	5.1	5.1
1998				0.3	0.3
1999	20	1.1	9.0	14.0	14.3
2000				0.2	0.2
2001				0.2	0.2
2002				0.7	0.7
2003					
2004					
2005					
2006				0.5	0.6
2007				0.5	0.6
2008				1.6	1.9
Subtotal	29	1.1	13.7	23.1	23.9

Appropriation: 9992 - Procurement, Other Funding

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	4		3.5	3.5	3.7
2003				1.6	1.7
2004				0.6	0.6
2005					
2006			2.2	2.2	2.5
Subtotal	4		5.7	7.9	8.5

This appropriation funds requirements for a Joint Staff Special User (4). There are recurring rollaway costs displayed with no quantities in the AEHF Mod Kits production year FY 2006.

Service	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	228	164.3	294.1	860.9	899.6
OSD	4		6.6	7.0	7.5
Navy	36		27.9	30.1	31.5
USAF	29	1.1	13.7	23.1	23.9
Other Funding	4		5.7	7.9	8.5
Grand Total	301	165.4	348.0	929.0	971.0

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	116	116

Percent Total Program Quantities Delivered: 38.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 591.2

Percent Total Program Expended: 60.9%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The following assumptions and ground rules used to develop the operating and support costs for the SMART-T program are based on the November 1998 SMART-T Program Office Estimate (POE) prepared in association with the Milestone III Decision Review.

A three-level maintenance structure is the framework for SMART-T maintenance planning: Unit Level, Direct Support (DS) and Depot Level Maintenance. The SMART-T program assumes contractor support over the life of the program (15 years). The contractor accomplishes all depot level repairs under a five-year failure free warranty. Terminals will transition to organic sustainment at the completion of warranty. The conditions under which the SMART-T maintenance costs are calculated include using the annual operating hours per terminal of 1797 hours as extracted from the Operational Mode Summary (OMS) and Mission Profile (MP) section of the Milstar Advanced Satellite Terminal (MAST) Operational Requirements Document (ORD), dated Mar 10, 1992. The assumptions are based on a peacetime scenario.

There is no antecedent system.

b. Costs -- (FY 1999 Constant (Base-Year) Dollars in Thousands)

Cost Element	SMART-T Average Annual Cost Per Terminal	No Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	25.2	N/A
Intermediate Maintenance	7.4	N/A
Depot Maintenance	23.4	N/A
Contractor Support	11.6	N/A
Sustaining Support	1.1	N/A
Indirect Costs	15.5	N/A

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1999 Constant (Base-Year) Dollars in Thousands)

Cost Element	SMART-T Average Annual Cost Per Terminal	No Antecedent
Total	84.2	N/A

Total O&S Cost	SMART-T	No Antecedent
BY\$ (In Millions)	379.7	N/A
TY\$ (In Millions)	485.4	N/A

Report Creation Date: 03/26/2003 9:06:05 AM

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# A-1 ABRAMS UPGRADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: M1A2 ABRAMS UPGRADE

AS OF DATE: December 31, 2002

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1. (U) Designation and Nomenclature (Popular Name): Tank, Combat, Full Tracked, M1A2 (M1A2 Abrams Tank)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

PEO GCS	COL DONALD P. KOTCHMAN
ATTN: SFAE-GCS-AB	Assigned: April 6, 2001
6501 E. 11 MILE ROAD	DSN 786-6885; COMM (586) 574-6885
Warren, MI 48397-5000	kotchmad@tacom.army.mil

4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U) PE 0203735  
 (U) PE 0203758  
 (U) PE 0603639

PROCUREMENT:

(U) APPN 2033 ICN G82917 (Army)  
 (U) APPN 2033 ICN GA0151 (Army)  
 (U) APPN 2033 ICN GA0730 (Army)  
 (U) APPN 2033 ICN GA0750 (Army)  
 (U) APPN 2033 ICN GA0755 (Army)  
 (U) APPN 2033 ICN G81302 (Army)  
 (U) APPN 2033 ICN GC0161 (Army)  
 (U) APPN 2033 ICN GE0161 (Army)

O&M:

**CLEARED AS AMENDED**  
FOR OPEN PUBLICATION

MAR 18 2003 11

DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: Derived from Security Classification Guide for Abrams Tank  
 Downgrade instructions: upgraded to UNCLASSIFIED when separated from classified pages  
 Declassify on: declassify on Exemption 3 Date of Review 24 July 97~~

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4a. (U) Program Elements/Procurement Line Items (Cont'd):

(U) PE 118207 (Shared) M1 Overhaul

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 March 6, 2000.

6. (U) Mission and Description:

(U) The Abrams tank modernization strategy supports the Army Vision. The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower, situational awareness and shock effect. The 120 mm main gun on the M1A1 and M1A2, combined with the powerful 1,500 hp turbine engine and special armor, make the Abrams tank particularly suitable for attacking or defending against large concentrations of heavy armor forces in a highly lethal battlefield.

The M1A2 program provides the Abrams tank with the necessary improvements in lethality, survivability, and fightability required to defeat advanced threats. The M1A2 includes a commander's independent thermal viewer, an improved commander's weapon station, position navigation equipment, a distributed data and power architecture, an embedded diagnostic system, and improved fire control system. The M1A2 System Enhancement Program (SEP) adds second-generation thermal sensors, Thermal Management System (TMS) and upgrades to processors/memory to enable the M1A2 to use the Army's common command and control software enabling the rapid transfer of digital situational data and overlays.

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 Army System Acquisition Review Council (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. In FY99, a System Enhancement Package (SEP) Engineering Change Proposal (ECP) was incorporated into the M1A2 configuration. The SEP ECP includes the Force XXI Battle Command Brigade and Below (FBCB2) digitization requirements, Second Generation Forward Looking Infra Red (FLIR) sights, an upgrade to the computer core, color flat panel displays, and an environmental conditioning unit to mitigate power

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M1A2 ABRAMS UPGRADE, December 31, 2002

7. (U) Executive Summary (Cont'd):

consumption and electronics heat.

An Acquisition Decision Memorandum (ADM), signed on December 18, 1992 by the Deputy to the Deputy to the Undersecretary of Defense (Acquisition) (DUSD(A)), approved the Army's first Acquisition Program Baseline (APB) 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 LRIP M1A2 tanks was delivered in March 1994. The M1A2 Milestone III ASARC was held on April 8, 1994. The resultant ADM, approving the M1A2 for full scale production and deployment, was signed by the AAE on April 20, 1994.

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 latest APB was approved by the AAE on March 6, 2000. The M1A2 SEP FUE took place in July 2000.

The M1A2 Test and Evaluation Master Plan (TEMP) Update 04 which includes the survivability analysis for the M1A2 Tank 2000 was signed by the Office of the Secretary of Defense (OSD) in December 2000. M1A2 SEP Conditional Material Release was obtained in March 2000. Field Operator's Test and Evaluation IV (FOTE IV) was successfully completed at Ft Hood in November 2000. The M1A2 SEP performed well at the Division Capstone Exercise (DCX) at Ft Irwin with both offensive and defensive operations receiving accolades from the owning units. The DCX test also verified the digital communication compatibility of the M1A2 SEP tank with platforms on both the Single-channel Ground and Airborne Radio System (SINGARS) network and Enhanced Position Location Reporting System (EPLRS) network, which included the Bradley M2A3 and the Kiowa Warrior.

On August 17, 2001 the Vice Chief of Staff of the Army (VCSA) approved a full recapitalization program for the Abrams tank which procured 966 SEP (547 upgrade & 419 retrofit) tanks for the Counter Attack Corps (CATK) and 790 AIM tanks for the Containment Force (CF). This reduced the total number of M1A2 tanks being retrofit to the SEP configuration from 608 to 419 reducing the total number of SEPs from 1155 to 966. In October 2002, the Army further reduced the number of M1A2 SEPs from 966 to 588 reducing the number of SEP retrofits from 419 to 41.

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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 1985	FEB 1985	FEB 1985
Award Block II Preliminary System Development Contract	JUL 1985	JUL 1985	JUL 1985
Award ICWS/SE #3 Preliminary Engineering Development Contract	SEP 1986	SEP 1986	SEP 1986
Award CO2 LRF Preliminary Engineering Development Contract	SEP 1986	SEP 1986	SEP 1986
Award Block II Advanced System Development Contract	DEC 1987	DEC 1987	DEC 1987
M1A2 Milestone II Decision Review	DEC 1988	DEC 1988	DEC 1988
Award Block II FSD Contract	DEC 1988	DEC 1988	DEC 1988
DAB Program Review	AUG 1989	AUG 1989	AUG 1989
Special M1A2 ASARC	MAR 1990	MAR 1990	MAR 1990
First Prototype Delivery (FSED) Technical Test	JAN 1991	JAN 1991	JAN 1991
Start	JAN 1991	JAN 1991	JAN 1991
Complete	MAR 1992	MAR 1992	MAR 1992
User Test			
Start	JUN 1991	JUN 1991	JUN 1991
Complete	DEC 1991	DEC 1991	DEC 1991
LRIP Decision (62 Tanks)	MAR 1992	MAR 1992	MAR 1992
Mod FY91 M1A1 Production Contract (Incorporating Block II Changes)	MAY 1992	MAY 1992	MAY 1992
First M1A2 Production Delivery	NOV 1992	NOV 1992	NOV 1992
Live Fire Test			

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9a. (U) Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Start	JAN 1993	JAN 1993	JAN 1993
Complete	JUL 1993	JUL 1993	OCT 1993
Production Qualification Test			
Start	FEB 1993	FEB 1993	FEB 1993
Complete	AUG 1994	AUG 1994	DEC 1994
IOC (Training Base)	FEB 1993	FEB 1993	FEB 1993
Initial Operational Test and Evaluation			
Start	SEP 1993	SEP 1993	SEP 1993
Complete	DEC 1993	DEC 1993	DEC 1993
First Upgrade Pilot Delivery	MAR 1994	MAR 1994	MAR 1994
M1A2 MS III Decision	APR 1994	APR 1994	APR 1994
First Unit Equipped (CONUS)	JUN 1995	JUN 1995	OCT 1995
Depot Support Established	SEP 1997	SEP 1997	SEP 1997

(U) ASARC - Army System Acquisition Review Council  
 APB - Approved Program Baseline  
 CO2 LRF - Carbon Dioxide Laser Range Finder  
 CONUS - Continental United States  
 DAB - Defense Acquisition Board  
 FSD - Full Scale Development  
 FSED - Full Scale Engineering Development  
 ICWS/SE - Improved Commander's Weapon Station / System Enhancement  
 IOC - Initial Operational Capability  
 LRIP - Low Rate Initial Production  
 MS III - Milestone III  
 SAR - Selected Acquisition Report

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated 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	254	243
Without NBC	270	270 / 256	270	256

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10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
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
Fightability-Improved	40	40 / 25	25	25
Commander's Weapon Station Visibility over M1A1 (%)				
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
115mm APFSDS (Hull/Turret Side Crew Areas, Bustle/Hull Ammo Comp)				
Targets Acquired/Unit Time Over M1A1 (%)				
Average 1st Round Hit Probabilities (Round/Condition/Ranges)				
Heat/S-S/1500-3000m				
Heat/S-M/1500-2500m				
Heat/M-S/1500-2500m				

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(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Heat/M-M/1500-2500m	(b)(1)			
KE/S-S/1500-3000m	(b)(1)			
KE/S-M/1500-2500m	(b)(1)			
KE/M-S/1500-2500m	(b)(1)			
KE/M-M/1500-2500m	(b)(1)			
Armor Protection vs Threat (deg)				
Heat Rounds:				
127mm ATGM (Hull & Turrent Side Crew Areas Bustle and Hull Ammo Compartment)	(b)(1)			
81mm HHIW (Hull Ammo Compartment)	(b)(1)			
81mm HHIW (Turret Bustle Compartment)	(b)(1)			
150mm ATGM (Turret & Hull Front)	(b)(1)			
Kinetic Energy Rounds:				
125mm APFSDS @ 800-1200mm (Turret Front)	(b)(1)			
115mm APFSDS (Hull Front)	(b)(1)			

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- (U) APB - Aproved Program Baseline
- APFSDS - Armor Piercing Fin Stabilized Discarding Sabot
- ATGM - Anti Tank Guided Missile
- BIT - Built In Test
- grnd - ground
- HHIW - Hand Held Infantry Weapon
- KE - Kinetic Energy
- LRU - Line Replaceable Unit
- m - meters
- M-M - Moving Tank / Moving Target
- M-S - Moving Tank / Stationary Target
- MMBF - Mean Miles Between Failure
- mph - miles per hour
- NBC - Nuclear, Biological & Chemical
- S-M - Stationary Tank / Moving Target
- S-S - Stationary Tank / Stationary Target
- sec - seconds

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10a. (U) Performance Characteristics (Cont'd):

TBD - To Be Determined  
 UAAPU - Under Armor Auxiliary Power Unit

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	755.4	907.8	868.7
Procurement	6028.6	7981.8	6178.9
Rollaway	(4968.9)		(5127.3)
Other Wpn System	(791.1)		(827.4)
Peculiar Support	(108.5)		(119.3)
Initial Spares	(160.1)		(104.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	207.9	85.3	85.3
Total FY 1995 Base-Year \$	<u>6991.9</u>	<u>8974.9</u>	<u>7132.9</u>
Escalation	970.0	822.7	303.1
Development (RDT&E)	(-84.8)	(-64.3)	(-69.0)
Procurement	(1020.8)	(885.3)	(370.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(34.0)	(1.7)	(1.7)
Total Then Year \$	<u>7961.9</u>	<u>9797.6</u>	<u>7436.0</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1060	1155	1155
Total	<u>1060</u>	<u>1155</u>	<u>1155</u>

Note: Excludes 10 RDT&E prototypes from the SAR Baseline that are not considered fully configured.

(U) Excluded are an additional 15 production pilots and 4 upgrade pilots that are not considered fully configured end items. The total procurement quantity of 1155 M1A2 tanks includes 62 Low Rate Initial Production (LRIP) new production M1A2 tanks (approved in March 1992), which were all delivered in FY93, and 1093 M1A2 tanks upgraded from M1 tanks.

c. (U) Foreign Military Sales --

COUNTRY	QUANTITY/MODEL	CASE VALUE
Saudi Arabia	315/M1A2 Abrams Tanks	\$3.0 Billion
Kuwait	218/M1A2 Abrams Tanks	\$1.9 Billion

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M1A2 ABRAMS UPGRADE, December 31, 2002

11d. (U) Total Program Cost and Quantity (Cont'd):

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	8974.9	7132.9	
(2) Quantity	1155	1155	
(3) Unit Cost	7.770	6.176	-20.51
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	7981.8	6178.9	
(2) Quantity	1155	1155	
(3) Unit Cost	6.911	5.350	-22.59

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	+5.3	-358.1	-	-1.4	-354.2
Quantity	-	-359.5	-	-	-359.5
Schedule	-	-200.2	-	-10.5	-210.7
Engineering	+25.0	+136.3	-	-	+161.3
Estimating	+122.5	+1714.6	-	-143.0	+1694.1
Other	-	-	-	-	-
Support	-	+203.2	-	-	+203.2
Subtotal	+152.8	+1136.3	-	-154.9	+1134.2
Current Changes:					
Economic	-0.3	+106.7	-	-	+106.4
Quantity	-	-1488.4	-	-	-1488.4
Schedule	-	-	-	-	-
Engineering	-22.2	-	-	-	-22.2
Estimating	-1.2	+4.6	-	-	+3.4
Other	-	-	-	-	-
Support	-	-259.3	-	-	-259.3
Subtotal	-23.7	-1636.4	-	-	-1660.1
Total Changes	+129.1	-500.1	-	-154.9	-525.9
Current Estimate	799.7	6549.3	-	87.0	7436.0

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M1A2 ABRAMS UPGRADE, December 31, 2002

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	-	-203.3	-	-	-203.3
Schedule	-	-	-	-	-
Engineering	+22.9	+118.1	-	-	+141.0
Estimating	+111.2	+1358.8	-	-122.6	+1347.4
Other	-	-	-	-	-
Support	-	+183.5	-	-	+183.5
Subtotal	+134.1	+1457.1	-	-122.6	+1468.6
Current Changes:					
Quantity	-	-1119.4	-	-	-1119.4
Schedule	-	-	-	-	-
Engineering	-19.6	-	-	-	-19.6
Estimating	-1.2	+4.2	-	-	+3.0
Other	-	-	-	-	-
Support	-	-191.6	-	-	-191.6
Subtotal	-20.8	-1306.8	-	-	-1327.6
Total Changes	+113.3	+150.3	-	-122.6	+141.0
Current Estimate	868.7	6178.9	-	85.3	7132.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Reduction of non-survivability portion of Live Fire Test. (Engineering)	-19.6	-22.2
Adjustment for current and prior inflation. (Estimating)	+0.3	+0.3
Miscellaneous budget adjustments to program. (Estimating)	-1.5	-1.5
RDT&E Subtotal	<u>-20.8</u>	<u>-23.7</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-69.7
Economic adjustment for negative program change. (Economic)	N/A	+176.4
Reduction of 378 in SEP retrofit quantity from 419 to 41. (Quantity)	-1119.4	-1488.4
Adjustment for current and prior inflation. (Estimating)	+21.2	+25.9
Miscellaneous budget adjustments to program. (Estimating)	-17.0	-21.3

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M1A2 ABRAMS UPGRADE, December 31, 2002

13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for current and prior inflation. (QR) (Support)	+5.4	+6.5
Change in Initial Spares due to decrease in SEP retrofit quantity. (QR) (Support)	-42.7	-56.6
Change in Peculiar Support due to decrease in SEP retrofit quantity. (QR) (Support)	-16.3	-20.9
Change in Other WPN System due to decrease in SEP retrofit quantity. (QR) (Support)	-138.0	-188.3
Procurement Subtotal	<u>-1306.8</u>	<u>-1636.4</u>

QR = Quantity 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	
7.51	-0.215	-2.22	-0.182	+0.120	+1.47	--	-0.049	-1.07	6.44

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	-0.218	-2.15	-0.173	+0.118	+1.49	--	-0.049	-0.980	5.67

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M1A2 ABRAMS UPGRADE, December 31, 2002

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 1988	DEC 1988
Milestone III	N/A	N/A	APR 1994	APR 1994
IOC	N/A	N/A	JUN 1995	OCT 1995
Total Cost	N/A	N/A	7961.9	7436.0
Total Quantity	N/A	N/A	1060	1155
Prog Acq Unit Cost	N/A	N/A	7.5	6.4

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --	Initial Contract Price		
(U) Upgrade Production:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Dynamics Corp., Warren, MI			
DAAE07-00-C-N044, FFP	\$741.2	N/A	307
Award: March 30, 2001			
Definitized: March 30, 2001			
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$741.2	\$741.2	

Explanation of Change:

(U) None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

This contract was converted from the Long Lead Material (LLM) funding contract to a 3 year multiyear production contract starting in FY01. Since this is a FFP contract, cost and schedule variance information is not required.

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M1A2 ABRAMS UPGRADE, December 31, 2002

15. (U) Contract Information (Cont'd):

(U) TRANSMISSION: ALLISON TRANSMISSION, INDIANAPOLIS IN DAAE07-01-C-N040, FFP/CPFF Award: December 22, 2000 Definitized: December 28, 2000	Initial Contract Price <u>Target</u> <u>Ceiling</u> Qty
	\$51.7              N/A              307

Current Contract Price <u>Target</u> <u>Ceiling</u> Qty	Estimated Price At Completion <u>Contractor</u> <u>Program Manager</u>
\$51.7              N/A              307	\$51.7              \$51.7

Explanation of Change:

(U) None.

Cost and Schedule variance reporting is not required on this FFP/CPFF 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 (FY85-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06)</u>	<u>Total</u>
RDT&E	799.7	-	-	-	799.7
Procurement	6440.2	98.3	5.4	5.4	6549.3
MILCON	-	-	-	-	-
O&M	87.0	-	-	-	87.0
Total	7326.9	98.3	5.4	5.4	7436.0

b. Annual Summary -- M1A2 ABRAMS Upgrade

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				47.9	36.2
1986				29.2	22.7
1987				30.6	24.5
1988				89.3	74.4
1989				142.9	123.9

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MIA2 ABRAMS UPGRADE, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				84.2	75.8
1991				126.3	117.9
1992				74.9	71.6
1993				7.7	7.5
1994				32.9	32.8
1995				16.6	16.9
1996				49.1	50.8
1997				66.1	69.1
1998				35.1	37.0
1999				15.7	16.7
2000				11.4	12.3
2001				8.6	9.4
2002				0.2	0.2
2003					
2004					
2005					
Subtotal				868.7	799.7

Appropriation: 2033 - Procurement of W&TCV

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986		6.3		6.3	5.1
1987		0.7		0.7	0.6
1988					
1989					
1990		107.3		196.1	182.3
1991	62	91.8	258.0	495.5	474.5
1992				232.6	227.5
1993				163.1	162.7
1994	172	34.5	580.4	131.1	133.1
1995	34		122.2	289.0	298.5
1996	100		331.1	545.3	570.8
1997	120		409.4	458.0	483.5
1998	120		449.1	560.1	597.8
1999	120		571.6	661.9	711.9
2000	120		532.6	753.8	822.0
2001	100		594.5	491.9	541.2
2002	104		585.7	644.5	716.5
2003	103		452.1	454.0	512.2
2004				85.8	98.3
2005				4.6	5.4

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M1A2 ABRAMS UPGRADE, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2033 - Procurement of W&TCV

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				4.6	5.4
2007					
2008					
2009					
2010					
2011					
2012					
Subtotal	1155	240.6	4886.7	6178.9	6549.3

(U) Within FY01-FY03, recurring rollaway dollars includes SEP Retrofit Program, which has no additional quantities associated with it. The VCSA recapitalization decision on August 17, 2001 reduced the total number of M1A2 to M1A2 SEP retrofits from 608 to 419. In October 2002, the Army further reduced the number of SEP retrofits from 419 to 41. The total number of M1A2s produced is 1155 but only 588 will be in a SEP configuration. The remaining 567 vehicles will stay in the M1A2 configuration.

Appropriation: 2020 - Operation & Maintenance, Army

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 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				20.1	20.7
1997				23.8	24.9
Subtotal				85.3	87.0

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1155	240.6	4886.7	7132.9	7436.0

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M1A2 ABRAMS UPGRADE, December 31, 2002

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	992	992

(U) Percent Total Program Quantities Delivered: 85.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 6210.6

(U) Percent Total Program Expended: 83.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
Active Army units for M1A1 and M1A2 drive an average of 800 miles per year. Source for unit level consumption: Operating & Support Management Information System (OSMIS) 2003. Depot maintenance for M1A1 includes Abrams Intergrated Management (AIM) tank overhauls of 125 per year averaged over the M1A1 fleet. Mod Kits costs were taken from the 2004 President's Budget for Abrams Mods SSN GA0700 and averaged per year per vehicle FY03 - FY07. Total O&S Cost is for 588 Abrams Upgrade vehicles over 20 years. Total O&S Cost is for 3443 M1A1 Abrams Vehicles over 20 years.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	M1A2 ABRAMS Upgrade M1A2 Avg Annual Cost per Active BN	ABRAMS M1A1 Avg Annual Cost per Active BN
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	196.2	149.7
Intermediate Maintenance	41.6	28.5
Depot Maintenance	9.5	30.3
Contractor Support	9.6	0.4
Sustaining Support	0.7	0.7
Indirect Costs	1.8	2.2
Maintenance Personnel -	0.7	0.5
Indirect Support Personn	148.5	133.6
Training (OPA, MPA, OMA)	145.2	137.9
War Reserve Ammo	9.3	9.3
Modification Kits	14.6	33.4
Crew Costs	123.4	123.4
Total	701.1	649.9

Total O&S Cost	M1A2 ABRAMS Upgrade	ABRAMS M1A1
BY\$ (In Millions)	8244.9	44752.1
TY\$ (In Millions)	10798.4	59327.9

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N-3 AIM-9X

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: AIM-9X

AS OF DATE: December 31, 2002

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FOR OPEN PUBLICATION  
~~AMENDED~~ **AS AMENDED**  
MAR 24 2003 **6**  
DIRECTORATE FOR FREEDOM OF INFORMATION  
AND SECURITY REVIEW  
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Popular Name): AIM-9X/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 Scott Stewart
47123 Buse Road Unit IPT, Suite 451	Assigned: October 18, 2002
Patuxent River, MD 20670-1547	DSN 757-7311; COMM (301)757-7311
	Stewartsd@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

PROCUREMENT:

- (U) APPN 1507 ICN 0204162N (Navy)
- (U) APPN 1507 ICN 0206138M (Navy)
- (U) APPN 3020 ICN 0207161F (Air Force)

No Security Objection  
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03-C-0486  
MAR 24 2003  
*[Signature]*  
Office of the Chief of  
Naval Operations  
Dept. of the Navy

Derived from:  
Downgrade instruction: Sidewinder AIM-9X Not Security Class Guide of 10/30/01  
Declassify on: X3

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03-C-0486

AIM-9X, December 31, 2002

5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline dated January 15, 1997.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 21, 2000.

6. (U) Mission and Description:

(U) The AIM-9X Sidewinder is a 5th generation Infra-Red (IR) air-to-air missile that complements the Advanced Medium Range Air-to-Air Missile (AMRAAM). Air superiority is essential to the warfighter and includes first-shot, first-kill opportunity against an enemy employing IR countermeasures. Improvements in missile seeker performance and kinematic capability allow current missile components to be retrofitted to the maximum extent possible. These improvements extend the AIM-9X's capability into the Near Beyond Visual Range arena resulting in a more effective balance with AMRAAM. AIM-9X provides a kill region before a fighter-bogey merge, where AMRAAM capability is not achievable at high off boresight angles or may be denied by electronic attack.

7. (U) Executive Summary:

(U) In September 2001, the Navy Acquisition Executive approved production for Low Rate Initial Production (LRIP) II and III missiles. The contract for LRIP II was awarded to Raytheon Missile Systems in November 2001. The LRIP III contract was awarded in November 2002. Initial Operational Test and Evaluation (IOT&E) was initiated in FY 2002.

In December 2001, the program completed all developmental testing objectives. Tests included missile level qualification, ship and field suitability, carrier suitability, and numerous logistics demonstrations for both Navy and Air Force. A total of 20 separation and 19 guided launches were completed over the development program with results successfully matching modeling and simulation.

In January 2002, the program passed its Operational Test (OT) Readiness Review. A Navy target mishap in March 2002 grounded full-scale targets. These targets are crucial to AIM-9X OT. The program office took advantage of the Navy target-down time to exit OT and retrofit the missile's Control Actuation System (CAS) with a more reliable fin position indicator. OT had identified that the previous design caused nuisance false alarms that were disrupting testing. Testing restarted in August 2002, however, Navy targets remained down through December 2002. As of December 31, 2002 the USAF has shot four of the required 22 OT shots. Despite test execution delays, OT results thus far appear very positive; four launches were completed with test-instrumentation packages in place of the missile's warhead and still three targets were completely destroyed. Test execution delays due to full-scale target availability could delay the September 2003 Full Rate Production (FRP) decision.

The prime contractor is self motivated to continuously improve missile reliability. The missile is already realizing reliability numbers comparable

7. (U) Executive Summary (Cont'd):

to its AIM-9M predecessor. The program is qualifying reliability improvements for incorporation into future production lots.

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 1994	DEC 1994	DEC 1994
DEM/VAL Contract Award	DEC 1994	DEC 1994	DEC 1994
Early Operational Assessment			
Start	FEB 1995	FEB 1995	MAR 1995
Complete	FEB 1996	FEB 1996	MAY 1996
Milestone II	OCT 1996	OCT 1996	DEC 1996
EMD Contract Award	JAN 1997	JAN 1997	DEC 1996
Critical Design Review	JUL 1998	JUL 1998	MAR 1998
IOT&E			
Complete	AUG 2001	NOV 2002	MAY 2003 (Ch-1)
LRIP DAB Decision	APR 2000	APR 2000	SEP 2000
Milestone III SAE Review	MAR 2002	MAR 2003	SEP 2003 (Ch-2)
Initial Operational Capability	AUG 2002	SEP 2003	SEP 2003

(U) ACRONYMS

DEM/VAL - Demonstration and Validation  
EMD - Engineering and Manufacturing Development

9a. (U) Schedule (Cont'd):

IOT&E - Initial Operational Test and Evaluation  
 LRIP - Low Rate Initial Production  
 DAB - Defense Acquisition Board  
 SAE - Service Acquisition Executive

b. Current Change Explanations --

(U) All dates listed for Approved Program Baseline (APB) are the objective goals.

(Ch-1) The Program Manager's Estimate is revised for IOT&E complete from Jan 2003 to May 2003 based on current IOT&E schedule. Threshold requirement is May 2003. This revision was due to the delay in the availability of the Navy drones.

(Ch-2) The Program Manager's Estimate is revised for MS III SAE Review from Jun 2003 to Sep 2003 based on revised IOT&E schedule. Threshold requirement is Sep 2003.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAB)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Day/Night Capability	(b)(1)			
Infrared counter counter measures (IRCCM)	(b)(1)			
Aircraft Interface	(b)(1)			
Missile Weight (lbs)	<.or.= 192	<.or.= 192 / <.or.= 210	<.or.= 186	<.or.= 192
Missile Size	(b)(1)			
Length (in.)	<.or.= 115	<.or.= 115 / <.or.= 123	119.2	119.2
Box Size (in.)	<.or.= 12.5 x 12.5	<.or.= 12.5 x 12.5 / <.or.= 12.5	<12.15 x 12.15	<.or.= 12.5 x 12.5
Diameter (in.)	5	5 / <.or.= 7	5	5
Digital Interface	Employ from current fighter	Employ from current fighter / Employ from future/current	Employed from F/A-18 C/D and	Employ from current fighter

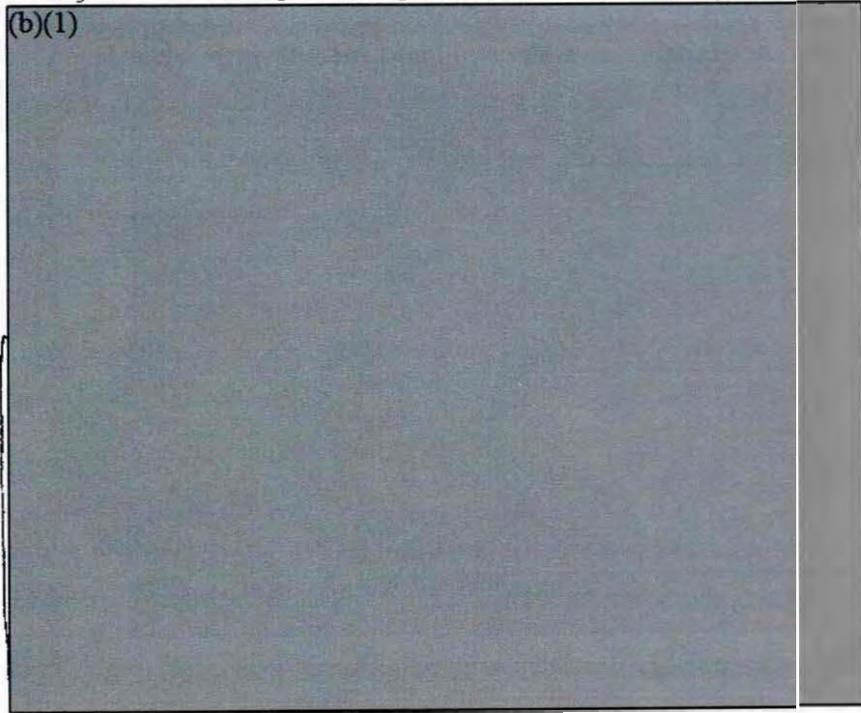
10a. (U) Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	aircraft without digital inter-face	aircraft/ fighter without / aircraft digital / with inter- / digital face / inter- / face	F-15C with digital inter-face	aircraft with digital inter-face
Off Boresight Capability 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 aircraft/ radar systems / systems which / and provide / planned accurate/ Helmet Line of / Mounted Site to / Cueing target / System	JHMCS and Radar on both F-15C and F/A-18C/ D	Inter-face to all current and planned aircraft systems which provide accurate Line of Site to target

~~/~~ Acquisition (deg.)

~~/~~ Track (deg.)

~~/~~ Launch (deg.)  
~~/~~ Probability of Kill



10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
(U) Captive Carry Reliability (hr.)	(b)(1)			
(U) Incoming Missile Reliability	(b)(1)			
Detect Non-Operational Missile (BIT) All Components	>.or.= 0.80	>.or.= / >.or.= 0.80 / 0.60	.90	>.or.= 0.90
Detect Non-Operational Missile (BIT-able Components)	>.or.= 0.95	>.or.= / >.or.= 0.95 / 0.90	.90	>.or.= 0.90
False Alarm Rate	<.or.= .01	<.or.= / <.or.= .01 / 0.01	18 hours	>.or.= 18 hours
BIT Time (sec)	<.or.=20	<.or.=20 / <.or.=20	<20	<.or.=20

(U) BIT - Built-In-Test

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	531.4	531.4	580.7
Procurement	1932.6	1932.6	1934.1
Flyaway	(1677.2)		(1839.3)
Non-Recurring			(4.4)
Total Flyaway	(1677.2)		(1843.7)
Other Weapons Systems	(138.2)		(0.0)
Peculiar Support	(78.1)		(63.2)
Initial Spares	(39.1)		(27.2)
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 1997 Base-Year \$	2464.0	2464.0	2514.8
 Escalation	 768.9	 768.9	 493.2
Development (RDT&E)	(22.1)	(22.1)	(17.7)
Procurement	(746.8)	(746.8)	(475.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	3232.9	3232.9	3008.0

(U) Costs listed for Approved Program (APB) are the objective goals.

Funding for Seek Eagle is not included in the current estimate above. It is reported in a separate program element and managed at Eglin Air Force Base (AFB), FL.

b. (U) Quantity --

Development (RDT&E)	49	49	45
Procurement	<u>10000</u>	<u>10000</u>	<u>10097</u>
Total	10049	10049	10142

(U) Note: The LRIP quantities approved at Milestone II were 150 (1st year), 250 (2nd year) and 600 (3rd year). Approved LRIP quantities on contract are 130 for LRIP I, 243 for LRIP II, and 570 for LRIP III. This does not represent more than 10% of the planned program buy.

c. (U) Foreign Military Sales --

There has been considerable international interest in the AIM-9X. Approved classified briefs have been given to Australia, Norway, Belgium, Denmark, the Netherlands, Canada, Korea, Switzerland, Finland, Poland, Turkey, and Portugal. Korea signed a Letter of Offer and Acceptance (LOA) to procure AIM-9X for use on their F-15K aircraft. Poland plans to sign a LOA in March 2003 to procure AIM-9X for use on their F-16 aircraft. Switzerland has selected the AIM-9X and plans to sign a LOA in December 2003 for use on their F/A-18 aircraft.

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	2464.0	2514.8	
(2) Quantity	10049	10142	
(3) Unit Cost	0.245	0.248	+1.22
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	1932.6	1934.1	
(2) Quantity	10000	10097	
(3) Unit Cost	0.193	0.192	-0.52

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	553.5	2679.4	-	3232.9
Previous Changes:				
Economic	-16.3	-240.8	-	-257.1
Quantity	-0.8	+20.3	-	+19.5
Schedule	+25.4	+60.9	-	+86.3
Engineering	+19.1	+151.3	-	+170.4
Estimating	-19.1	+10.3	-	-8.8
Other	-	-	-	-
Support	-	-285.9	-	-285.9
Subtotal	+8.3	-283.9	-	-275.6
Current Changes:				
Economic	-1.4	-71.6	-	-73.0
Quantity	-	-	-	-
Schedule	-	+39.7	-	+39.7
Engineering	+37.4	-	-	+37.4
Estimating	+0.6	+3.4	-	+4.0
Other	-	-	-	-
Support	-	+42.6	-	+42.6
Subtotal	+36.6	+14.1	-	+50.7
Total Changes	+44.9	-269.8	-	-224.9
Current Estimate	598.4	2409.6	-	3008.0

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	-0.8	+13.7	-	+12.9
Schedule	+21.3	-	-	+21.3
Engineering	+18.4	+116.3	-	+134.7
Estimating	-22.7	+13.7	-	-9.0
Other	-	-	-	-
Support	-	-199.4	-	-199.4
Subtotal	+16.2	-55.7	-	-39.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+19.6	-	+19.6
Engineering	+32.5	-	-	+32.5
Estimating	+0.6	+3.2	-	+3.8
Other	-	-	-	-
Support	-	+34.4	-	+34.4
Subtotal	+33.1	+57.2	-	+90.3
Total Changes	+49.3	+1.5	-	+50.8
Current Estimate	580.7	1934.1	-	2514.8

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-1.4
Navy Control Actuation System (CAS)	+21.8	+24.8
Built-In-Test (BIT) failure repairs, completion of EMD, and Active Optical Target Detector (AOTD) (Fuze) redesign. (Engineering)		
AF CAS BIT failure repairs, completion of EMD, and AOTD redesign. (Engineering)	+10.7	+12.6
Navy Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
AF Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
RDT&E Subtotal	+33.1	+36.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-71.6
Navy revision of procurement profile resulted in the shifting of missiles out of the FYDP. (Schedule)	+19.8	+32.0

13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
AF revision of procurement profile resulted in shifting of missiles out of the FYDP. (Schedule)	-0.2	+7.7
Navy Adjustment for Current and Prior Inflation. (Estimating)	+1.6	+1.7
AF Adjustment for Current and Prior Inflation (Estimating)	+1.6	+1.7
Navy Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Navy revised initial spares estimate to reflect change in quantity profile. (Support)	+9.6	+11.2
Navy revised peculiar support estimate for training support and equipment. (Support)	+22.3	+28.5
AF Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
AF revised initial spares estimate to reflect change in quantity profile. (Support)	+2.2	+2.6
AF revised peculiar support estimate for training support and equipment. (Support)	-0.1	-0.1
Procurement Subtotal	+57.2	+14.1

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	
0.322	-0.033	--	+0.012	+0.020	--	--	-0.024	-0.025	0.297

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	
0.268	-0.031	--	+0.010	+0.015	+0.001	--	-0.024	-0.029	0.239

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 1994	DEC 1994	N/A	DEC 1994
Milestone II	OCT 1996	OCT 1996	N/A	DEC 1996
Milestone III	SEP 2002	MAR 2002	N/A	SEP 2003
IOC	SEP 2003	AUG 2002	N/A	SEP 2003
Total Cost	695.0	3232.9	N/A	3008.0
Total Quantity	0	10049	N/A	10142
Prog Acq Unit Cost	0.0	0.3	N/A	0.3

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., Tucson, AZ	\$169.2	N/A	49
N00019-97-C-0027, CPIF/AF			
Award: December 13, 1996			
Definitized: December 13, 1996			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$267.4	N/A	\$315.4	\$315.4
	<u>Qty</u>	<u>Cost Variance Schedule Variance</u>	
	45	\$-6.1	\$-1.7
Previous Cumulative Variances		\$-0.2	\$-0.2
Cumulative Variances To Date (12/31/02)		\$5.9	\$1.5
Net Change			

Explanation of Change:

(U) Net favorable change in cumulative cost and schedule variances are due to delay in the execution of Operational Evaluation (OPEVAL).

(U) Contract Comments:

15. (U) Contract Information (Cont'd):

Contract is 99% complete. This is the last time it will be reported. Contract extended to September 30, 2003 to reflect extension of OPEVAL testing. The initial and current contract prices do not include the contractor's investment of \$48M. The estimated price at completion includes the investment of \$48M.

The increase between initial contract price and current contract price is caused by \$21.4M of scope growth (e.g., anti-tamper implementation, OT-IIA support), \$13.0M of undistributed award fee, and \$43.6M from the rebaseline due to the September 1999 APB revision and loss of Fiscal Year 2000 procurement funds.

b. Procurement --	Initial Contract Price		
(U) <u>AIM-9X:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Hughes Aircraft Co., Tucson, AZ	\$49.7	N/A	130
N00019-97-C-0027, FFP			
Award: November 20, 2000			
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>
\$204.3	N/A	943	\$204.3	\$204.3

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Initial contract price is for LRIP I. Current contract price combines LRIP I, LRIP II and LRIP III. LRIP II activities fully funded. Current contract price for LRIP III as of December 2002.

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AIM-9X, December 31, 2002

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY95-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-18)	<u>Total</u>
RDT&E	533.0	2.7	9.7	53.0	598.4
Procurement	224.4	108.6	92.0	1984.6	2409.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	757.4	111.3	101.7	2037.6	3008.0

(U) Funding for P3I AOTD Program included in the RDT&E appropriation.

b. Annual Summary -- AIM9X

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1997 Dollars Nonrec</u>	<u>Flyaway FY 1997 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				47.6	46.4
Subtotal				47.6	46.4

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1997 Dollars Nonrec</u>	<u>Flyaway FY 1997 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1996				28.3	28.1
1997				44.4	44.6
1998				54.4	55.1
1999				55.6	57.0
2000				38.0	39.5
2001				22.6	23.8
2002				16.8	17.9
2003				1.8	1.9
2004				2.1	2.3
2005				3.7	4.1
2006				8.3	9.4
2007				6.9	7.9
2008				2.1	2.5
2009				1.1	1.3
Subtotal	23			286.1	295.4

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AIM-9X, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				18.9	18.8
1997				29.0	29.1
1998				50.3	50.9
1999				47.8	49.0
2000				37.9	39.4
2001				20.6	21.7
2002				6.5	6.9
2003				2.7	2.9
2004				0.4	0.4
2005				5.1	5.6
2006				13.3	15.0
2007				4.9	5.6
2008				4.8	5.6
2009				4.8	5.7
Subtotal	22			247.0	256.6

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001	63	1.0	21.4	25.9	27.5
2002	105	0.1	20.0	23.4	25.1
2003	284	0.1	47.0	48.8	53.1
2004	167	0.1	30.5	33.6	37.2
2005	162	0.1	30.9	33.4	37.5
2006	173	0.1	32.5	35.9	41.0
2007	229	0.1	40.0	44.7	52.0
2008	213	0.1	39.4	45.3	53.6
2009	183	0.1	35.2	41.1	49.6
2010	381	0.1	68.6	71.9	88.3
2011	380	0.1	67.3	70.7	88.3
2012	380	0.1	67.4	70.8	90.0
2013	380	0.1	69.2	72.7	94.2
2014	380	0.1	68.7	72.3	95.3
2015	380	0.1	67.5	71.2	95.5
2016	380	0.1	67.6	71.3	97.4
2017	380	0.1	69.5	73.3	101.9
2018	380	0.1	68.9	69.3	98.1
Subtotal	5000	2.7	911.6	975.6	1225.6

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001	67	0.1	22.7	27.0	28.7
2002	138	0.1	27.0	31.8	34.2
2003	286	0.1	47.2	51.2	55.8
2004	364	0.1	60.9	64.6	71.4
2005	256	0.1	45.2	48.5	54.5
2006	265	0.1	46.7	49.6	56.7
2007	265	0.1	44.5	47.4	55.2
2008	263	0.1	45.2	47.3	56.0
2009	257	0.1	45.5	47.5	57.3
2010	392	0.1	70.1	70.2	86.2
2011	392	0.1	69.0	69.1	86.3
2012	389	0.1	68.5	68.6	87.3
2013	300	0.1	57.5	57.6	74.6
2014	300		57.1	57.1	75.3
2015	300	0.1	56.1	56.2	75.4
2016	300	0.1	56.1	56.2	76.8
2017	300	0.1	57.7	57.8	80.4
2018	263	0.1	50.7	50.8	71.9
Subtotal	5097	1.7	927.7	958.5	1184.0

(U) Funding for Seek Eagle is not included here and is in a separate program element and managed at Eglin Air Force Base (AFB), FL.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				47.6	46.4
Navy	5023	2.7	911.6	1261.7	1521.0
USAF	5119	1.7	927.7	1205.5	1440.6
Grand Total	10142	4.4	1839.3	2514.8	3008.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	45	45
Procurement	10	10

(U) Percent Total Program Quantities Delivered: 0.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 544.2

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17b. (U) Delivery/Expenditure Information (Cont'd):

(U) Percent Total Program Expended: 18.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The estimate for the Operating and Support costs are as of August 2000. Mission pay and allowance costs are the direct costs for the primary mission personnel and the costs to operate the joint service air-to-air missile (excluding base operating support). The estimate assumes 12 carriers (worst case) deployed per year (beginning in the third year of operations). Unit level consumption primarily relates to the annual training firings (Non Combat Expenditures Allowances (NCEA)) for the Navy and Weapon System Evaluation Program (WSEP) for the Air Force) and transportation cycle time of failed assets to and from the Depot. The system is procured with an All-Up-Round (AUR) and Captive Air Training Missile (CATM) warranty of 2,000 hours power-on-time or 10-years, which ever comes first. There is also a 10-year warranty on the AIM-9X Shipping and Storage Container (CNU-609/E). The cost estimate considers a 20-year service life for AUR and a 13-year service life for the CATM. The estimate spans a 33-year period. Contractor support is required to repair AUR/CATM/container failures as a result of combat damage, catastrophic events, government misuse, abuse, or failure to exercise due diligence in testing, storing, or maintaining the warranted item in accordance with approved procedures and specifications. This cost includes the required repair for out of warranty missiles and containers, software support, and technical publication revisions. The sustaining support consists of systems engineering and program management support and a surveillance/quality evaluation program. Intermediate maintenance and indirect costs are as noted.

There is no antecedent system.

b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

Cost Element	AIM9X Average Annual Cost per Missile	No Antecedent System
Mission Pay & Allowances	1.0	N/A
Unit Level Consumption	11.7	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	1.3	N/A
Sustaining Support	4.8	N/A
Indirect Costs	0.3	N/A
Total	19.1	N/A

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18b. (U) Operating and Support Costs (Cont'd):

Total O&S Cost	AIM9X	No Antecedent System
BYS (In Millions)	627.4	N/A
TYS (In Millions)	1234.8	N/A

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SELECTED ACQUISITION REPORT (RCS: UD-A&T(O&A)823)

PROGRAM: CEC

AS OF DATE: December 31, 2002

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 DIRECTORATE FOR FREEDOM OF INFORMATION  
 AND SECURITY REVIEW  
 DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Popular Name): Cooperative Engagement Capability (CEC); AN/USG-2/3

2. (U) DoD Component: Navy

Joint Participants:

U.S. Air Force (AWACS); U.S. Army (PATRIOT) and Joint Land Attack Cruise Missile Def Elevated Netted Sensor Sys (JLENS)

3. (U) Responsible Office and Telephone Number:

Program Executive Office	Capt. Michael S. Frick
Integrated Warfare Systems (PMS-465)	Assigned: March 7, 2002
1333 Isaac Hull Avenue, S.E.	DSN 336-1977; COMM (202) 781-1977
Washington, DC 20376-4401	FrickMS@NAVSEA.NAVY.MIL

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0603581N (Shared)
- (U) PE 0603658N Project K2616, U2039, U2394
- (U) PE 0603755N (Shared) Project U2039 (Shared)
- (U) PE 0604234N (Shared)
- (U) PE 0604300N (Shared)

PROCUREMENT:

- (U) APPN 1506 ICN 120000000 (Navy) (Shared)
- (U) APPN 1810 ICN 2606000000 (Navy)
- (U) APPN 1506 ICN 3700000000 (Navy) (Shared)

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03-C-0494

CEC, December 31, 2002

4a. (U) Program Elements/Procurement Line Items (Cont'd):

(U) APPN 1611 ICN Various (Navy) (Shared)

5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated April 3, 2002

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 3, 2002.

6. (U) Mission and Description:

(U) CEC is a sensor network with integrated fire control capability that significantly improves Battle Force air and missile defense capabilities by coordinating measurement data from battle force air search sensors, on CEC equipped units, 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 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 high quality track picture which is the same for all CUs. CEC data is presented as a superset of the best air and missile defense sensor capabilities from each CU, all of which are integrated into a single input to each CUs combat weapon system.

CEC significantly improves our Battle Force defense in depth, including both local and missile threats. Moreover, CEC will provide critical connectivity and integration of over-the-land air defense systems capable of countering emerging air threats, including land attack missiles, in a complex littoral environment.

CEC consists of the the Data Distribution System (DDS) and the Cooperative Engagement Processor (CEP), which is integrated with a host combat system. The DDS encodes and distributes ownship sensor and engagement data and is a high capacity, jam resistant, directive system providing 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 ship's 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 them.

The equipment nomenclature is AN/USG-2 for the shipboard system and AN/USG-3 for the airborne system.

7. (U) Executive Summary:

(U) On April 3, 2002 the Undersecretary of Defense (Acquisition, Technology and Logistics) approved Full Rate Production (FRP) of AN/USG-2 (shipboard) systems and authorized continued Low Rate Initial Production (LRIP) of AN/USG-3 (airborne) systems in FY 2002 and FY 2003.

USD (AT&L) also approved the continued development of CEC capabilities under a Block 2 plan presented to the Overarching Integrated Product Team (OIPT) in February 2002, and directed the Navy "to fully fund the Block 2 RDT&E and procurement requirements in its FY 2004-2009 POM." The development of Block 2 is planned as a full and open, best value competition to develop, produce and field CEC requirements including equipment design and development of a future CEC software baseline. Block 2 development is expected to result in an advanced sensor netting system that preserves the capability successfully demonstrated by CEC Block 1 Operational Evaluation (OPEVAL), and providing cost, performance and functional improvements. Block 2 competition is planned for FY 2003 with contract award expected in FY 2004.

Due to accelerated deployment of the USS NIMITZ Battle Group, the planned CEC/E-2C HAWKEYE 2000 aircraft Follow-on Test and Evaluation (FOT&E-2) schedule is not executable. Establishment of a revised FOT&E-2 test schedule is dependent on identification of test resources necessary to demonstrate system effectiveness and suitability, and the availability of Fleet assets to support the tests. Ongoing negotiations between the Program Executive Office (Integrated Warfare Systems), OSD (OT&E), OPNAV, COMOPTEVFOR and the Fleet Commands will establish a supportable schedule.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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:

8c. (U) Threshold Breaches (Cont'd):

Accelerated deployment of the USS NIMITZ Battle Group will delay Follow-on Test and Evaluation (FOT&E-2) of the integrated CEC/E-2C HAWKEYE 2000 aircraft.

Revised program cost estimates indicate a deviation from the Acquisition Program Baseline (APB), applicable to the RDT&E threshold value only. The deviation is due to increased Navy funding for CEC Block 2 development and competition, and increased FY 2003 Congressional appropriations.

9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone II	MAY 1995	MAY 1995	MAY 1995
Development Contract Modification	MAY 1995	MAY 1995	MAY 1995
Preliminary Design Review Complete	FEB 1996	FEB 1996	JUL 1996
Critical Design Review Complete	AUG 1996	AUG 1996	DEC 1996
Baseline System Initial Operational Capability	SEP 1996	SEP 1996	SEP 1996
IOT&E (DT-IIB/OT-IIA1)			
Start	MAY 1997	MAY 1997	MAY 1997
Complete	AUG 1997	AUG 1997	AUG 1997
LRIP Decision	DEC 1997	DEC 1997	FEB 1998
Low Rate Production Contract Award	APR 1998	APR 1998	APR 1998
Service Depot Support Date	OCT 2000	OCT 2000	OCT 2000
Service Final DT&E			
Start	JUL 2000	JUL 2000	JAN 2001
Complete	NOV 2000	NOV 2000	MAY 2001
IOT&E - OPEVAL (OT-IIA2)			
Start	SEP 2000	SEP 2000	MAR 2001
Complete	NOV 2000	NOV 2000	MAY 2001
Organic Support Date	OCT 2001	OCT 2001	OCT 2001
Milestone III	APR 2002	APR 2002	APR 2002
Full Rate Production Contract Award	MAY 2002	MAY 2002	APR 2002
FOT&E-1 (DTIIIA/OT-IIIA)E-2C			
Start	JAN 2002	JAN 2002	JAN 2002
Complete	AUG 2002	AUG 2002	NOV 2002
FOT&E-2 (DTIIIB/OT-IIIB)E-2C			
Start	MAR 2003	MAR 2003	MAR 2004 (Ch-1)
Complete	JUL 2003	JUL 2003	APR 2004 (Ch-1)
AIR IOC	DEC 2003	DEC 2003	NOV 2004 (Ch-1)
Full Operational Capability	DEC 2003	DEC 2003	NOV 2004 (Ch-1)

(U) Acronyms:

DT - Development Test  
 DT&E - Development Test and Evaluation  
 FOT&E - Follow-on Test and Evaluation  
 IOC - Initial Operational Capability  
 IOT&E - Initial Operational Test and Evaluation

9a. (U) Schedule (Cont'd):

LRIP - Low Rate Initial Production  
OPEVAL - Operational Evaluation  
OT - Operational Test

b. Current Change Explanations --

(U) (Ch-1) As noted in the Executive Summary, due to accelerated deployment of the USS NIMITZ Battle Group, the planned CEC/E-2C HAWKEYE 2000 aircraft Follow-on Test and Evaluation (FOT&E-2) schedule is not executable. Establishment of a revised FOT&E-2 test schedule is dependent on identification of test resources necessary to demonstrate system effectiveness and suitability, and the availability of Fleet assets to support the tests. Ongoing negotiations between the Program Executive Office (Integrated Warfare Systems), OSD (OT&E), OPNAV, COMOPTEVFOR and the Fleet Commands will establish a supportable schedule. The delayed FOT&E-2 schedule will also delay Air Initial Operational Capability (Air IOC) and Full Operational Capability (FOC).

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Track Base Size	(b)(1)			
Track Measurement Update Rate (1/sec)	(b)(1)			
Local	(b)(1)			
Remote	(b)(1)			
Operational Availability	(b)(1)			
Data Rate (without any Compression Technology Implemented) (Mbps)	(b)(1)			
Anti-jam Resistance (kW/MHz)	(b)(1)			
Interoperability Information Exchange Requirements (IER)	100% of top-level IERs	100% of top-level IERs.	100% of top-level IERs / designated / critical	100% of top-level IERs.
Track File Consistency	Integration will improve track file	CEC integration will improve track	CEC / integration / must not degrade / track	TBD

10a. (U) Performance Characteristics (Cont'd):

<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
consistency in each host system	file / file consistency as measured/ (0% in each host system / degradation) as measured / in each host system / system		file consistency as measured in each host system

(U) Interoperability Information Exchange Requirements (IER) added to Production APB:

Note 1 - All top-level IERs satisfied to standards specified by the Threshold and Objective values.

Note 2 - Unit-to-Unit comparison of tracks held throughout the force. This measure will be computed by comparing averaged data on specific control tracks across the force on a pairwise basis with CEC on and off, respectively. 100% of top-level IERs.

b. Current Change Explanations -- None

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	2028.1	2028.1	2376.3
Procurement	2095.2	2095.2	2019.6
Rollaway	(1759.8)		(1917.5)
Other Weapon Systems Cost	(335.4)		(102.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
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 2002 Base-Year \$	4123.3	4123.3	4395.9
 Escalation	 187.4	 187.4	 178.3
Development (RDT&E)	(-81.6)	(-81.6)	(-57.1)
Procurement	(269.0)	(269.0)	(235.4)
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 \$	4310.7	4310.7	4574.2
 b. (U) Quantity --			
Development (RDT&E)	16	16	22
Procurement	<u>256</u>	<u>256</u>	<u>279</u>
Total	272	272	301

(U) A total of forty-three (43) AN/USG-2 (shipboard) and AN/USG-3 (airborne) systems are being procured under Low Rate Initial Production (LRIP) contracts. The procurement of LRIP units exceeds 10% of the units planned to be procured under the Engineering and Manufacturing (E&M) and production programs. The procurement of LRIP units in excess of 10% was necessary to (1) meet ship installation schedules, (2) outfit Land Based Test Site (LBTS) in preparation for operational testing, and (3) maintain the Minimum Sustaining Rate (MSR) for production of CEC systems pending completion of operational testing and entry into Full Rate Production.

The currently contracted LRIP quantity of thirty-eight (38) systems were authorized as follows:

LRIP-1 - ASN(RDA) memorandum of March 2, 1998 to the Program Executive Officer for Theater Air Defense; and ASN(RDA) memorandum of August 24, 1998 to the Program Executive Officer for Theater Air Defense and Surface Combatants authorized the procurement of seven (7) systems.

LRIP-2 - ASN(RDA) memorandum of May 14, 1999 to the Program Executive Officer for Theater Surface Combatants authorized the procurement of seven (7) systems.

LRIP-3 - ASN(RDA) memorandum of April 7, 2000 to the Program Executive Officer for Theater Surface Combatants authorized the procurement of twelve (12) systems.

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11b. (U) Total Program Cost and Quantity (Cont'd):

LRIP-4 - Under Secretary of Defense (Acquisition, Technology and Logistics) memorandum of May 4, 2001 to the Secretary of the Navy authorized the procurement of seven (7) systems.

LRIP-5 - Under Secretary of Defense (Acquisition, Technology and Logistics) memorandum of April 3, 2002 to the Secretary of the Navy and the Chairman, Joint Chiefs of Staff authorized the procurement of five (5) AN/USG-3 (airborne) systems in FY 2002, and five (5) AN/USG-3 systems in FY 2003. (Note the FY 2003 authorized quantity of five (5) systems is not included in the contracted quantity indicated above.)

c. (U) Foreign Military Sales --

A FMS program was initiated with the United Kingdom (UK) (case #UK-P-LII). Funds of approximately \$6 million have been received and an existing contract with Raytheon Systems Company was modified for procurement of a data processing terminal, digital tape units, technical data and training support. The UK is projected to procure twelve (12) to fifteen (15) AN/USG-2 systems in the FY 2008-14 timeframe for outfitting ships of the Royal Navy at a projected then-year cost of \$150 million to \$175 million.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (APR 2002 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	4123.3	4395.9	
(2) Quantity	272	301	
(3) Unit Cost	15.159	14.604	-3.66
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	2095.2	2019.6	
(2) Quantity	256	279	
(3) Unit Cost	8.184	7.239	-11.55

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1946.5	2364.2	-	4310.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.5	-47.3	-	-56.8
Other	-	-	-	-
Support	-	-25.0	-	-25.0
Subtotal	-9.5	-72.3	-	-81.8
Current Changes:				
Economic	-5.5	-9.3	-	-14.8
Quantity	+56.3	+30.8	-	+87.1
Schedule	-	-	-	-
Engineering	+234.5	-	-	+234.5
Estimating	+96.9	+103.2	-	+200.1
Other	-	-	-	-
Support	-	-161.6	-	-161.6
Subtotal	+382.2	-36.9	-	+345.3
Total Changes	+372.7	-109.2	-	+263.5
Current Estimate	2319.2	2255.0	-	4574.2

(U) Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	2028.1	2095.2	-	4123.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.2	-22.6	-	-31.8
Other	-	-	-	-
Support	-	-24.9	-	-24.9
Subtotal	-9.2	-47.5	-	-56.7
Current Changes:				
Quantity	+51.4	+30.5	-	+81.9
Schedule	-	-	-	-
Engineering	+218.4	-	-	+218.4
Estimating	+87.6	+149.8	-	+237.4
Other	-	-	-	-
Support	-	-208.4	-	-208.4
Subtotal	+357.4	-28.1	-	+329.3
Total Changes	+348.2	-75.6	-	+272.6
Current Estimate	2376.3	2019.6	-	4395.9

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&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-5.5
	Additional procurement of six (6) systems by the E-2C, DD(X) and LCS program offices with RDT&E,N funds. (Quantity)	+51.4	+56.3
	Addition of FY 2004-09 funds programmed for CEC Block 2 development and competition. (Engineering)	+178.2	+191.5
	Addition of FY 2004-08 funds programmed for Single Integrated Air Picture (SIAP) improvements. (Engineering)	+40.2	+43.0
	Addition of funds to support continuation of engineering efforts for CEC Block 1 equipment. (Estimating)	+63.1	+73.9
	FY 2002 Below Threshold Reprogramming (BTR) for assessment of Tactical Component Network (TCN) technology. (Estimating)	+4.0	+4.0
	Addition of FY 2003 funds appropriated by Congress for Technology Refresh initiatives and Follow-on Test and Evaluation (FOT&E) of integrated CEC/E-2C aircraft. (Estimating)	+25.5	+26.0
	Miscellaneous budget adjustments (i.e., offsets for Small Business Innovative Research (SBIR); Navy Working Capital Fund (NWCFF) rate adjustments). (Estimating)	-5.0	-7.0
	RDT&E Subtotal	<u>+357.4</u>	<u>+382.2</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-9.3
	Net quantity increase of 23 systems from 256 to 279 systems: increase of 36 for Littoral Combat System, increase of 3 for E-2C , decrease of 11 for DD(X), and decrease of 5 shipboard systems for USMC (Quantity)	+30.5	+30.8
	Align rollaway and support costs to reflect the Block 2 Program Life Cycle Cost Estimate (PLCCE)		
	(Estimating)	+208.4	+161.6
	(Support)	-208.4	-161.6
	Estimated procurement cost avoidance resulting from Block 2 design. (Estimating)	-58.6	-58.4
	Procurement Subtotal	<u>-28.1</u>	<u>-36.9</u>

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	
14.06	-0.656	-2.84	+0.590	+0.420	+5.01	--	-0.736	+1.79	15.85

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	
15.85	-0.049	-1.24	--	+0.779	+0.476	--	-0.620	-0.651	15.20

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	
8.22	-0.532	-0.797	+0.291	-0.439	+1.76	--	+0.731	+1.01	9.24

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	
9.24	-0.033	-0.651	--	--	+0.200	--	-0.669	-1.15	8.08

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	MAY 1995	MAY 1995	MAY 1995
Milestone II	N/A	MAY 1995	MAY 1995	MAY 1995
Milestone III	N/A	OCT 1998	APR 2002	APR 2002
IOC	N/A	SEP 1996	SEP 1996	SEP 1996
Total Cost	N/A	2573.1	4310.7	4574.2
Total Quantity	N/A	183	272	301
Prog Acq Unit Cost	N/A	14.1	15.9	15.2

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --	Initial Contract Price		
(U) <u>Cont Engr Des/Dev:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Systems Company, St. Petersburg FL			
N00024-99-C-5110, CPAF	\$118.9	N/A	0
Award: April 30, 1999			
Definitized: February 16, 2000			
Current Contract Price			Estimated Price At Completion
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u> <u>Program Manager</u>
\$215.0	N/A	0	\$215.0              \$216.8
			<u>Cost Variance</u> <u>Schedule Variance</u>
Previous Cumulative Variances			\$3.3              \$-0.2
Cumulative Variances To Date (11/22/02)			<u>\$0.4</u> <u>\$-0.1</u>
Net Change			\$-2.9              \$0.1

Explanation of Change:

(U) The indicated cost and schedule variances are not considered significant.

(U) Contract Comments:

The increased cost of the contract is the result of extension of the contract through September 2003 for continuation of Design Agent services for development of CEC computer program baselines.

(U) <u>E-2C Integration:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop-Grumman Corp., Bethpage, Long Is., NY			
N00019-97-C-0069, CPAF	\$63.7	N/A	0
Award: March 31, 1997			
Definitized: March 31, 1998			
Current Contract Price			Estimated Price At Completion
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u> <u>Program Manager</u>
\$122.4	\$122.4	0	\$116.9              \$121.3
			<u>Cost Variance</u> <u>Schedule Variance</u>
Previous Cumulative Variances			\$2.9              \$0.4
Cumulative Variances To Date (11/30/02)			<u>\$3.9</u> <u>\$0.4</u>
Net Change			\$1.0              \$0.0

Explanation of Change:

(U) Cost and schedule variances are not significant.

(U) Contract Comments:

The contract addresses the development of interfacing computer programs for

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15. (U) Contract Information (Cont'd):

integration of CEC AN/USG-3 (airborne) equipment with the E-2C HAWKEYE 2000 Mission Computer Upgrade (MCU) electronic suite.

The increased cost of the contract is due to (a) exercise of a contract option for the development of the computer program to be installed in new production E-2C aircraft; and (b) additional costs for modification of computer programs to correct interoperability issues uncovered during initial testing of the integrated CEC/E-2C aircraft.

b. Procurement --	Initial Contract Price		
(U) <u>LRIP-2/3:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Systems Co., St. Petersburg, FL			
N00024-99-C-5116, FFP	\$73.3	N/A	12
Award: September 28, 1999			
Definitized: June 1, 2000			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$104.5	N/A	14	\$104.5	\$104.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

On 30 August 2001, the contract was modified from a Fixed Price Incentive Fee (FPIF) contract to a Firm Fixed Price (FFP) contract. The renegotiated contract was an agreed-to equitable adjustment for later than contractually required delivery of AN/USG-2 equipment. The modified contract delivery schedule conforms to amended Navy equipment installation plans because of changing ship availability schedules, and includes contractor provided additional spares equipment at no cost to the Government. The renegotiated contract also eliminated the requirement for submission of Cost Performance Reports (CPR) by the contractor.

The increased cost of the contract is due to (a) exercise of contract options for the procurement of spare parts kits, on-board repair parts, Installation and Checkout (INCO) kits, depot stock items, stand-alone Cooperative Engagement Processors (SACEP), INCO replenishment parts, stock point augmentation spares, and maintenance training courses; and (2) the procurement of CEC equipment for United Kingdom (UK) test purposes, spares and an installation and checkout (INCO) kit.

15. (U) Contract Information (Cont'd):

(U) LRIP-4:  
 Raytheon Systems Company, St. Petersburg FL  
 N00024-01-C-5169, FFP  
 Award: June 29, 2001  
 Definitized: June 29, 2001

		Initial Contract Price		
		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
		\$62.7	N/A	7

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$62.7	N/A	7	\$62.7	\$62.7

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The Firm Fixed Price (FFP) contract allows the contractor to earn incentive payments for performance meeting or exceeding the specified contract delivery requirements. Before the contractor is eligible for incentive payments under this contract, all outstanding system deliveries under production contracts N00024-99-C-5116 and N00024-00-C-5145 must be completed and accepted by the Navy.

(U) FY 02 Production:  
 Raytheon Company, St. Petersburg FL  
 N00024-02-C-5103, FFP  
 Award: April 24, 2002  
 Definitized: September 6, 2002

		Initial Contract Price		
		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
		\$50.9	N/A	10

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$50.9	N/A	10	N/A	N/A

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

To maintain planned ship installation schedules, a letter contract was awarded on 24 April 2002 for procurement of long lead material for the

15. (U) Contract Information (Cont'd):

manufacture of CEC systems. The contract requires delivery of five (5) OP,N funded AN/USG-2 (shipboard) and five (5) AP,N funded AN/USG-3 (airborne) systems.

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> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-19)	<u>Total</u>
ROD&E	1805.9	72.5	76.9	363.9	2319.2
Procurement	698.0	107.7	142.1	1307.2	2255.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2503.9	180.2	219.0	1671.1	4574.2

b. Annual Summary -- CEC

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2002 Dollars Nonrec</u>	<u>Rollaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				225.5	202.2
1995				168.3	153.8
1996				275.3	255.9
1997				238.3	224.3
1998				211.3	200.5
1999				197.4	189.6
2000				184.3	179.7
2001				175.4	173.3
2002				106.7	107.3
2003				107.7	109.6
2004				70.2	72.5
2005				73.3	76.9
2006				92.1	98.3
2007				105.5	114.8
2008				78.4	86.9
2009				56.5	63.9
Subtotal	22			2366.2	2309.5

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				10.1	9.7
Subtotal				10.1	9.7

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	6		34.8	34.8	34.6
2001	1		14.8	14.8	14.9
2002	5		28.1	28.1	28.5
2003	6		34.5	34.5	35.5
2004	6		26.1	26.1	27.3
2005	1		4.9	4.9	5.2
2006	1		4.9	4.9	5.3
2007	1		4.8	4.8	5.3
2008					
2009	4		19.0	19.0	21.7
2010	5		23.6	23.6	27.4
2011	6		28.1	28.1	33.2
2012	7		32.7	32.7	39.3
2013	8		37.1	37.1	45.4
2014	8		36.9	36.9	46.0
2015	8		36.8	36.8	46.7
2016	8		36.6	36.6	47.3
2017	8		36.5	36.5	48.0
2018	8		36.3	36.3	48.6
2019	1		4.5	4.5	6.2
Subtotal	98		481.0	481.0	566.4

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				10.6	10.1
1996				11.4	11.0
1997					
1998	2		22.0	20.9	20.7
1999	1		20.9	48.1	48.0
2000	4		48.1	33.6	33.9
2001	3		33.6		

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				5.8	6.0
2003	1		5.8	52.6	55.4
2004	8		52.6	16.4	17.6
2005	3		16.4	47.0	51.2
2006	9		47.0	6.1	6.8
2007	1		6.1	41.0	46.3
2008	8		41.0	5.7	6.6
2009	1		5.7	44.2	51.7
2010	9		44.2	50.8	60.4
2011	10		50.8	38.1	46.2
2012	7		38.1	33.7	41.6
2013	6		33.7	33.6	42.2
2014	6		33.6	33.6	42.9
2015	6		33.6	33.4	43.5
2016	6		33.4	33.4	44.2
2017	6		33.4	33.3	44.9
2018	6		33.3	12.0	16.5
2019	1		12.0		
Subtotal	104		645.3	645.3	747.7

(U) The projected fiscal year procurement quantities indicated above reflect the year CEC AN/USG-2 (shipboard) systems were/will be procured. The base and then-year cost estimates reflect the fiscal year appropriated funds were/will be budgeted to procure CEC systems (i.e., FY 1995-96 funds supported to procurement of two (2) AN/USG-2 system in FY 1998).

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	5		57.7	69.8	67.3
1999	6		81.7	83.3	81.3
2000	2		53.9	59.9	59.3
2001	5		24.4	36.4	36.4
2002	5		75.6	83.0	83.9
2003	6		63.9	69.5	71.2
2004	7		54.9	60.4	62.8
2005	9		75.6	81.1	85.7
2006	5		54.8	60.3	64.8
2007	4		45.9	51.4	56.2
2008	9		62.6	68.3	76.0
2009	7		54.3	60.0	67.9

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2010	6		54.4	60.1	69.3
2011	1		31.5	37.2	43.7
2012				11.1	13.3
2013				1.5	1.8
Subtotal	77		791.2	893.3	940.9

Service	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	301		1917.5	4385.8	4564.5
Army				10.1	9.7
Grand Total	301		1917.5	4395.9	4574.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	16	16
Procurement	28	28

(U) Percent Total Program Quantities Delivered: 14.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2114.2

(U) Percent Total Program Expended: 46.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
The O&S cost estimate was generated in January 2002 and supported the Milestone III Production and Deployment (P&D) (formerly Full Rate Production) decision.

MISSION PERSONNEL: CEC requires no system specific operating personnel. The cost of ship maintenance personnel as defined in the October 2001 Manpower Estimate Report are included.

UNIT LEVEL CONSUMPTION, INTERMEDIATE AND DEPOT MAINTENANCE: Labor, overhead, material, repair parts, and transportation costs projected to be performed at Organization, Intermediate and Depot-level maintenance activities have been included.

18a. (U) Operating and Support Costs (Cont'd):

CONTRACTOR SUPPORT: Costs for prime contractor in-service engineering support are included.

SUSTAINING SUPPORT: The costs of continuing engineering support for Navy in-house facilities and software maintenance costs have been included. Also included are costs to operate and maintain CEC training and support equipment. Modification kit procurement and installation costs are included beyond FY 2010.

INDIRECT SUPPORT: Costs for operational and maintenance training are included.

There is no antecedent system.

b. (U) Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

Cost Element	CEC Avg Annual Sys Cost	No Antecedent System
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.2	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.2	0.0
Indirect Costs	0.0	N/A
Total	0.4	0.0

Total O&S Cost	CEC	No Antecedent System
BYS (In Millions)	2409.7	N/A
TY\$ (In Millions)	3749.6	N/A

Report Creation Date: 03/21/2003 7:26:48 PM

N-24 T-AKE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: T-AKE

AS OF DATE: December 31, 2002

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1. Designation and Nomenclature (Popular Name): LEWIS and CLARK Class (T-AKE)  
Dry Cargo/Ammunition Ship

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

COMMANDER	CAPT P. M. SUDOL
NAVAL SEA SYSTEMS COMMAND	Assigned: December 17, 2001
1333 ISAAC HULL AVE SE STOP 2501	DSN 326-4822; COMM 202-781-4822
WASH NAVY YARD, DC 20376-2501	sudolpm@navsea.navy.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
 PE 0603564N (Shared) Project S0408 (Shared)  
 PE 0604567N (Shared) Project S1803 (Shared)

PROCUREMENT:  
 APPN 4557 ICN 0204441N (DoD)

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 T-AKE ship acquisition program financed by the NDSF.

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DEPARTMENT OF DEFENSE

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Office of the Chief of  
Naval Operations  
Dept. of the Navy

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03-C-0980

T-AKE, December 31, 2002

**5. References:**

SAR Baseline (Production Estimate):

DAE Approved Acquisition Program Baseline dated September 20, 2001.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated September 20, 2001.

**6. Mission and Description:**

The LEWIS and CLARK Class (T-AKE) Dry Cargo/Ammunition Ship acquisition program will provide a two product (ammunition and combat stores - including dry stores, frozen and chilled products, spare parts and consumables) replacement for the aging single product combat stores (T-AFS) and ammunition (T-AE) shuttle ships. Working in concert with an oiler (T-AO), the team can perform a "substitute" station ship mission that will allow the retirement of the three product fast combat support ships (AOE 1 Class). In its shuttle role, T-AKE will provide logistics lift to station ships and other ships operating with naval sources from supply sources, such as friendly ports, and at sea from Modular Cargo Delivery System (MCDS) equipped merchant vessels.

The T-AKE will have the capability to effectively and efficiently provide naval forces with ordnance, stores and spare parts through both connected replenishment (CONREP) and vertical replenishment (VERTREP). Organic helicopter operations to conduct VERTREP require T-AKE to support two military cargo logistics helicopters or two equivalent commercial variants and associated aviation personnel. Additionally, T-AKE will have the capability to transfer a limited quantity of fuel by means of CONREP or Astern Refueling.

The T-AKE end force structure will be such that it meets fleet peacetime requirements and satisfies the majority of wartime requirements. Wartime operations will require augmentation by additional shuttle ships (such as MCDS equipped ships currently in the Ready Reserve Force (RRF)).

**7. Executive Summary:**

On September 4, 2001, the Defense Acquisition Board (DAB) met to consider Milestone C approval for entry into the Production and Deployment phase of the acquisition cycle. The Acquisition Decision Memorandum (ADM) approving the program's entry into the Production and Deployment phase was signed by the Milestone Decision Authority (MDA) on September 20, 2001.

On October 18, 2001, a contract for the Detail Design and Construction of the lead ship with options for eleven follow ships was awarded. The option for the second ship was awarded October 18, 2001 as well. A Post Award conference was held, followed by a Methods and Practices Conference, both of which set the foundation for teamwork between General Dynamics (National Steel and Shipbuilding Company (NASSCO)); Supervisor of Shipbuilding and Conversion (SUPSHIP), San Diego; and the Program Office. This teamwork has translated

7. Executive Summary (Cont'd):

into daily contacts and rapid resolution of technical issues. On July 16, 2002, the FY 2002 third ship option was exercised. NASSCO has commenced their Transition Design process that translates their functional design; i.e., 2-D diagrams into 3-D geometric "as designed" ship configuration (model). This approach facilitates timely basic arrangement and detailed design decisions in support of Production Design and reduces the risk of delaying the Start of Construction (scheduled to commence in September 2003).

Engineering Development is on schedule, with the lead ship design effort approximately 15% complete and the lead ship approximately 5-6% complete (lead ship Start of Construction is scheduled for September 2003).

Technical Performance meets or exceeds all Critical Technical Parameters and Key Performance Parameters. There are no major issues, but one area of note is the Advanced Degaussing System design maturity. Installation details (cabling and routing) are not yet completely determined. Full-scale mock-up is being constructed at the shipyard to develop installation methods.

NASSCO recently revised their Transition and Production Design schedules to reflect design maturity and actual design freeze dates to support start of construction. Currently, all Milestone dates are being met; however, there is very little margin in the Functional/Transition design schedule to absorb delays without impacting start of construction. NASSCO is aggressively managing the Functional and Transition Design efforts to minimize the risk of delaying Start of Construction, lead ship delivery and rework during lead ship construction.

The T-AKE Dry Cargo/Ammunition Ship Program has submitted a Program Deviation Report (PDR) identifying a schedule breach that shortens the duration of the Operational Test IIB (OT-IIB) from 27 months to 9 months. This decision was made by the T-AKE Dry Cargo/Ammunition Ship Program Test Integrated Product Team (IPT) based upon a detailed review of the test strategy and integrated test program schedule. The recommended schedule milestone date changes result in no cost increases and the T-AKE Dry Cargo/Ammunition Ship Program remains within the cost threshold identified in the Acquisition Program Baseline (APB) of 20 September 2001. The reduction in the OT-IIB duration is due to refinement of the T-AKE test strategy, and, while delaying the start, results in earlier than planned completion of the OT-IIB.

The FY 2004 President's Budget reflects one additional T-AKE in FY 2004 and two less T-AKEs in FY 2007, for a total of 11 ships. This program change will cause minimal impact on the shipbuilding contract since it is the last option ship in the contract.

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

c. Explanation of Breach:

The Test IPT has proposed that the OT-IIB testing period be shortened from 27 months to 9 months. The change was proposed after a detailed review of the integrated test program schedule. The change reflects a refining in the test strategy rather than a delay in the program. The next Test and Evaluation Master Plan (TEMP) update will incorporate the schedule change. A Program Baseline Change Request and Deviation Report have been submitted identifying a new OT-IIB testing period, April 2004 through December 2004.

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Contract Award	SEP 2001	SEP 2001	OCT 2001
Initial Critical Design Review & OIPT	MAR 2002	MAR 2002	MAY 2002
OT II-A Start	APR 2002	APR 2002	AUG 2002
OT II-A Complete	MAR 2003	MAR 2003	JAN 2003
Final Critical Design Review & OIPT	MAR 2003	MAR 2003	APR 2003
OT II-B Start	APR 2003	APR 2003	APR 2004 (Ch-1)
Lead Ship Delivery	JUL 2005	JUL 2005	MAY 2005 (Ch-2)
OT II-B Complete	JUL 2005	JUL 2005	DEC 2004 (Ch-1)
OPEVAL Start	APR 2006	APR 2006	APR 2006
OPEVAL Complete	JUN 2006	JUN 2006	JUN 2006
IOC	OCT 2006	OCT 2006	OCT 2006

The TEMP is in the process of being staffed for approval.

9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) - The Test IPT has proposed that the OT-IIB testing period be shortened from 27 months to 9 months. The change was proposed after a detailed review of the integrated test program schedule. The change reflects a refining in the test strategy rather than a delay in the program. The next TEMP update will incorporate the schedule change.

	<u>From</u>	<u>To</u>
OT II-B Start	APR 2003	APR 2004
OT II-B Complete	JUL 2005	DEC 2004

(Ch-2) Due to NASSCO's aggressive scheduling, the delivery date of the lead ship has been accelerated from July 2005 to May 2005.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Intership Cargo Handling Interoperability	Provide all REP sys and equip. req'd for seamless interface w/existing and planned US ships	Provide / Provide all REP / all REP sys and / sys and equip. / equip. req'd / req'd for / for seamless/ seamless inter- / inter- face / face w/exist- / w/exist- ing and / ing and planned / planned US ships/ US ships	TBD	Provide all REP systems and equipment required for seamless inter- face w/existing & planned US ships
C4I Interoperability	100% Top Level and Navy IERs	100% Top/ Level / Level and / and Navy / Navy IERs / desig- / nated / as / CRITICAL	TBD	100% Top Level and Navy IERs
Survivability	Survive flooding by shell damage at any	Survive / Survive flooding/ flooding by shell/ by shell damage / damage at any / at any	TBD	Survive flooding by shell damage at any

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	location , heel angle NTE 15 deg, margin line not submerge d	location/ location , heel / except angle / transver NTE 15 / se blkhd deg, / bounding margin / an aft line not/ mach submerge/ space, d / heel / angle / NTE 25 / deg /		location , heel angle NTE 15 deg, margin line not submerge d
Endurance	14000 NM (20 kts)	14000 NM/ 14000 NM (20 kts)/ (20 kts)	TBD	14000 NM (20 kts)
Sustained Speed	> 20 kts NTE 80% MCR	> 20 kts/ 20 kts NTE 80% / NTE 80% MCR / MCR	TBD	> 20 kts NTE 80% MCR
Cargo Transfer Rate (Sea State 2)	> 274 MTPH palletiz ed ordnance to CV (CONREP & VERTREP) , > 220 MTPH palletiz ed ordnance to CV&CG SIMULTAN EOUSLY (CONREP)	> 274 / => 149 MTPH / MTPH palletiz/ palletiz ed / ed ordnance/ ordnance to CV / to CV (CONREP &/ (CONREP & VERTREP)/ VERTREP) , > 220 / , => 138 MTPH / MTPH palletiz/ palletiz ed / ed ordnance/ ordnance to CV&CG/ to CV&CG SIMULTAN/ SIMULTAN EOUSLY / EOUSLY (CONREP)/ (CONREP)	TBD	> 274 MTPH palletiz ed ordnance to CV (CONREP & VERTREP) , > 220 MTPH palletiz ed ordnance to CV&CG SIMULTAN EOUSLY (CONREP)
Supportability	MSC Stds (CG CERT & ABS)	MSC Stds/ MSC Stds (CG CERT/ (CG CERT & ABS) / & ABS)	TBD	MSC standard s (CG CERT & ABS)
Reliability (Ship Systems)	Highest commer- cial stds,	Highest / Highest commer- / commer- cial / cial stds, / stds,	TBD	Highest commerci al standard

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
	ABS	ABS / ABS		s, ABS
	Rules, R1	Rules, / Rules, R1		Rules, R1
	(redundancy) notation for propulsion, steering & aux systems. Redundancy in excess of commercial reqmts for mission critical systems	(redun- / (rodun- dancy) / dancy) notation/ notation for propul- / propul- sion, / sion, steering/ steering & aux / & aux sys. / sys. Redun- / Redun- dancy in/ dancy in excess / excess of com- / com- mercial / mercial reqmts / reqmts for mission critical systems / systems /		(redunda ncy) notation for propulsi on, steering and aux systems. Redundan cy in excess of commerci al requirem ents for mission critical systems.
Reliability (Cargo Transfer Systems)	Ao=0.98	Ao=0.98 / Ao=0.80	TBD	Ao=.98

NOTES: Threshold and objectives are abbreviated directly from the Table of Key Performance Parameters (KPP) in the T-AKE Operational Requirements Document (ORD). Refer to the T-AKE ORD for the expanded KPP objectives and threshold.

Mission critical systems include cargo refrigeration, cargo handling gear, auxiliary equipment for mobility, fire fighting and exterior communications.

b. Current Change Explanations -- None

11. Total Program Cost and Quantity (Dollars in Millions):

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
a. Cost --			
Development (RDT&E)	26.0	26.0	26.0
Procurement	8389.7	4236.6	3982.1
Sailaway	(4153.1)		(0.0)
Sailaway	(4236.6)		(3982.1)
Total Sailaway	(8389.7)		(3982.1)
Other Weapons Systems Cos			(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 2000 Base-Year \$	<u>8415.7</u>	<u>4262.6</u>	<u>4008.1</u>
Escalation	-3525.5	627.6	414.6
Development (RDT&E)	(-0.1)	(-0.1)	(-0.1)
Procurement	(-3525.4)	(627.7)	(414.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>4890.2</u>	<u>4890.2</u>	<u>4422.7</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>12</u>	<u>12</u>	<u>11</u>
Total	12	12	11

All of the ships procured in the T-AKE program are considered Low Rate Initial Production quantities. A Beyond Low Rate Initial Production (BLRIP) report is to be submitted after completion of the Operational Evaluation (OPEVAL). OPEVAL is scheduled to complete in June 2006.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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T-AKE, December 31, 2002

12. Unit Cost Summary:

	UCR Baseline (SEP 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	4262.6	4008.1	
(2) Quantity	12	11	
(3) Unit Cost	355.217	364.373	+2.58
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	4236.6	3982.1	
(2) Quantity	12	11	
(3) Unit Cost	353.050	362.009	+2.54

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	25.9	4864.3	-	4890.2
Previous Changes:				
Economic	-	-48.6	-	-48.6
Quantity	-	-	-	-
Schedule	-	+24.1	-	+24.1
Engineering	-	-	-	-
Estimating	-	+39.9	-	+39.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+15.4	-	+15.4
Current Changes:				
Economic	-	-105.3	-	-105.3
Quantity	-	-398.8	-	-398.8
Schedule	-	-19.8	-	-19.8
Engineering	-	-	-	-
Estimating	-	+41.0	-	+41.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-482.9	-	-482.9
Total Changes	-	-467.5	-	-467.5
Current Estimate	25.9	4396.8	-	4422.7

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	26.0	4236.6	-	4262.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+37.6	-	+37.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+37.6	-	+37.6
Current Changes:				
Quantity	-	-326.7	-	-326.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+34.6	-	+34.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-292.1	-	-292.1
Total Changes	-	-254.5	-	-254.5
Current Estimate	26.0	3982.1	-	4008.1

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-124.4
Economic adjustment for negative program change. (Economic)	N/A	+19.1
Total Quantity Variance associated with decrease of 1 FY 2007 ship from 12 to 11. (Quantity)	-326.7	-398.8
Acceleration of annual procurement buy profile by moving one ship from FY 2007 to FY 2004. (Schedule)	0.0	-19.8
Adjustment for Current and Prior Inflation. (Estimating)	+19.5	+20.8
Revised estimate resulting from a change in estimating assumptions in the cost quantity relationship associated with a 1-ship increase in FY 2004 and 2-ship decrease in FY 2007 (Estimating)	+15.1	+20.2
Procurement Subtotal	-292.1	-482.9

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
407.52	-13.99	+0.796	+0.391	--	+7.35	--	--	-5.45	402.06

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
405.36	-13.99	+0.600	+0.391	--	+7.35	--	--	-5.65	399.71

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	N/A	N/A	N/A
Milestone C	N/A	N/A	SEP 2001	SEP 2001
IOC	N/A	N/A	OCT 2006	OCT 2006
Total Cost	N/A	N/A	4890.2	4422.7
Total Quantity	N/A	N/A	12	11
Prog Acq Unit Cost	N/A	N/A	407.5	402.1

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

New Construction:

NASSCO, SAN DIEGO, CA

N0002402C2300, FPI

Award: October 18, 2001

Definitized: October 18, 2001

Initial Contract Price  
Target Ceiling Qty

\$689.5 \$788.1 2

Current Contract Price  
Target Ceiling Qty  
\$978.8 \$1098.7 3

Estimated Price At Completion  
Contractor Program Manager  
\$978.8 \$978.8

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (01/26/03)	<u>\$1.7</u>	<u>\$9.4</u>
Net Change	\$1.7	\$9.4

Explanation of Change:

CPR data shows a favorable cumulative cost variance of +\$1.7M that is largely due to efficient management of overhead.

CPR data shows a cumulative schedule variance of +\$9.4M due to adjustments in NASSCO's material buying schedule.

This is the first report in the SAR of CPR data. Variances such as these are normal and to be expected during the early stages of the program. The Program Office will track these variances to identify trends and report on them as the program matures.

Contract Comments:

On July 16, 2002, the third ship option was exercised at NASSCO.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY96-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-10)</u>	<u>Total</u>
RDT&E	25.9	-	-	-	25.9
Procurement	1593.8	722.3	742.5	1338.2	4396.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1619.7	722.3	742.5	1338.2	4422.7

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- T-AKE

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Sailaway FY 2000 Dollars Nonrec	Sailaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996		1.1		1.1	1.1
1997		3.7		3.7	3.6
1998		3.9		3.9	3.8
1999		5.9		5.9	5.9
2000		11.4		11.4	11.5
Subtotal		26.0		26.0	25.9

Appropriation: 4557 - National Defense Sealift Fund, Navy

Fiscal Year	Qty	Sailaway FY 2000 Dollars Nonrec	Sailaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	1	87.4	383.3	470.7	488.9
2001	1		339.7	339.7	357.8
2002	1		337.6	337.6	360.8
2003	1		356.0	356.0	386.3
2004	2		654.8	654.8	722.3
2005	2		661.8	661.8	742.5
2006	2		690.4	690.4	788.2
2007	1		385.6	385.6	448.1
2008			51.9	51.9	61.4
2009			26.7	26.7	32.1
2010			6.9	6.9	8.4
Subtotal	11	87.4	3894.7	3982.1	4396.8

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	11	113.4	3894.7	4008.1	4422.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E		
Procurement	0	0

Percent Total Program Quantities Delivered: N/A

17b. Delivery/Expenditure Information (Cont'd):

b. Total Expenditures To Date (In Millions of Dollars): \$ 92.8

Percent Total Program Expended: 2.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The T-AKE Program Office utilized the Navy Center for Cost Analysis (NCCA) Operating and Support Cost Analysis Model (OSCAM) to prepare the Operating and Support (O&S) cost estimates. The date for the O&S costs is July 6, 2001. The total O&S costs reflected in the December 2001 SAR have been revised to show only O&S costs versus Total Life Cycle Cost.

December 2001 SAR: \$17,552.6M (this number includes total acquisition costs and O&S costs)

Current SAR: \$12,460.0M (O&S costs only)

The assumptions for the Cost Element categories are as follows:

MISSION PAY & ALLOWANCES. The Program Office developed a spreadsheet based on "The Center for Naval Analysis CRM 97-28.10/November 1999 Combat Logistics Force (CLF) Analysis of Alternatives: Cost Estimating Methodology (CNA CRM 97-28.10)" to calculate a composite of U.S. Navy and Military Sealift Command (MSC) monthly salary cost for officer and enlisted personnel. The costs generated accurately reflect the specific complement for T-AKE. These values were then input into the OSCAM and used to generate this cost.

UNIT LEVEL CONSUMPTION. Unit Level Consumption consists of Ship Petroleum Oil Lubricants (POL), Repair Parts/Supplies, Depot Level Repairables, and Purchased Equipment/Services that were calculated as follows:

Ship POL - The Program Office developed spreadsheets to calculate fuel consumption based on the actual propulsion plant characteristics and the ship's operating/speed profile. These values were then input into OSCAM.

Repair Parts/Supplies - The Program Office developed a spreadsheet which used CNA 97-28.10 Cost Estimating Relationships (CERs) for Supplies (USN) and Consumables (MSC) to calculate the composite U.S. Navy and MSC value. This value was then input into OSCAM.

Depot Level Repairables - The Program Office used the average cost of material consumed for repair for the CLF ships being replaced. This value was then input into OSCAM.

Purchased Equipment/Services - The Program Office used the NCCA CER for Variable Alongside Support Services to represent this cost. This value was then input in OSCAM.

INTERMEDIATE MAINTENANCE. MSC conducts Voyage Repairs (VR) in lieu of Intermediate Level Maintenance. The OSCAM Intermediate Maintenance Ashore

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**18a. Operating and Support Costs (Cont'd):**

function was used in conjunction with the ship's notional operating schedule (1 VR per ship per operating quarter between Depot Level Maintenance periods) to generate the cost of Voyage Repairs.

DEPOT MAINTENANCE. The Depot Level Maintenance profile used in OSCAM was developed based on MSC's notional Depot Maintenance schedule. The Program Office used average costs for the CLF ships being replaced and NCCA CERs to estimate the associated costs.

CONTRACTOR SUPPORT. This cost element was not used because the T-AKE ship is built to commercial standards and is supported via commercial sources rather than the U.S. Navy Supply System.

SUSTAINING SUPPORT. This element is comprised of the following cost items:

Centrally Provided Material (CPM) - The Program Office used a spreadsheet to calculate CPM. The value generated was based on a weighted average of the CLF ships being replaced. This value was then input into OSCAM.

Engineering Technical Services - The NCCA CER for Engineering Technical Services that encompasses services provided to a ship by Mobile Technical Units (MOTUs), In-Service Engineering Agents (ISEAs) and Navy Sea Center (Atlantic and Pacific) was used. This value was input into OSCAM.

Receipt, Segregation, Storage, Issue - The Program Office used a spreadsheet using CNA 97-28.10 Cost Estimating Methodology to calculate publication costs, which were used to represent this cost category. This value was input into OSCAM.

INDIRECT COSTS. The Program Office developed a spreadsheet using CNA 97-28.10 Cost Estimating Methodology to calculate a composite U.S. Navy and MSC monthly salary costs for officer and enlisted personnel. The resulting composite values included only indirect costs associated with USN officer and enlisted monthly pay. These values were then input into OSCAM.

TY\$ were not calculated due to lack of inflation indices out past 2050.

**b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)**

Cost Element	T-AKE Avg Annual Cost per T-AKE Ship	No antecedent System
Mission Pay & Allowances	13.9	N/A
Unit Level Consumption	8.7	N/A
Intermediate Maintenance	0.6	N/A
Depot Maintenance	4.1	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.8	N/A
Indirect Costs	0.2	N/A

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	T-AKE Avg Annual Cost per T-AKE Ship	No antecedent System
Total	28.3	N/A

Total O&S Cost	T-AKE	No antecedent System
BY\$ (In Millions)	12460.0	N/A
TYS (In Millions)	N/A	N/A

Report Creation Date: 03/20/2003 12:21:08 PM

# A-5 BRADLEY UPGRADE

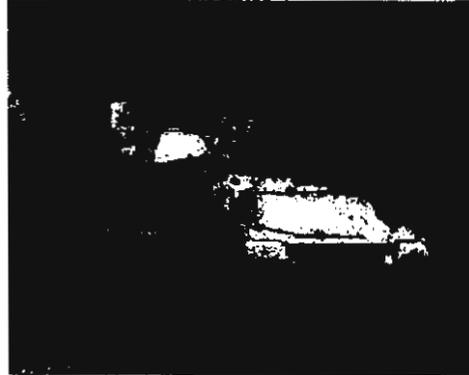
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM:** BFVS A3 Upgrade

**AS OF DATE:** December 31, 2002

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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:**  
PEO, Ground Combat Systems COL Curtis McCoy  
PM, Bradley Fighting Vehicle Systems Assigned: July 16, 2001  
ATTN: SFAE-GCS-BV DSN 786-5630; COMM (586) 574-5630  
Warren, MI 48397-5000 mccoyc@tacom.army.mil
- 4. Program Elements/Procurement Line Items:**  
RDT&E:  
PE 0203735  
PROCUREMENT:  
APPN 2033 ICN G20900 (Army) (Shared)  
APPN 2033 ICN G80717 (Army)  
APPN 2033 ICN GE0163 (Army) (Shared)

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**5. References:**

SAR Baseline (Production Estimate):

AAE Approved Acquisition Program Baseline (APB) dated April 9, 2001.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated May 8, 2002.

**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 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 A3 BFV 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 (BFIST) vehicle variant acquires targets and coordinates all indirect fire support assets.

**7. Executive Summary:**

The ADM for the M2/M3A3 Bradley Army System Acquisition Review Council (ASARC), signed on July 18, 1997, approved entry into Low Rate Initial Production (LRIP), updated BFVS A3 Exit Criteria for Milestone III, and designated PEO-GCSS as Milestone Decision Authority for the follow-on LRIP decision. The contract for the first year of A3 LRIP was signed with United Defense Limited Partnership (UDLP) in July 1997, and the second year in November 1997.

The third year (FY99) of the Bradley A3 LRIP program was awarded to UDLP on December 21, 1998 for 73 additional A3 vehicles. The Bradley A3 multiyear was delayed by one year due to a slip in the Initial Operational Test and Evaluation (IOT&E). The FY00 Appropriations Bill moved \$22M from the Procurement Appropriation to RDT&E to fund the program restructure. The bill also cut an additional \$12M from the Procurement Appropriation. The Army Acquisition Executive (AAE) signed an Acquisition Decision Memorandum (ADM) on December 22, 1999 authorizing PEO-Ground Combat Systems (GCS) to procure a total of 230 Bradley A3 vehicles within LRIP, which was approximately 20% of the Army Procurement Objective at that time. A conditional Materiel Release was approved for vehicles to be fielded to 2/8 Infantry and 1/10 Cavalry at Fort Hood. These vehicles supported the Army's First Digitized Division. There were eleven pending conditions for a full Materiel Release. All but four conditions have been closed with three of the remaining conditions scheduled to

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**7. Executive Summary (Cont'd):**

close 2QFY03. The last open condition is the retrofit of the Integrated Driver's Vision System (IDVS). The condition is closed upon completion of integration, test, a successful User event and an approved retrofit schedule. Target date is 2QFY04.

No major issues have been identified from testing. Limited User Test (LUT) II was completed in August 1999. Live Fire Testing was completed at Aberdeen Proving Ground (APG) in September 1999 with a total of eighteen shots conducted. The Bradley A3 Initial Operational Test (IOT) was completed November 2000. The IOT consisted of four 96-hour scenarios. During each of these scenarios a Bradley A3/M1A2 System Enhancement Program (SEP) equipped Company Team conducted attack, defense, and movement to contact missions. The Bradley A3 demonstrated significant maintenance reliability throughout the IOT and is on track to support Force XXI Battle Command, Brigade-and-Below (FBCB2) test events scheduled for the first or second quarter of FY03. Production Qualification Test (PQT) and Production Verification Test (PVT) were completed at Yuma Proving Ground (YPG) and APG, respectively. The proof of performance (POP) test was successfully conducted in San Jose and demonstrated that A3 with Turret Processor Unit II (TPUII) met the Milestone III exit criteria in computer memory and processor utilization.

The Bradley A3 was approved for full-rate production and Type Classification Standard by the Bradley A3 Army Systems Acquisition Review Council (ASARC) on April 27, 2001 with the Milestone III production decision. An alternative contracting strategy was approved to award a single year contract that was convertible to a multiyear contract. On May 2, 2001 the contract for 109 Bradley A3 fighting vehicles was signed. The contract conversion was signed June 2001 for a total of 389 Bradley A3 vehicles to be procured via a three year multiyear contract (FY01-FY03). This is the final year of the multiyear contract with a target date of award in March 2003. The total quantity of Bradley A3s to be procured has been reduced from 1037 to 595.

Completed fieldings to date include 1/10 Cavalry, 2/8 Infantry in Fourth Infantry Division (4ID). Fielding of one company to 2/5 Cavalry in First Cavalry Division (1CD) was completed March 2002. Fielding of the 1/5 Cavalry was completed August 2002. The fielding of the 1/7 Cavalry is ongoing.

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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 IV	JAN 1994	JAN 1994	JAN 1994
Preliminary Design Review	MAR 1995	MAR 1995	JUL 1995
Critical Design Review	SEP 1995	SEP 1995	JAN 1996
Pre-Production Qualification Test (PPQT)			
Start	OCT 1996	OCT 1996	OCT 1996
Complete (Government)	JUL 1997	JUL 1997	JUL 1997
PQT			
Start	OCT 1998	OCT 1998	DEC 1998
Complete	JUL 1999	JUL 1999	JUN 1999
Initial Operation Test & Evaluation (IOT&E)			
Start	OCT 2000	OCT 2000	OCT 2000
Complete	NOV 2000	NOV 2000	NOV 2000
First Unit Equipped (FUE)	NOV 2000	NOV 2000	NOV 2000
Milestone III	MAR 2001	MAR 2001	APR 2001
1st Full Scale Production Contract	APR 2001	APR 2001	MAY 2001

9b. Schedule (Cont'd):

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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 /	Future Battle Command and Below	Future Battle Command and Below
<b>Lethality:</b> Command and Control: Improve the target acquisition and fire control system	Dual track and auto track with IBAS and CIV	Dual / track and / auto track with IBAS and CIV /	Dual track and aided track with IBAS	Dual track and aided track with IBAS
<b>Survivability:</b> NBC protection for dismount element while in vehicle	Ventilated face pieces	Ventila-/ ted face/ pieces /	Ventila- ted face pieces	Ventila- ted face pieces
<b>Mobility:</b> 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 and map
Maintain cross-country mobility with main battle tank	M1A2 Tank	M1A2 / Tank /	M1A2 Tank	M1A2 Tank

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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>
RAM (Mean Miles Between Failure)	500	500 / 400	417	500
Integrated Logistics Support:				
Systems fault isolation capability to provide unambiguous fault isolation to: Mission critical Line Replaceable Units (LRU) (% of the time)	95	95 / 95	90	95
Non-Mission critical LRUS (% of the time)	90	90 / 90	90	90

Acronyms:

NBC--Nuclear, Biological, and Chemical  
GPS--Global Positioning System  
RAM--Reliability, Availability, and Maintainability  
CIV--Commander's Independent Viewer  
IBAS--Improved Bradley Acquisition System

Integrated Logistics Support: System fault isolation capability was demonstrated in the A3 IOT&E 1st quarter FY01. The System Evaluation Report of the Bradley FVS M2/M3A3, March 2001, which supports the ASARC decision, states that during the Diagnostics Demonstration, the diagnostic tools correctly detected and isolated faults to the correct LRU 90% of the time. Although this did not meet the 95% requirement, this capability is considered adequate, is low risk for future improvements and provides significant improvement over legacy system capabilities. Subsequent improvements to test equipment have improved this performance; therefore, we have left the estimate at 95%.

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)	529.6	532.6	532.7
Procurement	3194.6	3541.5	2246.3
Non-recurring	(25.8)		(25.8)
Recurring	(2784.1)		(1873.6)
Total Rollaway	(2809.9)		(1899.4)
Training Devices	(31.8)		(34.6)
Other	(217.4)		(195.6)
Total Other Wpn Sys	(249.2)		(230.2)
Peculiar Support	(49.9)		(47.5)
Initial Spares	(85.6)		(69.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2001 Base-Year \$	<u>3724.2</u>	<u>4074.1</u>	<u>2779.0</u>
Escalation	135.6	171.7	3.8
Development (RDT&E)	(-21.0)	(-24.1)	(-24.2)
Procurement	(156.6)	(195.8)	(28.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>3859.8</u>	<u>4245.8</u>	<u>2782.8</u>
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	<u>926</u>	<u>1037</u>	<u>595</u>
Total	926	1037	595

Note: Excludes 8 RDT&E prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

Two fully configured vehicles originally planned to be funded by RDT&E have now been funded by the Procurement Appropriation.

The initial LRIP quantity was 126. At that time, the APB authorized a total procurement quantity of 1602 vehicles. Subsequent decreases to the authorized procurement quantity, as well as an additional year of LRIP due to a delay of IOT&E, have caused the LRIP quantity to exceed 10% of the total procurement quantity. The current approved LRIP quantity was 230; only 206 were produced. A multiyear contract was awarded after April 2001 Milestone III to build the remaining 389 full production A3s. A new APB authorizes a total procurement quantity of 595 vehicles to fill two heavy divisions and the TRADOC training base.

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 (FEB 2003 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	2780.4	2779.0	
(2) Quantity	595	595	
(3) Unit Cost	4.673	4.671	-0.04
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	2247.8	2246.3	
(2) Quantity	595	595	
(3) Unit Cost	3.778	3.775	-0.08

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	508.6	3351.2	-	3859.8
Previous Changes:				
Economic	-4.0	-28.4	-	-32.4
Quantity	-	+318.6	-	+318.6
Schedule	-	+0.2	-	+0.2
Engineering	-	+13.5	-	+13.5
Estimating	+3.9	+40.7	-	+44.6
Other	-	-	-	-
Support	-	+41.5	-	+41.5
Subtotal	-0.1	+386.1	-	+386.0
Current Changes:				
Economic	-0.1	+11.7	-	+11.6
Quantity	-	-1338.3	-	-1338.3
Schedule	-	-0.1	-	-0.1
Engineering	-	-7.5	-	-7.5
Estimating	+0.1	-30.6	-	-30.5
Other	-	-	-	-
Support	-	-98.2	-	-98.2
Subtotal	-	-1463.0	-	-1463.0
Total Changes	-0.1	-1076.9	-	-1077.0
Current Estimate	508.5	2274.3	-	2782.8

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	529.6	3194.6	-	3724.2
Previous Changes:				
Quantity	-	+282.3	-	+282.3
Schedule	-	+0.1	-	+0.1
Engineering	-	+12.7	-	+12.7
Estimating	+3.0	+22.0	-	+25.0
Other	-	-	-	-
Support	-	+29.7	-	+29.7
Subtotal	+3.0	+346.8	-	+349.8
Current Changes:				
Quantity	-	-1192.7	-	-1192.7
Schedule	-	-0.1	-	-0.1
Engineering	-	-10.2	-	-10.2
Estimating	+0.1	-24.6	-	-24.5
Other	-	-	-	-
Support	-	-67.5	-	-67.5
Subtotal	+0.1	-1295.1	-	-1295.0
Total Changes	+3.1	-948.3	-	-945.2
Current Estimate	532.7	2246.3	-	2779.0

b. Current Change Explanations --

(Dollars in Millions)

Base-Year    Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+0.1	0.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-55.4
Economic adjustment for negative program change. (Economic)	N/A	+67.1
Total Quantity Variance associated with decrease from 1037 to 595.	-1220.7	-1368.5
Quantity decrease from 1037 to 595. (Quantity)	-1192.7	-1338.3
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	-0.1	-0.1
Allocation to Engineering variance resulting from Quantity Change. (QR)(Engineering)	-10.2	-7.5
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	-17.7	-22.6
Changes to reflect prior year obligations. (Estimating)	+0.7	+0.7

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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>
Adjustment for Current and Prior Inflation. (Estimating)	+16.7	+18.0
Decrease in estimate to contractor engineering (Estimating)	-24.3	-26.7
Adjustment for Current and Prior Inflation. (Support)	+1.5	+1.7
Change in Initial Spares due to quantity decrease. (QR)(Support)	-33.2	-41.6
Change in Peculiar Support estimate due to quantity decrease. (QR)(Support)	-8.2	-10.6
Change in Training Devices. (Support)	-2.5	-2.9
Change in Other support (Initial Consummables, New Equipment Training, Contractor Logistic Support, and Program Closure) estimate due to quantity decrease. (QR)(Support)	-25.1	-44.8
Procurement Subtotal	<u>-1295.1</u>	<u>-1463.0</u>

QR = Quantity related changes.

**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	
4.17	-0.035	+0.605	--	+0.010	+0.024	--	-0.095	+0.509	4.68

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	
3.62	-0.028	+0.299	--	+0.010	+0.017	--	-0.095	+0.203	3.82

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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	JAN 1994	JAN 1994	JAN 1994
Milestone III	N/A	NOV 1998	MAR 2001	APR 2001
IOC	N/A	SEP 1998	NOV 2000	NOV 2000
Total Cost	N/A	4038.8	3859.8	2782.8
Total Quantity	N/A	1602	926	595
Prog Acq Unit Cost	N/A	2.5	4.2	4.7

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
A3 Production Contract:  
 United Defense L.P., York,, PA  
 DAAE07-96-C-X036, FFP  
 Award: July 25, 1997  
 Definitized: July 25, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$66.2	N/A	35

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$228.8	N/A	126	\$228.8	\$228.8

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

A3 LRIP:

Initial Contract Price		
Target	Ceiling	Qty
\$152.4	\$152.4	80

United Defense L.P., York, PA  
 DAAE07-00-C-M002, FFP  
 Award: December 31, 1999  
 Definitized: August 31, 2000

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$152.4	\$152.4	80	\$152.4	\$152.4

Explanation of Change:

None.

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BFVS A3 Upgrade, December 31, 2002

15. Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

<u>A3 MY Contract:</u> United Defense (LP), York, PA DAAE07-01-C-M016, FFP Award: June 1, 2001 Definitized: June 1, 2001	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$446.7	\$446.7	251

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$446.7	\$446.7	251	\$446.7	\$446.7

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

A single year contract was awarded to United Defense which was converted to a multiyear contract on 1 June 2001 after approval of the A3 O&S Cost Certification, on 2 May 2001. A total of 389 Bradley A3 Vehicles will be delivered under this contract (Funding years: FY01-03; Delivery years: FY02-FY05).

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	508.5	-	-	-	508.5
Procurement	2071.6	122.5	80.2	-	2274.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2580.1	122.5	80.2	-	2782.8

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BFVS A3 Upgrade, December 31, 2002

**16b. Program Funding Summary (Cont'd):**

b. Annual Summary -- BFVS A3 Upgrade

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 2001 Dollars Nonrec	Rollaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				42.5	38.9
1995				94.2	87.9
1996				139.9	132.9
1997				92.5	88.9
1998				73.2	70.9
1999				61.4	60.2
2000				29.0	28.8
Subtotal				532.7	508.5

Appropriation: 2033 - Procurement of W&TCV

Fiscal Year	Qty	Rollaway FY 2001 Dollars Nonrec	Rollaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	35	10.8	165.0	177.5	172.2
1998	18	0.2	106.6	108.8	106.7
1999	73	8.9	266.2	295.1	291.7
2000	80		280.3	323.1	323.8
2001	109	3.8	336.9	392.2	396.6
2002	142	2.1	368.6	384.9	393.3
2003	138		350.0	373.5	387.3
2004				116.3	122.5
2005				74.9	80.2
Subtotal	595	25.8	1873.6	2246.3	2274.3

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	595	25.8	1873.6	2779.0	2782.8

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	260	260

Percent Total Program Quantities Delivered: 43.7%

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BFVS A3 Upgrade, December 31, 2002

**17b. Delivery/Expenditure Information (Cont'd):**

b. Total Expenditures To Date (In Millions of Dollars): \$ 1546.3

Percent Total Program Expended: 55.6%

Eight non-fully configured prototype EMD vehicles have also been delivered.

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Operating 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 870 miles per year (for the M2A3). The source for this cost estimate is the A3 Army Cost Position (ACP), dated March 2001 and updated January 2002.

The source for the M2/M3 A2 data is the Operating and Support Management Information System (OSMIS) updated April 2002.

Increases in cost for unit level consumption between A2 and A3 are due to increased complexity of the components.

Intermediate maintenance includes labor cost only. The cost of repair parts is included in Unit Level Consumption.

Sustaining support is for software only. There was no software in the A2.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

Cost Element	BFVS A3 Upgrade Annual Cost/Vehicle	M2A2/M3A2 Annual Cost/Vehicle
Mission Pay & Allowances	241.8	241.8
Unit Level Consumption	82.4	39.3
Intermediate Maintenance	0.1	0.1
Depot Maintenance	4.4	1.7
Contractor Support	0.0	0.0
Sustaining Support	13.2	0.0
Indirect Costs	40.3	40.3
Total	382.2	323.2

Total O&S Cost	BFVS A3 Upgrade	M2A2/M3A2
BY\$ (In Millions)	4579.2	20083.6
TY\$ (In Millions)	6590.7	21092.9

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A-19 MCS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: MCS

AS OF DATE: December 31, 2002

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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-Ground Combat C2, SFAE-C3S-GCC2	COL STEPHEN HORNER
FORT MONMOUTH, NJ 07703-5405	Assigned: August 25, 1999
	DSN 992-4041; COMM 732-532-4041
	shorner@c3smail.monmouth.army.mil

4. Program Elements/Procurement Line Items:

ROTA&E:

PE 23740 Project D484

PROCUREMENT:

APPN 2035 ICN BA9320 (Army)  
 APPN 2035 ICN BA9710 (Army)  
 APPN 2035 ICN BS9710 (Army)

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03-C-0416

**5. References:**

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated December 19, 1997.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 19, 2000.

**6. Mission and Description:**

The Maneuver Control System (MCS) satisfies an urgent need for more efficient command and control of tactical operations on the battlefield. MCS provides commanders and staffs, at corps through battalion, more accurate, up-to-date information for quicker decisions and more effective utilization of firepower and maneuver resources. The MCS data base provides decision support information and functional tools in both text and map graphics form. The system also automates the preparation and distribution of operations orders and reports to facilitate the initiation and execution of the commander's decision. Reports received through MCS automatically update the database ensuring that current tactical information is available whenever and wherever it is needed. Since the initial MCS was introduced in Europe in 1981, this program has been and will continue to be an evolutionary development. The MCS capability continues to expand in pre-planned, time-phased steps toward the objective system. The use of Common Hardware/Software (CHS) computers and peripheral hardware enables the MCS to capitalize on state of the art, ruggedized, commercial equipment and reduce life cycle costs. MCS is moving to ruggedized commercial workstations and notebook computers to enhance software development, support and training. MCS will also integrate its CHS equipment into Standardized Integrated Command Post System (SICPS) shelters.

**7. Executive Summary:**

In November 15, 1995, the Maneuver Control System (MCS) Operational Requirements Document (ORD) for Block IV was approved. 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, on the Defense Information Infrastructure Common Operating Environment (DII COE) software infrastructure.

In March 1997, the MCS Block III software was successfully used in Task Force XXI Army Warfighting Experiment (AWE). MCS Block III was part of the Army Battle Command System software baseline which was used during the Division AWE in November 1997. This demonstrated the tremendous operational potential of digital technology in achieving Information Dominance.

In June 1998, MCS Block III Initial Operational Test and Evaluation (IOT&E) was successfully conducted at Fort Hood, TX. The IOT&E results were positive with US Army Operational Test and Evaluation Command (OPTEC) recommending Block III be fielded to First Digital Corps (FDC). However, because of DOT&E insistence,

MCS, December 31, 2002

**7. Executive Summary (Cont'd):**

the Army did not seek a Milestone III decision to field Block III software. MCS Block III Y2K certification package was completed December 23, 1998, approved by PEO C3S and forwarded to Y2K authorities. Block III is used for training experiences.

In 1999, the DAE approved changes in the MCS program acquisition strategy, under which the program would continue in Engineering and Manufacturing Development (EMD). The R&D effort would be dedicated to support Block IV software development, in accordance with the Acquisition Decision Memorandum (ADM) signed August 6, 1999. The ADM authorized the Army to purchase and support with procurement funds Common Hardware/Software II computers to be used for MCS Block IV development, including participation in those aspects of the Army Experimentation Campaign Plan (AECPP) that are essential to MCS development and for operational testing.

In 2000, MCS continued ABCS software integration efforts and support to the Common Tactical Picture (CTP) operations. The MCS contractor continued development of software for Build 6.1 which was delivered to the Central Technical Support Facility (CTSF) at Fort Hood, TX for integration into ABCS 6.1. The continued integration of ABCS 6.1 at the CTSF resulted in increased efforts beyond that which was originally planned for MCS 6.1 and continued to impact work scheduled for MCS 6.2. Delivery of MCS functionality fell behind schedule principally due to the difficulties associated with product stability, performance and the integration of the ABCS foundation products. It became evident that the MCS contractor (Lockheed Martin) would not be able to complete all contract requirements by the contract end date of May 2002. The Army and OSD were notified via a Program Deviation Report dated November 20, 2000, which outlined an expected baseline breach in the area of RDTE Cost and Schedule.

In 2001, significant enhancements were made to the CTP whereby performance and stability were improved, but MCS functionality delivery continued to fall behind schedule. Also, during this period, results of an Independent Development Test (IDT) and a Performance Prove out Test (PPT) indicated that MCS software required additional time to mature prior to going to its IOT&E scheduled in November 2001, and a subsequent Operational Test Readiness Review recommended that the MCS IOT&E be delayed until the following year. MCS contractor (Lockheed Martin) submitted an Estimate to Complete. The variance at completion was significantly greater than the current contract value and the master schedule was extended through FY04. The government PM office developed a revised Estimate at Completion (EAC) using the COCOMO Software Model, which was on target with final negotiated cost.

During 2002, several significant changes have taken place. The MCS Operational Requirements Document (ORD) was approved by the Joint Requirements Oversight Council December 10, 2002. The MCS software showed improved performance and stability as evidenced at the Field Test 5 in September 2002 and the IOTE was on track for April 2003. Subsequently, that test window has become unavailable due to a change in priorities for the Army and the MCS test unit. Due to other priorities, the Army is not able to commit to a test unit and test date at this time. The Product Manager has begun planning for ABCS 7.X software development

**7. Executive Summary (Cont'd):**

and hardware architecture requirements.

**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- 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:

The software delivered by the contractor was not sufficiently mature, which resulted in a delay in the IOT&E. As a result of government directed changes, additional contract development costs were incurred. The Army is assessing the MCS requirements and a revised APB will be submitted which will correct these schedule and RDT&E breaches.

**9. Schedule:**

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
BLOCK IV				
AN/TYQ-45 (CHS)				
Award MCS Contract	N/A	SEP 1996	SEP 1996	
PEO C3S target for 4ID upgrade	N/A	SEP 2000	SEP 2000	
IOT&E				
Start	N/A	OCT 2001	TBD	(Ch-1)
Complete	N/A	NOV 2001	TBD	(Ch-1)
Milestone III	N/A	MAY 2002		
FUE	N/A	JUN 2002	TBD	(Ch-1)
PEO C3S target for III Corps upgrade	N/A	APR 2004	N/A	(Ch-2)
OA/OT				
Start	N/A	SEP 2002	N/A	(Ch-2)
Complete	N/A	NOV 2002	N/A	(Ch-2)
BLOCK V	N/A	N/A		

9a. Schedule (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
OA/OT	N/A	N/A		
Start	N/A	N/A	TBD	(Ch-3)
Complete	N/A	N/A	TBD	(Ch-3)

ACRONYMS

- Block IV - MCS Version 6X Software
- Block V - MCS Version 7X Software
- CHS - Common Hardware Systems
- FUE - First Unit Equipped
- IOT&E - Initial Operational Tests and Evaluation
- OA/OT - Operational Assessment/Operational Test

b. Current Change Explanations --

(Ch-1) HQDA message, dated October 2002, subject: Confirmed Stryker IOTE Time line and Announced Postponement of MCS/FBCB2/ISYSCON V(4) Gateway IOTE. The IOTE test unit has been released to support other training missions/Army priorities. The loss of an IOTE test unit has caused the changes to the current program plan.

	FROM	TO
IOT&E		
Start	Apr 2003	TBD
Complete	Jun 2003	TBD
Milestone III	Dec 2003	TBD
FUE	Jan 2004	TBD

(Ch-2) PEO C3S Target for III Corps upgrade from April 2004 to N/A as it is no longer applicable to the MCS Block IV program. OA/OT start date of July 2004 and complete date of September 2004 are changed to N/A as they are no longer applicable for MCS Block IV software program.

(Ch-3) OA/OT has been added as a requirement for MCS Block V software program with a start and complete date to be determined.

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
BLOCK IV						
AN/TYQ-45/53 (CHS)						
100% Memory Retention during Power fluc/loss (at least xx mins)	5	N/A	/ N/A	TBD	N/A	
Purge Memory (within xx mins)	3	N/A	/ N/A	TBD	N/A	
Mean Time to Repair Organizational (hr)	.5	N/A	/ N/A	TBD	N/A	
Situation Awareness						
Integrity of: "Common Picture" (assumes COE compliant input from external sources) (%)	N/A	100	/ 95	TBD	N/A	(Ch-1)
Between Army and Joint Echelons(sec)	N/A	8	/ 1800	TBD	N/A	(Ch-1)
Adjacent Army and Joint Echelons (sec)	N/A	8	/ 900	TBD	N/A	(Ch-1)
Within Army and Joint Echelons (sec)	N/A	8	/ 900	TBD	N/A	(Ch-1)
Interoperability						
Direct data exchange integrity IAW DoD COE Standards (%)	N/A	100	/ 95	TBD	N/A	(Ch-1)
Continuity of Operations (hr)						
Commander's Situation Report Availability After: Planned Outage (min)	N/A	15	/ 30	TBD	N/A	(Ch-1)

10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Unplanned Outage (min)	N/A	45 / 60	TBD	N/A	(Ch-1)
Operational Availability (Ao)	.88	.88 / .76	TBD	N/A	(Ch-1)
BLOCK IV			TBD		
Common Operational Picture			TBD		
Integrity	N/A	N/A	TBD	90% of data	(Ch-2)
Speed				90% of time	
Standards Met	N/A	N/A	TBD	85% of time	(Ch-2)
Data Consistency	N/A	N/A	TBD	85%	(Ch-2)
Interoperability			TBD		
With Joint Systems			TBD		
Limited Messages					
Information	N/A	N/A	TBD	100% of	(Ch-2)
Exchange				all IERS	
Reqm'ts (IERS)					
Disseminate Orders			TBD		
Integrity	N/A	N/A	TBD	90% of data	(Ch-2)
Speed				90% of time	
Standards Met	N/A	N/A	TBD	85%	(Ch-2)
BLOCK V			TBD		
Common Operational Picture			TBD		
Integrity	N/A	N/A	TBD	99.99% of data	(Ch-2)
Speed				99.99% of time	
Standards Met	N/A	N/A	TBD	98%	(Ch-2)
Data Consistency	N/A	N/A	TBD	98%	(Ch-2)
Interoperability			TBD		
With Joint Systems			TBD		
Full Message					
Capability					
Information	N/A	N/A	TBD	100%	(Ch-2)
Exchange					
Reqm'ts (IERS)					
Disseminate Orders			TBD		

**10a. Performance Characteristics (Cont'd):**

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Integrity	N/A	N/A	TBD	99.99% (Ch-2) of data 99.99% of time
Speed Standards Met	N/A	N/A	TBD	85% (Ch-2)

**b. Current Change Explanations --**

(Ch-1) Deleted Block IV performance parameter, no longer applicable due to the approved Joint Requirements Oversight Council (JROC) Operational Requirements Document (ORD) dated December 10, 2002.

(Ch-2) Added performance parameter in accordance with the JROC approved ORD dated December 10, 2002.

**11. Total Program Cost and Quantity (Dollars in Millions):**

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
<b>a. Cost --</b>			
Development (RDT&E)	50.9	101.2	155.5
Procurement	56.0	447.4	454.5
Flyaway	(56.0)		(330.0)
Other Wpn System Costs			(97.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(27.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1980 Base-Year \$	<u>106.9</u>	<u>548.6</u>	<u>610.0</u>
Escalation	125.2	729.3	725.8
Development (RDT&E)	(55.4)	(96.1)	(152.0)
Procurement	(69.8)	(633.2)	(573.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>232.1</u>	<u>1277.9</u>	<u>1335.8</u>
<b>b. Quantity --</b>			
Development (RDT&E)	N/A	0	0
Procurement	<u>947</u>	<u>5776</u>	<u>8629</u>
Total	<u>947</u>	<u>5776</u>	<u>8629</u>

Unit of measure quantities include the MCS Notebook Computer Unit (Unix Based Lap top) (NCU V-2), Notebook Computer Unit - Lap top Rugged (NCU-R,CF72), and ABCS Information Server - Device (AIS-D) suite of computers, including

11b. Total Program Cost and Quantity (Cont'd):

peripherals and common off-the-shelf software. No LRIP approved for Block IV.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (JUN 2000 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1980 BY\$)	548.6	610.0	
(2) Quantity	5776	8629	
(3) Unit Cost	0.095	0.071	-25.26
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1980 BY\$)	447.4	454.5	
(2) Quantity	5776	8629	
(3) Unit Cost	0.077	0.053	-31.17

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	106.3	125.8	-	232.1
Previous Changes:				
Economic	-8.7	+5.2	-	-3.5
Quantity	-	+2332.4	-	+2332.4
Schedule	-	+824.4	-	+824.4
Engineering	-	+483.3	-	+483.3
Estimating	+202.3	-3444.0	-	-3241.7
Other	-	-	-	-
Support	-	+412.3	-	+412.3
Subtotal	+193.6	+613.6	-	+807.2
Current Changes:				
Economic	-3.2	-17.3	-	-20.5
Quantity	-	-67.8	-	-67.8
Schedule	-	+10.7	-	+10.7
Engineering	-	-	-	-
Estimating	+10.8	+411.2	-	+422.0
Other	-	-	-	-
Support	-	-47.9	-	-47.9
Subtotal	+7.6	+288.9	-	+296.5
Total Changes	+201.2	+902.5	-	+1103.7
Current Estimate	307.5	1028.3	-	1335.8

Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	50.9	56.0	-	106.9
Previous Changes:				
Quantity	-	+952.1	-	+952.1
Schedule	-	-76.6	-	-76.6
Engineering	-	+362.2	-	+362.2
Estimating	+99.3	-1117.8	-	-1018.5
Other	-	-	-	-
Support	-	+145.3	-	+145.3
Subtotal	+99.3	+265.2	-	+364.5
Current Changes:				
Quantity	-	-27.4	-	-27.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.3	+181.5	-	+186.8
Other	-	-	-	-
Support	-	-20.8	-	-20.8
Subtotal	+5.3	+133.3	-	+138.6
Total Changes	+104.6	+398.5	-	+503.1
Current Estimate	155.5	454.5	-	610.0

13b. Cost Variance Analysis (Cont'd):

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
b. Current Change Explanations --			
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-3.2
	Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.7
	Reprogrammed funds to RDT&E to support the MCS Initial Operational Test and Evaluation (IOT&E). (Estimating)	+4.3	+9.1
	RDT&E Subtotal	<u>+5.3</u>	<u>+7.6</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-19.6
	Economic adjustment for negative program change. (Economic)	N/A	+2.3
	Quantity Variance associated with decrease of 1095 units from 9724 to 8629, reflects a reduction in the number of re-procurement quantities during the production period. (Quantity)	-27.4	-67.8
	Stretchout of annual procurement buy profile due to reprogramming of procurement dollars for Standard Integrated Command Post Shelters (SICPS) and hardware retrofits. (Schedule)	0.0	+10.7
	Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.2
	A Change in requirements to reflect the purchase of Standard Intergrated Command Post Shelter (SICPS), which were previously funded outside the program and to retrofit previously purchased hardware to support Version 6.X to Version 7.X software. (Estimating)	+181.2	+411.0
	Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.3
	An increase in Initial Spares due to a sparing concept change. (Support)	+1.6	+3.5
	A decrease in Other Wpn System Costs (support and fielding costs) due to the reduction in re-procurement quantities during the production period. (Support)	-22.5	-51.7
	Procurement Subtotal	<u>+133.3</u>	<u>+288.9</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	
0.245	-0.003	+0.045	+0.097	+0.056	-0.327	--	+0.042	-0.090	0.155

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	
0.133	-0.001	+0.143	+0.097	+0.056	-0.351	--	+0.042	-0.014	0.119

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
IOC	N/A	N/A	N/A	TBD
Total Cost	N/A	232.1	N/A	1335.8
Total Quantity	N/A	947	N/A	8629
Prog Acq Unit Cost	N/A	0.3	N/A	0.2

**15. Contract Information (Then-Year Dollars in Millions):**

a. RDT&E --

Maneuver Control System:  
 LOCKHEED MARTIN CORP, TINTON FALLS NJ  
 DAAB07-96-C-E008, CPAF  
 Award: September 26, 1996  
 Definitized: September 26, 1996

Qty	Initial Contract Price	
	Target	Ceiling
1	\$63.1	\$95.1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$173.3	\$0.0	9	\$173.3	\$173.3

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$2.3	\$-0.9
Net Change	\$2.3	\$-0.9

Explanation of Change:

Current cost and schedule variance is driven primarily by diverting resources from ABCS 7.0 development to maturity of ABCS 6.0 software in order to reduce risk in preparation for Initial Operational Test and Evaluation. In addition, the schedule and effort associated with the System Segment Acceptance Test and the Systems Stress Test #3, has been extended due to other Army priorities and reallocation of resources.

Contract Comments:

The initial contract price has increased as a result of rebaselining the 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 (FY96-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-14)</u>	<u>Total</u>
RDT&E	228.5	39.6	17.9	21.5	307.5
Procurement	69.8	39.1	52.7	866.7	1028.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	298.3	78.7	70.6	888.2	1335.8

b. Annual Summary -- MCS BLOCK IV

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1980 Dollars Nonrec	Flyaway FY 1980 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				0.9	1.7
1997				6.7	12.5
1998				7.4	13.9
1999				15.0	28.7
2000				21.8	42.2
2001				24.0	47.1
2002				20.3	40.2
2003				21.0	42.2

16b. Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1980 Dollars Nonrec	Flyaway FY 1980 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				19.5	39.6
2005				8.7	17.9
2006				5.3	11.1
2007				4.9	10.4
Subtotal				155.5	307.5

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 1980 Dollars Nonrec	Flyaway FY 1980 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996					
2000	239		5.7	12.0	23.3
2001	246		7.6	13.3	26.2
2002			1.4	5.0	10.0
2003			1.5	5.1	10.3
2004	206		10.3	19.1	39.1
2005	462		17.2	25.4	52.7
2006	281		16.2	23.7	50.1
2007	186		11.4	18.6	39.9
2008	126		7.8	14.0	30.7
2009	234		8.3	14.2	31.6
2010	858		52.8	65.2	147.9
2011	1147		51.1	59.9	138.2
2012	1257		49.1	58.1	136.6
2013	1755		45.7	57.5	137.4
2014	1632		43.9	63.4	154.3
Subtotal	8629		330.0	454.5	1028.3

FY2002 recurring flyaway costs are for System Project Management. FY2003 recurring flyaway costs are for System Project Management and the costs for TRADOC schools hardware retrofits.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	8629		330.0	610.0	1335.8

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	485	485

Percent Total Program Quantities Delivered: 5.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 250.2

Percent Total Program Expended: 18.7%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

MCS operating costs are estimated based upon peacetime usage rates. Costs are based on an operating life of 20 years. CHS-2 equipment will only require Depot Level Repairables (Spares), and Replenishment Consumables (Repair Parts) for the HCU's, LCU's and peripherals (RAID, LSP, LSD, Printers, TCIM) once fielded. The O&S costs are supported by the ACP approved March 1999, Addendum #3, dated March 2000. O&S costs will be updated based on the revised Acquisition Program Baseline.

ACRONYMS

- ACP - Army Cost Position
- HCU - High Capacity Unit
- LCU - Lightweight Capacity Unit
- LSD - Large Scale Display
- LSP - Large Screen Plotter
- RAID - Redundant Array of Independent Disks
- TCIM - Tactical Communications Interface Module

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Thousands)

Cost Element	MCS BLOCK IV Avg Annual Cost	No Antecedent
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
Personnel Support	23.8	N/A
Depot Level Repairables	25.1	N/A
Software Maintenance/Sup	18.5	N/A
Total	67.4	N/A

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MCS, December 31, 2002

18b. Operating and Support Costs (Cont'd):

Total O&S Cost	MCS BLOCK IV	No Antecedent
BY\$ (In Millions)	70.4	N/A
TY\$ (In Millions)	161.5	N/A

Report Creation Date: 3/13/2003 4:58:20 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: FMTV

AS OF DATE: December 31, 2002

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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:

PEO, Combat Spt & Combat Service Spt	COL Robert B. Lees, Jr.
PM, Medium Tactical Vehicles	Assigned: July 30, 1999
ATTN: SFAE-CSS-MT	DSN 786-5332; COMM (586) 574-5332
Warren, MI 48397-5000	leesrob@tacom.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 0604604A Project DH07

PROCUREMENT:  
APPN 2035 ICN D15500 (Army)  
APPN 2035 ICN DS1010 (Army)  
APPN 2035 ICN DV0310 (Army)  
APPN 2035 ICN DV0320 (Army)

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03-C-0418

**5. References:**

SAR Baseline (Production Estimate):

AAE Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated October 6, 1999.

**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, load handling system and dump truck models. Subvariants provide Air Drop capability for contingency and rapid deployment operations. Over 80% commonality of parts between variants significantly reduces operational and support costs. FMTV, intended to replace obsolete and maintenance-intensive trucks currently in the fleet, performs local and line haul, unit mobility, unit resupply, and other missions in combat, combat support, and combat service support units. The system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain, in all climatic conditions. The Project Manager has taken special interest in correcting field interface problems for older trailers that use FMTV as the prime mover. The FMTV A1 is the configuration currently in production.

**7. Executive Summary:**

The negotiated, sole-source, four-year, multiyear rebuy contract with Stewart & Stevenson was awarded on October 14, 1998. Vehicle production of the FMTV A1 series began in September 1999, and vehicles produced under this contract have the improved driveline components. First Unit Equipped occurred in July 2000 at Ft. Carson, CO. LMTV and MTV trailers procured under this contract completed air-drop certification during the year and received Full Materiel Release in September and December 2001, respectively.

The FMTV A1 Competitive Rebuy acquisition strategy was approved by the Army Acquisition Executive on January 22, 2000, and is being implemented using full and open competition. Phase I, the Competitive Evaluation Phase to select competitors for production, began in FY01 with contracts awarded in April 2001 to Stewart & Stevenson and Oshkosh Truck Corporation. Phase II, the award of a multiyear production contract, is scheduled for March 2003.

The Army received the required multiyear approval for the A1 Competitive Rebuy in Section 113, National Defense Authorization Act for FY 2003, December 2, 2002, but with contingencies. Information required by law addressing those contingencies is in the SECARMY venue for approval, after which it will be provided to the SECDEF for signature of documents for Congress. The Support Cost Certification documentation has been completed, preliminary staffing is complete, and formal staffing has begun.

**7. Executive Summary (Cont'd):**

As of December 31, 2002, a total of 17,800 FMTV vehicles have been accepted or conditionally accepted by the Army, of which 16,422 have been fielded to units.

**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/II (ASARC)	MAY 1987	MAY 1987	MAY 1987
DAB Program Review	MAY 1988	MAY 1988	MAY 1988
Prototype Contract Awards	OCT 1988	OCT 1988	OCT 1988
First Prototype Delivery	JAN 1990	JAN 1990	JAN 1990
FSD Development Testing			
Start	JAN 1990	N/A	JAN 1990
Complete	DEC 1990	N/A	DEC 1990
Early User Test and Evaluation			
Start	MAY 1990	N/A	MAY 1990
Complete	OCT 1990	N/A	OCT 1990
ASARC IIIA	SEP 1991	N/A	SEP 1991
Production Award (MYP)	OCT 1991	N/A	OCT 1991
Call up 2nd Year of MYP	AUG 1992	N/A	AUG 1992
Production Qualification Test (PQT)			
Start	MAY 1992	N/A	MAY 1992
Complete	NOV 1992	N/A	NOV 1992
First Production Delivery	MAY 1993	N/A	MAY 1993
Initial Production Test (IPT)			
Start	MAY 1993	N/A	MAY 1993

9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Complete	JUL 1995	N/A	JUL 1995
IOT&E			
Start	APR 1995	N/A	APR 1995
Complete	JUL 1995	N/A	JUL 1995
Call Up 3rd Year of MYP Increment 1	SEP 1993	N/A	SEP 1993
ASARC IIIB	AUG 1995	AUG 1995	AUG 1995
Call Up 3rd Year of MYP Increment 2	JUL 1995	N/A	JUL 1995
Organic Support Capability	DEC 1995	DEC 1995	DEC 1995
First Unit Equipped (FUE)/Initial Operational Capability (IOC)-FMTV	DEC 1995	DEC 1995	JAN 1996
Call up 4th Year of MYP Increment 1	JUL 1995	N/A	JUL 1995
Call up 4th Year of MYP Increment 2	SEP 1995	N/A	SEP 1995
Call Up 5th Year of MYP	JUL 1996	N/A	AUG 1996
Production Decision Review Van, Tanker, & Trailer	JUN 1996	N/A	NOV 1996
PQT, Van & Tanker			
Start	NOV 1999	N/A	N/A
Complete	DEC 1999	N/A	N/A
IPT, Van & Tanker			
Start	FEB 2000	N/A	N/A
Complete	OCT 2000	N/A	N/A
IOT&E, Van & Tanker			
Start	APR 2000	N/A	N/A
Complete	AUG 2000	N/A	N/A
PQT, Trailer			
Start	NOV 1999	N/A	N/A
Complete	DEC 1999	N/A	N/A
IPT Trailer			
Start	FEB 2000	N/A	N/A
Complete	OCT 2000	N/A	N/A
IOT&E, Trailer			
Start	APR 2000	N/A	N/A
Complete	AUG 2000	N/A	N/A
JSOR Amendment	N/A	MAY 1997	MAY 1997
Rebuy Contract Award	N/A	OCT 1998	OCT 1998
2nd Source Phase I Awards	N/A	OCT 1998	OCT 1998
Van Award	N/A	JAN 2000	N/A
2nd Source Phase II	N/A	JUN 2000	N/A
FUE Rebuy Contract	N/A	MAR 2000	JUL 2000
FUE 2nd Source	N/A	JAN 2003	N/A
FUE Van	N/A	APR 2002	N/A
Follow-on Contracts	N/A	NOV 2002	APR 2001

Acronyms:

ASARC - Army Systems Acquisition Review Council  
DAB - Defense Acquisition Board  
FSD - Full Scale Development

9a. Schedule (Cont'd):

FUE - First Unit Equipped  
 IOC - Initial Operational Capability  
 IPT - Initial Production Test  
 IOT&E - Initial Operational Test & Evaluation  
 JSOR - Joint Service Operational Requirement  
 MYP - Multiyear Procurement  
 PQT - Production Qualification Test

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Highway Speed on 2% Grade at GVW (mph)	55	55 / 55	54.8	55	
Highway Speed on 3% Grade at GVW (mph)	45	45 / 45	48.7	45	
Highway Speed on 2% Grade at GCW (mph)	40	40 / 40	45.5	40	
Highway Speed on 3% Grade at GCW (mph)	30	30 / 30	35.8	30	(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	12000 / 12000	7500	12000	
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	N/A / N/A	N/A	N/A	
Operating Range on Integral Fuel at GCW (miles)	300	300 / 300	300	300	
Reliability:					
MMBHMF (miles)					
Truck, Cargo (LMTV)	3000	5500 / 5500	12000	10000	(Ch-1)
Truck, Cargo (MTV)	2700	5500 / 5500	12000	10000	(Ch-1)
Tractor	3300	3800 / 3800	4800	3800	
Wrecker	2300	2800 / 2800	4800	2800	
Trailer (LMTV)	2800	2800 / 2800	5000	12000	(Ch-1)
Trailer (MTV)	2600	2600 / 2600	5000	12000	(Ch-1)
MMBOMF (miles)					
Truck, Cargo (LMTV)	2228	2228 / 2228	>8279	2200	(Ch-1)

10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Truck, Cargo (MTV)	2035	2035 / 2035	6386	2000	(Ch-1)
Tractor	2480	2480 / 2480	3606	2500	(Ch-1)
Wrecker	1875	1875 / 1875	4720	1900	(Ch-1)
Trailer (LMTV)	2056	2056 / 2056	5000	2100	(Ch-1)
Trailer (MTV)	1913	1913 / 1913	5000	1900	(Ch-1)
MMHPOM					
Truck, Cargo (LMTV)	.01	.0044 / .0044	.0037	.004	(Ch-1)
Truck, Cargo (MTV)	.011	.0055 / .0055	.0048	.006	(Ch-1)
Tractor	.012	.0065 / .0065	.0062	.0055	(Ch-1)
Wrecker	.015	.0064 / .0064	.0069	.0064	
Trailer (LMTV)	.003	.0017 / .0017	.0003	.0014	(Ch-1)
Trailer (MTV)	.003	.0017 / .0017	.0006	.001	(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	N/A	C-130 / C-130	C-130	C-130	
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	35	35 / 35	30	35	
Combination					

Acronyms:

GVW - Gross Vehicle Weight  
 GCW - Gross Combined Weight  
 MMBHMF - Mean Miles Between Hardware Mission Failure  
 MMBOMF - Mean Miles Between Operational Mission Failure  
 MMHPOM - Maintenance Man hours/Operating Mile (Unit Level)  
 LMTV - Light Medium Tactical Vehicle  
 MTV - Medium Tactical Vehicle  
 LHS - Load Handling System

b. Current Change Explanations --

(Ch-1) Current Estimate values reflect technical thresholds of the FMTV A1 CR configuration which will begin actual production in February 2004. For hardware parameters, these changes are based on the FMTV specification, #ATPD 2131C, dated October 11, 2002. For Mean Miles Between Operational Mission Failure (MMBOMF) operational parameters, the values are based on the Draft FMTV Operational Requirements Document (ORD), dated November 25, 2002. A1 CR performance will be demonstrated/evaluated during PVT, beginning March 2004. Values changed as follows:

10b. Performance Characteristics (Cont'd):

<u>Characteristic</u>	<u>From</u>	<u>To</u>
Highway Speed on 3% Grade at GCW	35 mph	30 mph
MMBHFM Truck, Cargo (LMTV)	5500 miles	10000 miles
MMBHFM Truck, Cargo (MTV)	5500 miles	10000 miles
MMBHFM Trailer (LMTV)	2800 miles	12000 miles
MMBHFM Trailer (MTV)	2600 miles	12000 miles
MMBOMF Truck, Cargo (LMTV)	2228 miles	2200 miles
MMBOMF Truck, cargo (MTV)	2035 miles	2000 miles
MMBOMF Tractor	2480 miles	2500 miles
MMBOMF Wrecker	1875 miles	1900 miles
MMBOMF Trailer (LMTV)	2056 miles	2100 miles
MMBOMF Trailer (MTV)	1913 miles	1900 miles
MMHPOM Truck, Cargo (LMTV)	.0044 hours	.004 hours
MMHPOM Truck, Cargo (MTV)	.0055 hours	.006 hours
MMHPOM Tractor	.0065 hours	.0055 hours
MMHPOM Trailer (LMTV)	.0017 hours	.0014 hours
MMHPOM Trailer (MTV)	.0017 hours	.001 hours

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)	121.8	120.5	134.5
Procurement	11472.4	14156.4	15001.5
Rollaway	(10677.1)		(14456.2)
Other Wpn Systems Cost	(777.3)		(545.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(18.0)		(0.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	11594.2	14276.9	15136.0
Escalation	7327.1	4106.7	4134.1
Development (RDT&E)	(-6.2)	(-7.7)	(-5.2)
Procurement	(7333.3)	(4114.4)	(4139.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	18921.3	18383.6	19270.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	85488	86916	83185
Total	85488	86916	83185

Note: Excludes 51 RDT&E prototypes from the SAR Baseline and 51 from the Current Estimate that are not considered fully configured.

11b. Total Program Cost and Quantity (Cont'd):

The FMTV program consists of trucks and trailers. Quantities in Section 11b. reflect trucks only, which are the official unit of measure for the program.

FMTV Low Rate Initial Production (LRIP) was approved in September 1991. LRIP quantities produced prior to Milestone IIIB, Full Rate Production Decision, August 1995, could not exceed a rate of 200 vehicles per month. By the completion of LRIP, 1,804 LMTV trucks and 779 MTV trucks had been produced.

c. Foreign Military Sales --

☐ FMTV Foreign Military Sales through December 31, 2002:

<u>Country</u>	<u>Quantity</u>	<u>Estimated Cost</u>
Saudi Arabia	99	\$13.5M
Taiwan	3	.4M
Thailand	117	22.8M
Greece	4	.6M
Macedonia	5	.7M

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	<u>UCR Baseline (OCT 1999 APB)</u>	<u>Current Estimate (Dec 2002 SAR)</u>	<u>Percent Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	14276.9	15136.0	
(2) Quantity	86916	83185	
(3) Unit Cost	0.164	0.182	+10.98
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	14156.4	15001.5	
(2) Quantity	86916	83185	
(3) Unit Cost	0.163	0.180	+10.43

**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	-2.4	-3386.1	-	-3388.5
Quantity	-	-597.8	-	-597.8
Schedule	+1.5	-434.8	-	-433.3
Engineering	-	+1048.7	-	+1048.7
Estimating	+13.5	+2923.7	-	+2937.2
Other	-	-	-	-
Support	-	-413.2	-	-413.2
Subtotal	+12.6	-859.5	-	-846.9
Current Changes:				
Economic	-0.9	-462.6	-	-463.5
Quantity	-	-	-	-
Schedule	-	+555.1	-	+555.1
Engineering	-	+702.0	-	+702.0
Estimating	+2.0	+383.0	-	+385.0
Other	-	-	-	-
Support	-	+17.1	-	+17.1
Subtotal	+1.1	+1194.6	-	+1195.7
Total Changes	+13.7	+335.1	-	+348.8
Current Estimate	129.3	19140.8	-	19270.1

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	-	-97.2	-	-97.2
Schedule	+0.2	+42.6	-	+42.8
Engineering	-	+781.5	-	+781.5
Estimating	+10.8	+2172.0	-	+2182.8
Other	-	-	-	-
Support	-	-252.2	-	-252.2
Subtotal	+11.0	+2646.7	-	+2657.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+517.7	-	+517.7
Estimating	+1.7	+362.5	-	+364.2
Other	-	-	-	-
Support	-	+2.2	-	+2.2
Subtotal	+1.7	+882.4	-	+884.1
Total Changes	+12.7	+3529.1	-	+3541.8
Current Estimate	134.5	15001.5	-	15136.0

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-0.9
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
	Additional funding for future vehicle changes/improvements. (Estimating)	+1.6	+1.9
	RDT&E Subtotal	+1.7	+1.1
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-462.6
	Change in total (all variants) FMTV annual procurement buy profile in response to budgetary constraints. (Schedule)	0.0	+555.1
	Elimination of Designated Fuel and Water Tanker Models. (Engineering)	-287.3	-391.2
	Addition of Load Handling System (LHS) Mission. (Engineering)	+8.4	+12.0
	Addition of HIMARS Resupply Vehicle (RSV) as Interchange. (Engineering)	+179.4	+244.6
	Addition of Embedded Diagnostic Hardware. (Engineering)	+557.5	+757.0
	Dump Truck Upgrade Hardware. (Engineering)	+59.7	+79.6
	Adjustment for Current and Prior Inflation. (Estimating)	+21.6	+23.5
	Change in recurring costs (hardware, engineering changes, etc) to reflect estimate updates including use of actual costs extrapolated over the program life. (Estimating)	+248.4	+356.5
	Net Production Rate Effects on Hardware Prices due to lower production rate FY03-FY12 and higher production rate FY13-FY22. (Estimating)	+8.7	-70.8
	Change in non-recurring costs (engineering, testing, in-house program management, etc.) to reflect actual versus prior estimates extrapolated over the program life. (Estimating)	+22.3	+26.6
	Truck model mix changes. (QR) (Estimating)	+61.5	+47.2
	Adjustment for Current and Prior Inflation. (Support)	+0.8	+0.8
	Change in Other Weapon Systems Cost (i.e. vehicle deprocessing, new equipment training, first destination transportation). (Support)	+1.4	+16.3

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

(Dollars in Millions)

Procurement Subtotal	Base-Year	Then-Year
	+882.4	+1194.6

QR = Quantity 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	
0.072	-0.001	+0.037	+0.035	+0.004	+0.066	--	+0.008	+0.149	0.221

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	
0.221	-0.046	-0.001	+0.001	+0.021	+0.040	--	-0.005	+0.010	0.232

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	
0.072	-0.001	+0.037	+0.035	+0.004	+0.066	--	+0.007	+0.148	0.220

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	
0.220	-0.046	-0.001	+0.001	+0.021	+0.040	--	-0.005	+0.010	0.230

In the Development Estimate, the unit of measure for the PAUC and APUC included truck and trailer quantities. The unit of measure was changed to only truck quantities in the December 1993 SAR. This unit of measure continues to be used

14. Unit Cost and Other History (Cont'd):

in the Production Estimate and Current Estimate columns.

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 1987	MAY 1987	MAY 1987
Milestone II	N/A	AUG 1987	MAY 1987	MAY 1987
Milestone III	N/A	MAR 1993	AUG 1995	AUG 1995
IOC	N/A	APR 1993	DEC 1995	JAN 1996
Total Cost	0.0	8568.6	18921.3	19270.1
Total Quantity	0	119542	85488	83185
Prog Acq Unit Cost	0.0	0.1	0.2	0.2

In the Development Estimate, the unit of measure for the PAUC and APUC included truck and trailer quantities. The unit of measure was changed to only truck quantities in the December 1993 SAR. This unit of measure continues to be used in the Production Estimate and Current Estimate columns.

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --	Initial Contract Price		
<u>FMTV:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Stewart & Stevenson Serv., Houston TX			
DAAE07-92-C-R001, Firm Fixed Price	\$1196.2	N/A	10843
Award: October 11, 1991			
Definitized: October 11, 1991			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1479.9	N/A	\$1479.9	\$1479.9

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Contract Comments:

Total quantity procured on the on contract -R001 is:

Direct Army	10,741
Air Force	194
National Guard	180
Foreign Military Sales	223

15. Contract Information (Cont'd):

Other	7
TOTAL	11,345

FMTV:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Stewart & Stevenson Serv, Houston TX DAAE07-98-C-M005, Firm Fixed Price Award: October 14, 1998 Definitized: October 14, 1998	\$1016.8	N/A	5390

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1915.2	N/A	10791	\$1915.2	\$1915.2

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Contract Comments:

Total quantity procured to date on contract -M005 is:

Direct Army	10497
Air Force	62
National Guard	107
Army Reserve	102
Foreign Military Sales	5
Other	<u>18</u>
TOTAL	10791

To maintain consistency with the official unit of measure for FMTV - trucks only - the truck quantity is shown in this section, although this contract includes both trucks and trailers.

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> (FY88-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-23)	<u>Total</u>
RDT&E	98.4	4.4	2.9	23.6	129.3
Procurement	3914.0	309.8	491.8	14425.2	19140.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4012.4	314.2	494.7	14448.8	19270.1

b. Annual Summary -- FMTV

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 1996 Dollars Nonrec</u>	<u>Rollaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1988				12.0	9.8
1989				31.8	27.0
1990				22.1	19.5
1991				10.7	9.8
1992				11.6	10.9
1993				0.7	0.7
1994				7.4	7.2
1995				4.3	4.3
1996				1.5	1.5
1997					
1998					
1999					
2000				1.8	1.9
2001				1.9	2.0
2002				1.8	1.9
2003				1.7	1.9
2004				3.9	4.4
2005				2.6	2.9
2006				1.7	1.9
2007				1.6	1.9
2008				1.8	2.1
2009				1.7	2.1
2010				1.7	2.1
2011				1.7	2.1
2012				1.7	2.2
2013				1.7	2.2
2014				1.7	2.3
2015				1.7	2.3
2016				1.7	2.4

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16b. Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 1996 Dollars Nonrec	Rollaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal				134.5	129.3

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Rollaway FY 1996 Dollars Nonrec	Rollaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991	394	20.0	55.4	81.1	76.2
1992	1301	9.9	153.8	187.6	180.1
1993	2008	12.2	239.1	262.7	257.3
1994	183	2.6	31.3	40.1	39.8
1995	3351	11.8	354.5	375.5	380.2
1996	825	46.8	103.9	163.6	167.2
1997	1821	5.7	212.7	230.4	238.2
1998	1346	46.1	163.7	219.4	229.0
1999	1439	26.8	282.0	318.1	335.6
2000	1930	27.2	345.6	393.3	419.7
2001	2288	47.4	376.3	433.8	467.9
2002	2400	34.3	375.2	422.1	459.9
2003	3199	45.6	540.4	601.3	662.9
2004	1160	29.7	227.1	277.0	309.8
2005	1965	30.4	388.6	432.8	491.8
2006	1893	39.0	374.2	429.9	496.7
2007	2016	33.9	376.6	427.3	502.5
2008	1707	30.8	359.6	408.1	488.5
2009	1753	28.1	370.6	414.0	504.6
2010	1800	25.5	360.5	401.0	497.5
2011	1800	36.0	354.1	405.4	512.0
2012	1800	31.8	344.4	391.5	503.3
2013	4416	29.5	731.3	776.1	1015.7
2014	4416	26.8	718.3	767.9	1023.1
2015	4416	25.0	705.7	753.4	1021.9
2016	4417	35.6	693.3	751.6	1037.8
2017	4415	31.2	680.6	734.6	1032.6
2018	4415	28.2	724.1	775.1	1109.1
2019	4577	25.5	745.4	792.9	1155.0
2020	4577	23.8	732.2	778.3	1154.1
2021	4580	23.8	719.9	766.0	1156.3
2022	4577	23.5	706.6	752.5	1156.4
2023		14.7		37.1	58.1
Subtotal	83185	909.2	13547.0	15001.5	19140.8

The FMTV Revised Army Acquisition Objective (AAO) is 83,170 trucks. The

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**16b. Program Funding Summary (Cont'd):**

total quantity of 83,185 includes 15 chassis which are not part of the AAO.

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	83185	909.2	13547.0	15136.0	19270.1

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	17800	17800

Percent Total Program Quantities Delivered: 21.4%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2832.7

Percent Total Program Expended: 14.7%

Delivery refers to the number of Army trucks accepted or conditionally accepted to date as of December 31, 2002.

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The average miles/vehicle/year is 2,901 miles for the LMTV truck and 2,968 miles for the MTV truck. The average years of operation (useful life) is 20 years. There are 36,347 Operating LMTVs and 42,796 Operating MTVs.

The standard unit of measure for this program - the quantity of trucks only, with trailer costs amortized proportionally against the truck quantities - has been used in developing the O&S costs reported below. These costs are based on a validated cost estimate, dated April 2001.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	FMTV Avg Annual Cost Per LMTV	FMTV Avg Annual Cost Per MTV
Mission Pay & Allowances	0.4	7.2
Unit Level Consumption	1.6	2.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.2	0.3
Indirect Costs	0.1	1.7

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	FMTV Avg Annual Cost Per LMTV	FMTV Avg Annual Cost Per MTV
Total	2.3	11.2

Total O&S Cost	FMTV	FMTV
BY\$ (In Millions)	1672.0	9586.3
TY\$ (In Millions)	2415.1	13767.8

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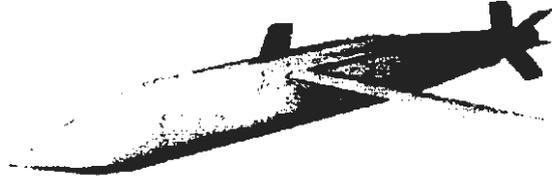
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)  
PROGRAM: JSOW

AS OF DATE: December 31, 2002

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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 R.O. Wirt, Jr., USN
Bldg 2272	Assigned: April 23, 1999
47123 Buse Road Unit #IPT	DSN 757-7477; COMM (301)757-7477
Patuxent River, MD 20670-1547	Wirtro@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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DEPARTMENT OF DEFENSE

03-C-0466

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5. (U) References:

Baseline/BLU-108

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline (APB) dated October 30, 1998.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated September 29, 2001.

Unitary

SAR Baseline (Development Estimate):

(U) DAE Approved Program Baseline (APB) dated April 26, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated November 29, 2001.

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 common JSOW variant nomenclature is JSOW-A (Baseline), JSOW-B (BLU-108), and JSOW-C (Unitary).

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. 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 BROACH lethal package incorporates a multi-stage warhead which allows the warfighter to attack blast/frag sensitive and hardened point targets. JSOW-C uses an Imaging Infrared (IIR) seeker with embedded Autonomous Targeting Algorithm (ATA) software, increasing accuracy and lethality. The IIR affords the mission planner precise aimpoint selection and target discrimination.

Through adherence to international standards for weapons interfaces and minimized weight and dimension considerations, JSOW is compatible with Navy, Air Force and NATO aircraft. JSOW is a Navy-led, joint program.

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7. (U) Executive Summary:

(U) Raytheon has met JSOW-A contractual delivery requirements for 16 consecutive months. As of January 31, 2003, 726 combat-ready JSOW-A weapons have been delivered to Navy and Air Force warfighters.

An 18-month-long Engineering Change Proposal (ECP) to modify the Low Cost Control section (LCCS) to withstand the more harsh vibration environment of the F-16 during high speed, low altitude flight has been completed on schedule. JSOW-A weapons configured with the ECP control section completed captive carriage flight-testing on the F-16 in December 2002. A successful F-16 DT-i free flight demonstrated robustness of the redesigned control section. Two of two DT/OT shots from F/A-18 were also successful. Program is tracking to complete remaining two F-16 DT/OT shots in February 2003 and proceed into FOT&E in March 2003.

In November 2002, COMOPTEVFOR completed a highly successful Quick Reaction Assessment (QRA)/Operational Test of JSOW-A with software version 9.1. The 9.1 software incorporates enhancements to the wind estimation algorithms that significantly improve weapon accuracy over that experienced with previous software releases. The QRA included 88 hours of captive carriage and 10 live drops from F/A-18 aircraft. 9.1 testing to date has demonstrated performance 62% better than the JORD accuracy requirements. The Quick Reaction Assessment/Operational Test report concluded that the weapons were potentially operationally effective and potentially operationally suitable and recommended that 9.1 be deployed. 9.1 software was released to the Fleet in November 2002.

The Joint Requirements Oversight Council (JROC) approved an update to the JSOW Joint Operational Requirements Document (JORD) on 10 December 2002. The revision moves the anti-armor requirement to a Navy-only section and defers the JSOW-B production decision. The FY04 President's Budget zeroed Navy and Air Force JSOW-B procurement requirements. The PM plans to complete JSOW-B IOT&E and shelve the capability until the threat evolves. The Acquisition Program Baseline (APB) is being updated to remove JSOW-B schedule parameters and modify both Dispenser and Unitary cost parameters to reflect this deferral.

In May 2002, the Unitary program successfully demonstrated Seeker/ATA performance during the free flight testing. The free flight test program is ongoing to demonstrate Broach lethal package integration. The Broach sled test program began in October 2002, successfully penetrating the ORD threshold target. Sled testing is also ongoing to demonstrate lethal package fuzing performance. During the second of three sled tests a premature initiation of the follow through warhead was observed. Engineering investigation and corrective action efforts are underway. Minor delay in start of LRIP (3rd Quarter FY03) is anticipated. Activities are ongoing to complete the remaining LRIP Entrance Criteria to support an LRIP decision by the Navy's Acquisition Executive.

USD(AT&L) Memorandum (FY02 MDAP Lists) dated May 29, 2002 re-designated the Unitary program to ACAT 1C.

8. (U) Threshold Breaches:

Baseline/BLU-108

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:

BLU-108 MSIII, IOC and MOT&E schedule milestones no longer apply as a result of removal of JSOW-B from FY04 President's Budget, and JROC approval to defer procurement of JSOW-B. Updated APB currently in work to remove schedule milestones.

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

8c. (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:

Baseline/BLU-108

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I	JUN 1989	JUN 1989	JUN 1989
DEMVAL Contract Award	JUN 1989	JUN 1989	JUN 1989
Early Operational Assessment (OT-I)			
Start	MAR 1991	MAR 1991	MAR 1991
Complete (Report)	OCT 1991	OCT 1991	OCT 1991
Milestone II	APR 1992	APR 1992	JUN 1992
E&MD Contract Award	MAY 1992	MAY 1992	JUN 1992
Preliminary Design Review	NOV 1992	NOV 1992	JAN 1993
Critical Design Review	DEC 1994	DEC 1994	APR 1995
IOT&E (OT-IIA)			
Start	DEC 1995	DEC 1995	FEB 1996
Complete (Report)	JUL 1996	JUL 1996	DEC 1996
TECHEVAL (DT-IIC)			
Start	NOV 1995	NOV 1995	FEB 1996
Complete (Report)	JUL 1996	JUL 1996	DEC 1996
Functional Configuration Audit	OCT 1995	OCT 1995	DEC 1995
Production Verification Review	APR 1996	APR 1996	JAN 1996
Production Readiness Review	JUN 1996	JUN 1996	OCT 1996
LRIP Contract Option Exercised	OCT 1996	OCT 1996	FEB 1997
LRIP First Delivery	MAY 1998	MAY 1998	MAY 1998
OPEVAL (OT-IIB)			
Start	AUG 1996	AUG 1996	FEB 1997
Complete (Report)	JUL 1997	JUL 1997	SEP 1997
Organizational Level Support	APR 2000	APR 2000	JUN 2000
Intermediate Level Support	JUL 2000	JUL 2000	SEP 2000
Milestone III	JUL 1998	JUL 1998	OCT 1998
IOC	JUL 1998	JUL 1998	JAN 1999
BLU-108 SYSTEM			
Pre-E&MD Contract Award	MAY 1993	MAY 1993	MAY 1993
Preliminary Fit Checks	JUN 1993	JUN 1993	JUN 1993
Eng Dev Test Vehicle Delivery	FEB 1994	FEB 1994	FEB 1994
F-16 Flight Tests	MAR 1994	MAR 1994	MAR 1994
F-15E Flight Tests	MAY 1994	MAY 1994	MAY 1994
Systems Design Review	APR 1995	APR 1995	JUN 1994
Milestone II	APR 1995	APR 1995	APR 1995

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9a. (U) Schedule (Cont'd):  
Baseline/BLU-108

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
E&MD Contract Mod	JUN 1995	JUN 1995	JUN 1995	
Preliminary Design Review	OCT 1995	OCT 1995	OCT 1995	
Critical Design Review	OCT 1996	OCT 1996	APR 1997	
DT&E				
Start	DEC 1995	DEC 1995	FEB 1996	
Complete (Report)	JUN 1998	JUN 1998	SEP 1998	
Operational Assessment				
Start	DEC 1995	DEC 1995	APR 1996	
Complete (Report)	SEP 1996	SEP 1996	FEB 1997	
LRIP Contract Option Exercised	JAN 2000	JAN 2000	DEC 1998	
LRIP First Delivery	JUL 2001	JUL 2001	JUL 2000	
Milestone III	OCT 2001	SEP 2003	TBD	(Ch-1)
Initial Operational Capability	SEP 2002	DEC 2003	TBD	(Ch-1)
IOT&E				
Start	JUL 2000	N/A	N/A	
Complete (report)	MAR 2001	N/A	N/A	
MOT&E				
Start	N/A	DEC 2002	TBD	(Ch-1)

b. Current Change Explanations --

(U) (Ch-1) BLU-108 MSIII, IOC and MOT&E schedule milestones no longer apply as a result of removal of JSOW-B from FY04 President's Budget, and JROC approval to defer procurement of JSOW-B. Updated APB currently in work to remove schedule milestones.

Unitary

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
Milestone II	APR 1995	APR 1995	APR 1995	
E&MD Contract Award	JUL 1995	JUL 1995	AUG 1995	
Critical Process Review #1	FEB 1996	FEB 1996	JUN 1996	
Critical Process Review #2	DEC 1998	N/A	N/A	
Critical Process Review #3	AUG 2000	N/A	N/A	
System Flight Test				
Start	JAN 2001	N/A	N/A	
Complete (Report)	SEP 2001	N/A	N/A	
LRIP Contract Option Exercised	OCT 2000	N/A	N/A	
LRIP First Delivery	APR 2002	N/A	N/A	
OPEVAL (OT-IIB)				
Start	NOV 2001	MAR 2003	MAY 2003	(Ch-1)
Complete (Report)	MAY 2002	N/A	N/A	
Milestone III	SEP 2002	DEC 2003	APR 2004	(Ch-1)
Initial Operational Capability	SEP 2002	(b)(1)	(b)(1)	(Ch-2)
Organization Level Support	TBD	N/A	N/A	
Intermediate Level Support	TBD	N/A	N/A	

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9a. (U) Schedule (Cont'd):  
Unitary

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Depot Level Support	TBD	N/A	N/A

b. Current Change Explanations --

(U) (Ch-1) OPEVAL start (from Mar 03 to May 03) and MSIII (from Dec 03 to Apr 04) dates slipped as a result of Broach integration issues and IOT&E scope requirement increases.

(Ch-2) IOC date (from (b)(1) to (b)(1)) slipped due to delay in LRIP Contract award in 3rd Quarter FY03.

10. (U) Performance Characteristics:

Baseline/BLU-108

a. Performance --

	Production <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Launch Envelope Airspeed (IMN/KCAS)	(b)(1)			
Off Axis Launch Angle	(b)(1)			
Survivability	IAW Sys Spec (SD-901- 1)	IAW Sys / Spec / Spec (SD-901-/ 1) / 1)	IAW Sys Spec (SD-901- 1)	IAW Sys Spec (SD-901- 1)
Accuracy (CEP) Weapon (Air Vehicle) (ft)	(b)(1)			
Reliability System Mission Range (nm from launch at specified conditions) Low Altitude (NM)	(b)(1)			
High (NM @30K ft MSL, .8 IMN) BLU-108 System Weapon Effective- ness (Kill per Weapon) Non- Countermeasures	(b)(1)			

(Ch-1)

(Ch-1)

JSOW, December 31, 2002

10a. (U) Performance Characteristics (Cont'd):  
Baseline/BLU-108

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Environment	(b)(1)			
Reliability				
System Mission				

b. Current Change Explanations --

(U) (Ch-1) DT, DT/OT and QRA test data shows a significant improvement in weapon air vehicle accuracy based on 10 launches with the version 9.1 software release.

Unitary

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Launch Envelope	(b)(1)			
Airspeed (IMN/KCAS)				
Off Axis Launch Angle (deg)				
Survivability				
Accuracy (CEP)				
Weapon (ft)				
Weapon (Air Vehicle) (ft)				
Range (nm from launch at specified conditions)				
Low Altitude (NM)				
High (NM @ 30K ft MSL, .8 IMN)				
Reliability				
System Mission				

10b. (U) Performance Characteristics (Cont'd):  
Unitary

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):  
Baseline/BLU-108

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	554.0	561.1	563.4
Procurement	2990.5	3417.5	2168.2
Recurring	(2876.7)		(1855.0)
Nonrecurring	(78.7)		(274.8)
Total Flyaway	(2955.4)		(2129.8)
Fleet Support	(34.2)		(35.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.9)		(3.4)
Construction (MILCON)	21.8	21.8	0.0
Acquisition O&M	<u>0.0</u>	<u>0.4</u>	<u>0.0</u>
Total FY 1990 Base-Year \$	3566.3	4000.8	2731.6
Escalation	1332.4	1600.9	996.2
Development (RDT&E)	(91.0)	(78.4)	(79.2)
Procurement	(1234.6)	(1515.6)	(917.0)
Construction (MILCON)	(6.8)	(6.8)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.1)</u>	<u>(0.0)</u>
Total Then Year \$	4898.7	5601.7	3727.8
b. (U) Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	<u>16124</u>	<u>16114</u>	<u>11811</u>
Total	16124	16114	11811

Note: Excludes 69 RDT&E prototypes from the SAR Baseline and 69 from the Current Estimate that are not considered fully configured.

(U) Note: LRIP quantities approved at Milestone II are 280 for JSOW Baseline and 11 for JSOW BLU-108. This does not represent 10% or more of the planned buy quantities.

11,811 procurement units include 8800 Navy Baselines, 3,000 Air Force Baselines, and 11 Air Force BLU-108's.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

11a. (U) Total Program Cost and Quantity (Cont'd):

Unitary

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	257.2	239.9	249.5
Procurement	3103.7	634.1	654.5
Recurring Flyaway	(2825.2)		(618.9)
Nonrecurring Flyaway	(102.1)		(32.6)
Total Flyaway	(2927.3)		(651.5)
Fleet Support	(35.5)		(3.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(140.9)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>1.8</u>	<u>0.0</u>
Total FY 1990 Base-Year \$	3360.9	875.8	904.0
Escalation	2946.3	387.2	327.1
Development (RDT&E)	(79.1)	(50.3)	(53.3)
Procurement	(2867.2)	(336.4)	(273.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.5)</u>	<u>(0.0)</u>
Total Then Year \$	6307.2	1263.0	1231.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>7800</u>	<u>3000</u>	<u>3000</u>
Total	7800	3000	3000

Note: Excludes 7 RDT&E prototypes from the SAR Baseline and 7 from the Current Estimate that are not considered fully configured.

(U) Note: LRIP quantities approved at Milestone II are 85 for Unitary. This does not represent 10% or more of the planned buy quantities.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

Baseline/BLU-108

	UCR Baseline (SEP 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	4000.8	2731.6	
(2) Quantity	16114	11811	
(3) Unit Cost	0.248	0.231	-6.85
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	3417.5	2168.2	
(2) Quantity	16114	11811	
(3) Unit Cost	0.212	0.184	-13.21

Unitary

	UCR Baseline (SEP 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	875.8	904.0	
(2) Quantity	3000	3000	
(3) Unit Cost	0.292	0.301	+3.08
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	634.1	654.5	
(2) Quantity	3000	3000	
(3) Unit Cost	0.211	0.218	+3.32

13. (U) Cost Variance Analysis:

Baseline/BLU-108

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	645.0	4225.1	28.6	4898.7
Previous Changes:				
Economic	+0.2	-70.3	-	-70.1
Quantity	-	-30.0	-	-30.0
Schedule	-	+202.7	+0.4	+203.1
Engineering	-	+28.5	-	+28.5
Estimating	-1.8	+825.4	-29.0	+794.6
Other	-	-	-	-
Support	-	-6.5	-	-6.5
Subtotal	-1.6	+949.8	-28.6	+919.6
Current Changes:				
Economic	-0.1	-44.2	-	-44.3
Quantity	-	-1193.7	-	-1193.7
Schedule	-	+112.7	-	+112.7
Engineering	-	+31.4	-	+31.4
Estimating	-0.7	-1010.1	-	-1010.8
Other	-	-	-	-
Support	-	+14.2	-	+14.2
Subtotal	-0.8	-2089.7	-	-2090.5
Total Changes	-2.4	-1139.9	-28.6	-1170.9
Current Estimate	642.6	3085.2	-	3727.8

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	554.0	2990.5	21.8	3566.3
Previous Changes:				
Quantity	-	-24.1	-	-24.1
Schedule	-	-	-	-
Engineering	-	+22.3	-	+22.3
Estimating	+9.9	+583.3	-21.8	+571.4
Other	-	-	-	-
Support	-	-4.3	-	-4.3
Subtotal	+9.9	+577.2	-21.8	+565.3
Current Changes:				
Quantity	-	-780.5	-	-780.5
Schedule	-	-	-	-
Engineering	-	+21.2	-	+21.2
Estimating	-0.5	-647.8	-	-648.3
Other	-	-	-	-
Support	-	+7.6	-	+7.6
Subtotal	-0.5	-1399.5	-	-1400.0
Total Changes	+9.4	-822.3	-21.8	-834.7
Current Estimate	563.4	2168.2	-	2731.6

13b. (U) Cost Variance Analysis (Cont'd):  
Baseline/BLU-108

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-0.1
	Revised estimate reflects reduction of JMPS funding in PB04 and adjustment of Air Force Current Estimate. (Estimating)	-0.6	-0.8
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
	RDT&E Subtotal	-0.5	-0.8
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-44.2
	Procurement decrease of 4,303 weapons from 16,114 to 11,811 due to deferral of Navy and Air Force Blu-108 programs. (Quantity)	-780.5	-1193.7
	Addition of aircraft costs, range costs, and test articles to address multiple software changes. (Engineering)	+11.3	+16.9
	A/C Integration and test costs for ECP-related testing. (Engineering)	+1.3	+1.9
	Revised to add projected annual costs for software engineering changes and flight test program. (Engineering)	+8.6	+12.6
	Adjustment for Current and Prior Inflation Air Force (Estimating)	+1.6	+2.0
	Adjustment for Current and Prior Inflation Navy (Estimating)	+3.6	+4.8
	Air Force outyear warranty cost projections updated to reflect actuals. (Estimating)	-7.0	-10.5
	Special Tooling/Special Test Equipment savings - estimating methodology changed, for sustaining labor. Air Force deleted Textron tooling. (Estimating)	N/A	-56.8
	Container cost savings as result of (competition) single container vendor. (Estimating)	-9.5	-14.2
	Reduction of cost estimate based on actual Contractor manufacturing and support costs for FRP-1/2/3. (Estimating)	-638.6	-938.5
	Costs associated with Contractor Performance Characterization Test (PCTV) updated to reflect actuals. (Estimating)	+2.1	+3.1
	Recalculation of spares requirements. (Support)	+3.4	+4.8
	Contractor ILS previously omitted, added to latest estimate. (Support)	+4.2	+9.4

13b. (U) Cost Variance Analysis (Cont'd):

Baseline/BLU-108

b. (U) Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Outyear increases caused by completion of AF Baseline and Unitary Programs (loss of common truck concurrency). (Schedule)	0.0	+112.7

Procurement Subtotal	-1399.5	-2089.7
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Unitary

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	336.3	5970.9	-	6307.2
Previous Changes:				
Economic	-20.2	-358.5	-	-378.7
Quantity	-	-1322.5	-	-1322.5
Schedule	-	-76.7	-	-76.7
Engineering	-	-	-	-
Estimating	-16.6	-2944.8	-	-2961.4
Other	-	-	-	-
Support	-	-313.0	-	-313.0
Subtotal	-36.8	-5015.5	-	-5052.3
Current Changes:				
Economic	-1.0	-27.6	-	-28.6
Quantity	-	-	-	-
Schedule	-	-10.1	-	-10.1
Engineering	-	-	-	-
Estimating	+4.3	+8.2	-	+12.5
Other	-	-	-	-
Support	-	+2.4	-	+2.4
Subtotal	+3.3	-27.1	-	-23.8
Total Changes	-33.5	-5042.6	-	-5076.1
Current Estimate	302.8	928.3	-	1231.1

13a. (U) Cost Variance Analysis (Cont'd):

Unitary

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	257.2	3103.7	-	3360.9
Previous Changes:				
Quantity	-	-781.8	-	-781.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.8	-1502.5	-	-1513.3
Other	-	-	-	-
Support	-	-175.0	-	-175.0
Subtotal	-10.8	-2459.3	-	-2470.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.1	+8.5	-	+11.6
Other	-	-	-	-
Support	-	+1.6	-	+1.6
Subtotal	+3.1	+10.1	-	+13.2
Total Changes	-7.7	-2449.2	-	-2456.9
Current Estimate	249.5	654.5	-	904.0

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices (Economic)	N/A	-1.0
Adjustment for Current and Prior Inflation (Estimating)	+0.8	+1.0
Revised estimate for Seeker Development (Estimating)	+2.3	+3.3
RDT&E Subtotal	+3.1	+3.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-27.6
Adjustment for Current and Prior Inflation (Estimating)	+0.4	+0.5
Cost estimate increase resulting from quantity change experienced in Dispenser program. Unitary affected due to commonality of both programs. (Estimating)	+9.7	+10.1
Unitary profile aligned with economic production rate (Schedule)	0.0	-10.1
Correction to align flyaway and support costs (Support)	+1.6	+2.4

13b. (U) Cost Variance Analysis (Cont'd):

Unitary

b. (U) Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
(Estimating)	-1.6	-2.4
Procurement Subtotal	+10.1	-27.1

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

Baseline/BLU-108

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.304	-0.010	+0.007	+0.027	+0.005	-0.018	--	+0.001	+0.012	0.316

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	
0.262	-0.010	-0.008	+0.027	+0.005	-0.016	--	+0.001	-0.001	0.261

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 1989	JUN 1989	JUN 1989	JUN 1989
Milestone II	MAR 1991	APR 1992	APR 1995	APR 1995
Milestone III	JUN 1994	JUL 1998	OCT 2001	TBD
IOC	SEP 1995	JUL 1998	SEP 2002	TBD
Total Cost	260.0	2969.2	4898.7	3727.8
Total Quantity	0	8800	16124	11811
Prog Acq Unit Cost	0.0	0.3	0.3	0.3

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14a. (U) Unit Cost and Other History (Cont'd):

Unitary

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.809	-0.136	+0.854	-0.029	--	-0.983	--	-0.104	-0.398	0.410

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	
0.766	-0.129	+0.785	-0.029	--	-0.979	--	-0.104	-0.456	0.309

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 1995	N/A	APR 1995
Milestone III	N/A	SEP 2002	N/A	MAR 2004
IOC	N/A	SEP 2002	N/A	(b)(1)
Total Cost	0.0	6307.2	0.0	1231.1
Total Quantity	0	7800	0	3000
Prog Acq Unit Cost	0.0	0.8	0.0	0.4

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) JSOW UNITARY E&MD:

Raytheon Systems, Tucson, AZ  
 N00019-95-C-0120, CPFF  
 Award: August 30, 1995  
 Definitized: August 30, 1995

	Initial Contract Price		
	Target	Ceiling	Qty
	\$211.5	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$226.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$215.4	\$215.4

JSOW, December 31, 2002

15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-5.7	\$-1.1
Cumulative Variances To Date (12/31/02)	<u>\$-9.9</u>	<u>\$-0.8</u>
Net Change	\$-4.2	\$0.3

Explanation of Change:

(U) Cost Variance: The net unfavorable change for cost variance is primarily driven by the continuing additional effort and resolution of technical issues necessary to integrate a commercial IR camera, and accomplish new hardware and software design required to implement the Unitary CAIV Seeker configuration. There was also some impact from effort to resolve Broach Payload integration issues.

Schedule Variance: The net favorable change for schedule variance is due to the additional effort and resolution of technical issues to integrate and accomplish new hardware and software design required to implement Unitary CAIV seeker configuration.

There is no impact to the contract or JSOW program for these variances.

b. Procurement -- (U) <u>JSOW BASELINE FRP:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Systems, Tucson, AZ N00019-99-C-1014, FFP Award: December 30, 1998 Definitized: N/A	\$133.9	N/A	427

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$345.2	N/A	942	\$345.2	\$345.2

Explanation of Change:

(U) Current contract price reflects exercise of the FY00 option to procure additional quantities.

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</u> (FY87-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-17)	<u>Total</u>
RDT&E	942.7	0.8	0.5	1.4	945.4
Procurement	779.6	217.5	220.5	2795.9	4013.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1722.3	218.3	221.0	2797.3	4958.9

Baseline/BLU-108

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY87-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-17)	<u>Total</u>
RDT&E	639.9	0.8	0.5	1.4	642.6
Procurement	723.5	151.6	147.7	2062.4	3085.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1363.4	152.4	148.2	2063.8	3727.8

(U) Funding does not include Seek Eagle or BRU-57 funds which are included in the P-1 documentation.

Unitary

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-13)	<u>Total</u>
RDT&E	302.8	-	-	-	302.8
Procurement	56.1	65.9	72.8	733.5	928.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	358.9	65.9	72.8	733.5	1231.1

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Baseline/BLU-108

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				1.1	1.0
1988				20.3	19.2
1989				13.7	13.5
1990				8.3	8.5
1991				15.6	16.5
1992				42.0	45.8
1993				52.7	58.8
1994				71.1	80.9
1995				90.0	104.3
1996				39.8	46.9
1997				29.5	35.2
1998				6.8	8.2
1999				4.4	5.4
2000				0.1	0.1
2001					
2002					
2003				0.9	1.2
2004				0.6	0.8
2005				0.4	0.5
2006				0.3	0.4
2007				0.2	0.3
2008				0.2	0.3
2009				0.3	0.4
Subtotal				398.3	448.2

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				4.8	5.4
1994				20.3	23.1
1995				44.6	51.7
1996				35.5	41.8
1997				18.4	22.0
1998				17.9	21.5
1999				14.1	17.2
2000				8.3	10.2
2001				1.2	1.5
Subtotal				165.1	194.4

16b. (U) Program Funding Summary (Cont'd):

Baseline/BLU-108

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996		20.8		20.4	24.3
1997	100	4.9	38.4	51.0	61.5
1998	135	9.4	47.6	62.4	76.1
1999	328	22.7	67.0	93.0	114.8
2000	454	8.3	82.5	91.5	114.4
2001	29	23.4	93.5	118.6	149.8
2002					
2003	80	11.1	27.4	38.8	50.2
2004	254	6.8	48.2	55.2	72.6
2005	238	5.6	42.2	48.1	64.3
2006	215	7.5	37.5	45.2	61.4
2007	129	5.5	25.3	31.0	42.9
2008	112	5.3	24.4	29.9	42.1
2009	130	4.9	26.4	31.6	45.3
2010	260	4.9	37.4	42.9	62.6
2011	513	6.2	65.1	72.1	107.0
2012	780	7.7	98.8	107.3	162.2
2013	775	10.3	98.8	109.9	169.1
2014	1080	9.4	132.4	142.7	223.5
2015	1080	9.3	131.2	141.5	225.6
2016	1080	9.2	130.3	140.4	228.0
2017	1028	8.9	124.3	134.1	221.6
Subtotal	8800	202.1	1378.7	1607.6	2319.3

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	45		17.5	17.5	21.3
1999	86	3.4	22.0	27.0	33.3
2000	74	2.5	15.9	21.8	27.3
2001		24.9		22.2	28.1
2002				8.0	10.2
2003	18	2.1	7.3	9.4	12.2
2004	335	5.8	54.2	60.1	79.0
2005	363	6.4	55.8	62.4	83.4
2006	375	5.9	56.0	62.0	84.3
2007	380	6.4	57.3	63.9	88.3
2008	299	3.6	46.2	50.0	70.4
2009	301	4.1	45.8	50.0	71.7
2010	350	4.0	48.8	53.0	77.3

16b. (U) Program Funding Summary (Cont'd):

Baseline/BLU-108

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2011	385	3.6	49.5	53.3	79.1
2012					
<b>Subtotal</b>	<b>3011</b>	<b>72.7</b>	<b>476.3</b>	<b>560.6</b>	<b>765.9</b>

(U) Funding does not include Seek Eagle or BRU-57 funds which are included in the P-1 documentation.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	8800	202.1	1378.7	2005.9	2767.5
USAF	3011	72.7	476.3	725.7	960.3
<b>Grand Total</b>	<b>11811</b>	<b>274.8</b>	<b>1855.0</b>	<b>2731.6</b>	<b>3727.8</b>

b. Annual Summary -- Unitary

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				1.7	1.9
1993				4.1	4.6
1994				2.1	2.4
1995				8.9	10.3
1996				26.2	30.9
1997				39.4	47.0
1998				54.8	65.9
1999				32.4	39.5
2000				22.8	28.2
2001				21.3	26.7
2002				24.0	30.3
2003				11.8	15.1
<b>Subtotal</b>				<b>249.5</b>	<b>302.8</b>

16b. (U) Program Funding Summary (Cont'd):

Unitary

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001		4.0		4.0	5.0
2002					
2003	85	3.4	35.9	39.5	51.1
2004	175	3.5	46.5	50.1	65.9
2005	225	3.4	51.0	54.5	72.8
2006	275	1.9	58.6	60.8	82.6
2007	275	1.9	58.0	60.2	83.3
2008	275	2.6	58.4	61.2	86.1
2009	275	1.9	57.0	59.3	84.9
2010	300	2.9	57.4	60.7	88.5
2011	420	3.0	73.1	76.5	113.6
2012	420	2.5	72.6	75.3	113.9
2013	275	1.6	50.4	52.4	80.6
Subtotal	3000	32.6	618.9	654.5	928.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3000	32.6	618.9	904.0	1231.1

17. (U) Delivery/Expenditure Information:

Baseline/BLU-108

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	1009	1009

(U) Percent Total Program Quantities Delivered: 8.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1280

(U) Percent Total Program Expended: 34.3%

JSOW, December 31, 2002

17b. (U) Delivery/Expenditure Information (Cont'd):

Unitary

Unitary

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 283.4

(U) Percent Total Program Expended: 23.0%

18. (U) Operating and Support Costs:

Baseline/BLU-108

a. (U) Assumptions and Ground Rules --  
SOURCE: Operations and Support requirements analysis dated June 2002.

ASSUMPTIONS:

- There is no antecedent system.
- No additional operational/maintenance personnel at O-Level.
- No I-Level Maintenance.
- 15 JSOW expenditures per year.
- Deployed aboard 6 CVBG each year - 100 JSOW per CV.
- 30 year missile life.
- 20 year bumper to bumper warranty.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Baseline/BLU-108 Avg Annual Cost Per LOT	No Antecedent System
Mission Pay & Allowances	260.7	N/A
Unit Level Consumption	8639.7	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	91.3	N/A
Contractor Support	357.7	N/A
Sustaining Support	3083.0	N/A
Indirect Costs	413.0	N/A
<b>Total</b>	<b>12845.4</b>	<b>N/A</b>

Total O&S Cost	Baseline/BLU-108	No Antecedent System
BY\$ (In Millions)	12.9	N/A
TY\$ (In Millions)	16.4	N/A

18a. (U) Operating and Support Costs (Cont'd):

Unitary

a. (U) Assumptions and Ground Rules --

SOURCE: Operations and Support requirements analysis dated June 2002.

ASSUMPTIONS:

There is no antecedent system.

Unitary will be integrated with the established Baseline program.

10 Unitary expenditures per year.

Deployed aboard 6 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 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Unitary Avg Annual Cost Per LOT	No Antecedent System
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	85.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	2129.0	N/A
Contractor Support	881.5	N/A
Sustaining Support	25.0	N/A
Indirect Costs	0.0	N/A
Total	3120.5	N/A

Total O&S Cost	Unitary	No Antecedent System
BY\$ (In Millions)	3.1	N/A
TY\$ (In Millions)	3.9	N/A

Report Creation Date: 03/20/2003 10:19:36 AM

# A-17 LONGBOW APACHE

\*\*\* ~~SECRET~~ \*\*\*

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: LONGBOW APACHE

AS OF DATE: December 31, 2002

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FOR OPEN PUBLICATION

MAR 17 2003

9

FREEDOM OF INFORMATION  
SECURITY REVIEW  
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Popular Name): AH-64D LONGBOW APACHE

AS AMENDED

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

APACHE ATTACK HELICOPTER	COL RALPH PALLOTTA
ATTN: SFAE-AV-AAH	Assigned: September 21, 2001
BLDG 5681	DSN 897-4200; COMM 256-313-4200
Redstone Arsenal, AL 35898-5000	ralph.pallotta@peoavn.redstone.army
	.mil

4. (U) Program Elements/Procurement Line Items:

- RDT&E:
- (U) PE 23744 Project D508
  - (U) PE 63776 Project D472
  - (U) PE 64816 Project D2DT, DC27, DC31, DC87
- PROCUREMENT:
- (U) APPN 2031 ICN AA0978 (Army) (Shared)
  - (U) APPN 2031 ICN AA6607 (Army) (Shared)
  - (U) APPN 2031 ICN AA6608 (Army) (Shared)

~~Classified by: *W. J. ...* Dated 24 Feb 97~~  
~~Downgrade instructions: Apache Attack Helicopter ...~~  
~~Declassify on: X3~~

EDIT

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Longbow Apache, December 31, 2002

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 May 18, 2001.

FCR MISSION KIT

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated May 18, 2001.

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. 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 274 aircraft will be modified to incorporate all of the Longbow improvements except the FCR and the 701-C engines.

7. (U) Executive Summary:

(U) (U) On August 16, 1996, the Apache Project Manager signed a multiyear Firm Fixed Price (FFP) contract with McDonnell Douglas Helicopter Systems, now the Boeing Company. This contract provided for the production of 232 aircraft over five years. In February 2002, Boeing completed all of its aircraft deliveries on schedule.

The Apache Project Manager awarded a second multi-year contract to McDonnell Douglas Helicopter Company on September 20, 2000, for the production of 269 aircraft. This Multiyear II FFP production contract is currently priced at \$2.5B. As of December 31, 2002, 42 aircraft have been delivered.

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Longbow Apache, December 31, 2002

7. (U) Executive Summary (Cont'd):

Multiyear contracts for Lots 3 - 7, for both the Fire Control Radar (FCR) and the Radar Frequency Interferometer (RFI) were awarded November 26, 1997. As of December 31, 2002, 154 FCRs and 117 RFIs have been delivered.

The Modernized Target Acquisition Designation Sight (MTADS) System Development and Demonstration (SDD) contract was awarded to Team Apache Systems (Lockheed Martin/Boeing Limited Liability Company) on October 26, 2000. This contract is for the purpose of developing and testing the second generation Forward Looking Infrared Radar (FLIR) on the Apache. Upon completion of this phase, the program will enter production and be fielded on the entire fleet of AH-64 Apaches.

The following significant tests were completed during calendar year 2002:  
Lot 6 System Tests and an Electromagnetic Vulnerability Test of the Lot 6 Configuration

Lot 7 System Tests which included:

Electrical Power System Ground and Flight Test, Electromagnetic Compatible Test, Handling Qualities Test, Embedded Global Positioning System, Inertial (EGI) Subsystem Navigation Survey, Controls and Displays Test, Data Management System Test, Communications Test, and Weapons Survey Test.

The contract for Reliability and Safety (R&S) improvements to the Strap Packs was awarded July 31, 2001, for a total of \$18.6M plus options totaling \$2.1M. The basic effort was for 473 aircraft, 4 strap packs per aircraft, with an option for 220 spares. During the following year, modifications for a rotatable pool were incorporated into the contract, increasing the total amount to \$29.7M. The R&S/Recapitalization effort was awarded on September 27, 2002 for a total of \$243.1M. This effort includes a base year plus four option years. The R&S/Recapitalization effort is the upgrade/overhaul of 26 components for both the AH-64A and AH-64D model aircraft. In addition, the United States Government (USG) purchased 446 retrofit kits for the longitudinal and directional servos and management of the rotatable pool, thereby increasing the total contract value to \$291.1M.

The contract with General Electric for 701C engines was awarded December 9, 2002, at a cost of \$39.2M. The 59 engines will be used toward pure fleetings selected AH-64D Longbow units. The deliveries will start in January 2003 with 36 units and the last delivery is scheduled for May 2003.

On October 17, 2002, Longbow Apache was confirmed as the Heavy Attack Platform in the Objective Force. Also confirmed was the acquisition objective of 501 AH-64D Longbow aircraft.

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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

9. (U) Schedule:

Airframe Modifications

a. Milestones --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
Milestone I In Process Review	AUG 1985	AUG 1985	AUG 1985
Prelimin Design Contract Award	NOV 1985	NOV 1985	NOV 1985
Contract Award (Proof of Principle)	AUG 1986	AUG 1986	AUG 1986
LBA Phase I Contract Award	AUG 1988	AUG 1988	AUG 1988
Milestone IB (DAB)	JUL 1989	JUL 1989	JUL 1989
LBA Phase 2 Contract Award	AUG 1989	AUG 1989	AUG 1989
IDP Contract Award	SEP 1989	SEP 1989	SEP 1989
Dev Test/Early User Test and Eval			
Start	FEB 1990	FEB 1990	FEB 1990
Complete	APR 1990	APR 1990	APR 1990
Milestone II/IV (DAB)	DEC 1990	DEC 1990	DEC 1990
Full Scale Development Contract Award	DEC 1990	DEC 1990	DEC 1990
Verification of Apache Action Tm Fixes			
Start	APR 1991	APR 1991	APR 1991
Complete	JUL 1991	JUL 1991	JUL 1991
First Flight of Prototype w/o Longbow	APR 1992	APR 1992	APR 1992
Prelim Airworthiness Eval			
Start	MAR 1993	MAR 1993	MAR 1993
Complete	AUG 1993	AUG 1993	JUN 1993
LBA Initial Prod Readiness Rev	JUL 1992	JUL 1992	JUL 1992
First Flight w/ Longbow	AUG 1993	AUG 1993	AUG 1993
Component Qualification	JUN 1994	JUN 1994	DEC 1993
LBA Long Lead IPR	OCT 1994	OCT 1994	OCT 1994
First Flight (AH-64D w/o FCR)	JAN 1994	JAN 1994	JAN 1994
Long Lead Time Items Contract Award	DEC 1994	DEC 1994	DEC 1994
Development Test			
Start	JUL 1994	JUL 1994	JUL 1994
Complete	SEP 1994	SEP 1994	SEP 1994
Force Dev Test and Experimentation			
Start	OCT 1994	OCT 1994	OCT 1994
Complete	NOV 1994	NOV 1994	NOV 1994
Production Readiness Review	JUN 1995	JUN 1995	JUN 1995
IOT&E			
Start	JAN 1995	JAN 1995	JAN 1995
Complete	MAR 1995	MAR 1995	MAR 1995
Milestone III (DAB)	OCT 1995	OCT 1995	OCT 1995
Lot 1 Contract Award	NOV 1995	NOV 1995	DEC 1995
First Production Delivery (LBA & FCR)	MAR 1997	MAR 1997	MAR 1997
First Unit Equipped	OCT 1997	JUL 1998	JUL 1998
IOC	SEP 1998	SEP 1998	NOV 1998

9b. (U) Schedule (Cont'd):  
Airframe Modifications

b. Current Change Explanations -- None

FCR MISSION KIT

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I In Process Review	AUG 1985	AUG 1985	AUG 1985
Preliminary Design Contract Award	NOV 1985	NOV 1985	NOV 1985
Contract Award (Proof of Principle)	AUG 1986	AUG 1986	AUG 1986
Milestone IB DAB	JUL 1989	JUL 1989	JUL 1989
IDP Contract Award	SEP 1989	SEP 1989	SEP 1989
Development Test/Early User Test & Experimentation			
Start	FEB 1990	FEB 1990	FEB 1990
Complete	APR 1990	APR 1990	APR 1990
Milestone II/IV	DEC 1990	DEC 1990	DEC 1990
Full Scale Development Award	DEC 1990	DEC 1990	DEC 1990
Long Lead Time Items Contract Award	NOV 1994	NOV 1994	DEC 1994
Lot 1 Contract Award	NOV 1995	NOV 1995	MAR 1996
First Production Delivery	FEB 1997	FEB 1997	MAR 1997

(U) Acronyms used in Schedule Milestones

DAB - Defense Acquisition Board  
 FCR - Fire Control Radar  
 IDP - Initial Design Phase  
 IOC - Initial Operational Capability  
 IOT&E - Initial Operational Test & Evaluation  
 IPR - In process review  
 LBA - Longbow Apache

b. Current Change Explanations -- None

10. ~~(U)~~ Performance Characteristics:

Airframe Modifications

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Vertical Rate of Climb for AH-64D with FCR Mission Kit (ft/min)	450	450 / 450	705	450
Ordnance Load (primary mission config)				
Hellfire (no.)	16	16 / 12	8	12
Target Handover	No	No / 15%	13%	No
	degrada-	degrada-/ degada-	Degrada-	degrada-
<del>(U)</del> Engagement time (RF Hellfire) in seconds	(b)(1)			
(U) Ao, Operational Availability (%) of AH-64D w/FCR Kit	79	79 / 75	91.4	79

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(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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
<del>(U)</del> Probability of Detection Ground Targets, Benign Conditions Stationary @6KM /2 Moving @6KM /2/3	(b)(1)			

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10b. (U) Performance Characteristics (Cont'd):  
FCR MISSION KIT

b. Current Change Explanations -- None

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	761.3	757.8
Procurement	5052.2	5829.5	6178.7
Flyaway	(4161.5)		(4696.5)
Non recurring Flyaway			(240.2)
Total Flyaway	(4161.5)		(4936.7)
Other Weapon System	(737.4)		(1165.8)
Peculiar Support	(42.6)		(19.6)
Initial Spares	(110.7)		(56.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	<u>5690.6</u>	<u>6590.8</u>	<u>6936.5</u>
Escalation	1337.2	533.3	549.2
Development (RDT&E)	(-46.1)	(-28.1)	(-28.2)
Procurement	(1383.3)	(561.4)	(577.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>7027.8</u>	<u>7124.1</u>	<u>7485.7</u>
b. (U) Quantity --			
Development (RDT&E)	N/A	0	0
Procurement	<u>758</u>	<u>501</u>	<u>501</u>
Total	758	501	501

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 6 from the Current Estimate that are not considered fully configured.

(U) Low Rate Initial Production (LRIP) was not approved for this program.

c. (U) Foreign Military Sales --

**Netherlands**

Effective Date - February 11, 1994  
Quantity - 30 New Build  
Net estimated cost - \$694M

**Singapore**

Effective Date - February 26, 1999  
Quantity - 8 (Includes 8 FCRs)

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LONGBOW APACHE, December 31, 2002

**11c. (U) Total Program Cost and Quantity (Cont'd):**  
Airframe Modifications

Net estimated cost - \$399M

**Singapore**

Effective Date - Sept 05, 2001  
Quantity - 12 New Build  
Net estimated cost - \$352M

**Israel**

1) Effective date - February 17, 2000  
Quantity - 8 New Build, 1 Remanufactured  
2) Effective date - Dec 27, 2002  
Quantity - 3 Remanufactured  
Includes 12 FCRs  
Net estimated cost - \$330M

**Egypt**

Effective date - September 12, 2000  
Quantity - 35 Remanufactured  
Net estimated cost \$440M

**Kuwait**

Effective date - September 29, 2002  
Quantity - 16 New Build (Includes 8 FCRs)  
Net estimated cost \$870.5M

d. Nuclear Costs -- None.

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11a. (U) Total Program Cost and Quantity (Cont'd):

FCR MISSION KIT

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	885.2	885.2	863.6
Procurement	813.9	813.9	811.8
Flyaway	(741.3)		(719.7)
Non recurring Flyaway			(33.8)
Total Flyaway	(741.3)		(753.5)
Other Weapon System	(22.2)		(24.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(50.4)		(33.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	<u>1699.1</u>	<u>1699.1</u>	<u>1675.4</u>
Escalation	2.3	2.3	-56.2
Development (RDT&E)	(-117.5)	(-117.5)	(-101.7)
Procurement	(119.8)	(119.8)	(45.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>1701.4</u>	<u>1701.4</u>	<u>1619.2</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>227</u>	<u>227</u>	<u>227</u>
Total	<u>227</u>	<u>227</u>	<u>227</u>

Note: Excludes 10 RDT&E prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

(U) Low Rate Initial Production (LRIP) was not approved for this program.

c. (U) Foreign Military Sales --  
Included in Section 11a, under Airframe Modifications.

d. (U) Nuclear Costs --  
None.

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LONGBOW APACHE, December 31, 2002

12. (U) Unit Cost Summary:

Airframe Modifications

	UCR Baseline (MAY 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	6590.8	6936.5	
(2) Quantity	501	501	
(3) Unit Cost	13.155	13.845	+5.25
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	5829.5	6178.7	
(2) Quantity	501	501	
(3) Unit Cost	11.636	12.333	+5.99

FCR MISSION KIT

	UCR Baseline (MAY 2001 APB)	Current Estimate (Dec 2002 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	1699.1	1675.4	
(2) Quantity	227	227	
(3) Unit Cost	7.485	7.381	-1.39
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	813.9	811.8	
(2) Quantity	227	227	
(3) Unit Cost	3.585	3.576	-0.25

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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	-0.1	-299.5	-	-299.6
Quantity	-	-2003.6	-	-2003.6
Schedule	-	+17.5	-	+17.5
Engineering	+134.9	+1710.1	-	+1845.0
Estimating	+4.8	+410.3	-	+415.1
Other	-	-	-	-
Support	-	+210.8	-	+210.8
Subtotal	+139.6	+45.6	-	+185.2
Current Changes:				
Economic	-1.4	-72.2	-	-73.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+168.0	-	+168.0
Estimating	-0.9	+32.6	-	+31.7
Other	-	-	-	-
Support	-	+146.6	-	+146.6
Subtotal	-2.3	+275.0	-	+272.7
Total Changes	+137.3	+320.6	-	+457.9
Current Estimate	729.6	6756.1	-	7485.7

(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	-	-1600.0	-	-1600.0
Schedule	-	-	-	-
Engineering	+123.7	+1478.0	-	+1601.7
Estimating	-3.6	+728.5	-	+724.9
Other	-	-	-	-
Support	-	+228.0	-	+228.0
Subtotal	+120.1	+834.5	-	+954.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+129.6	-	+129.6
Estimating	-0.7	+39.1	-	+38.4
Other	-	-	-	-
Support	-	+123.3	-	+123.3
Subtotal	-0.7	+292.0	-	+291.3
Total Changes	+119.4	+1126.5	-	+1245.9
Current Estimate	757.8	6178.7	-	6936.5

13b. (U) Cost Variance Analysis (Cont'd):  
Airframe Modifications

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-1.4
	Adjustment for Current and Prior Inflation. (Estimating)	+1.3	+1.4
	Programmatic changes to the Modernized Target Acquisition Designation Sight's (M-TADS) Development Program. (Estimating)	-2.0	-2.3
	RDT&E Subtotal	<u>-0.7</u>	<u>-2.3</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-72.2
	Adjustment for Current and Prior Inflation. (Estimating)	+24.8	+27.0
	Reduction to the recapitalization and sustainment program due to funding constraints (Estimating)	-9.3	-14.4
	Additions to the Premodification Program, multiyear over and above obligations, acquisition of High Frequency Radio kits, and increased engineering support changes. (Estimating)	+12.5	+19.8
	Revised estimate due to the pace of the Modernized Target Acquisition Designation Sight's (M-TADS) development program. (Estimating)	+11.1	+0.2
	Cost for the inclusion of auxiliary fuel tanks as a requirement. (Engineering)	+129.6	+168.0
	Adjustment for Current and Prior Inflation. (Support)	+6.0	+6.5
	Required initial spares for the MTADS program were increased and slipped to reflect refined production and fielding schedules. (Support)	+10.2	+12.5
	Peculiar ground support equipment costs increased to meet new Transformation requirements. (Support)	+0.5	+0.5
	The requirement for Longbow training assets increased because of Transformation. (Support)	+28.7	+32.4
	Program management continues to FY10 because of the MTADS program schedule, but phases out as the BLOCK III plan replaces the Longbow Remanufacturing program. (Support)	+77.9	+94.7
	Procurement Subtotal	<u>+292.0</u>	<u>+275.0</u>

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Longbow Apache, December 31, 2002

13b. (U) Cost Variance Analysis (Cont'd):  
Airframe Modifications

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

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	-	-13.0	-	-13.0
Quantity	-	+127.0	-	+127.0
Schedule	-	+16.3	-	+16.3
Engineering	-	+36.8	-	+36.8
Estimating	-5.8	-195.0	-	-200.8
Other	-	-	-	-
Support	-	-29.2	-	-29.2
Subtotal	-5.8	-57.1	-	-62.9
Current Changes:				
Economic	-	-2.9	-	-2.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-25.6	-	-25.6
Other	-	-	-	-
Support	-	+9.2	-	+9.2
Subtotal	-	-19.3	-	-19.3
Total Changes	-5.8	-76.4	-	-82.2
Current Estimate	761.9	857.3	-	1619.2

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LONGBOW APACHE, December 31, 2002

13a. (U) Cost Variance Analysis (Cont'd):  
FCR MISSION KIT

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	885.2	813.9	-	1699.1
Previous Changes:				
Quantity	-	+114.8	-	+114.8
Schedule	-	-	-	-
Engineering	-	+35.4	-	+35.4
Estimating	-21.6	-116.0	-	-137.6
Other	-	-	-	-
Support	-	-22.2	-	-22.2
Subtotal	-21.6	+12.0	-	-9.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-22.0	-	-22.0
Other	-	-	-	-
Support	-	+7.9	-	+7.9
Subtotal	-	-14.1	-	-14.1
Total Changes	-21.6	-2.1	-	-23.7
Current Estimate	863.6	811.8	-	1675.4

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.8
Economic adjustment for negative program change. (Economic)	N/A	+0.9
Adjustment for Current and Prior Inflation. (Estimating)	+3.4	+3.7
Removed requirement for obsolescence engineering; FCR modernization efforts moved into the Longbow Block III plan. (Estimating)	-25.4	-29.3
Increased estimate for post production expenses; increase to FCR costs for integration into the Longbow production line due to changes in transformation. (Support)	+7.9	+9.2
Procurement Subtotal	-14.1	-19.3

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LONGBOW APACHE, December 31, 2002

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	-0.745	+0.755	+0.035	+4.02	+0.892	--	+0.713	+5.67	14.94

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	-0.742	+0.355	+0.035	+3.75	+0.884	--	+0.713	+5.00	13.49

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 1989	JUL 1989	JUL 1989
Milestone II	N/A	DEC 1990	DEC 1990	DEC 1990
Milestone III	N/A	NOV 1995	OCT 1995	OCT 1995
IOC	N/A	APR 1997	SEP 1998	NOV 1998
Total Cost	N/A	5564.4	7027.8	7485.7
Total Quantity	N/A	758	758	501
Prog Acq Unit Cost	N/A	7.3	9.3	14.9

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	-0.070	+0.559	+0.072	+0.162	-0.997	--	-0.088	-0.362	7.13

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Longbow Apache, December 31, 2002

14b. (U) Unit Cost and Other History (Cont'd):  
FCR MISSION KIT

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	-0.070	+0.559	+0.072	+0.162	-0.972	--	-0.088	-0.337	3.78

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	JUL 1989	JUL 1989	JUL 1989
Milestone II	N/A	DEC 1990	DEC 1990	DEC 1990
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	1442.6	1701.4	1619.2
Total Quantity	N/A	227	227	227
Prog Acq Unit Cost	N/A	6.4	7.5	7.1

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --	Initial Contract Price		
(U) <u>Modernized TADS/PNVS:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Team Apache Systems, Orlando, FL	\$78.5	N/A	
DAA-H23-00-C0174, CPIF			
Award: October 26, 2000			
Definitized: October 26, 2000			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$84.9	N/A	\$135.1	\$136.5
Previous Cumulative Variances		<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date		\$-15.0	\$-8.7
Net Change		\$-34.6	\$-3.7
		\$-19.6	\$5.0

Explanation of Change:

(U) The cost variance increased by \$19.6M due to over aggressive strategies to complete the design and initial integration, as well as increased costs in hardware, largely driven by cost reimbursable subcontracts. Products deliverable under these subcontracts are now complete. Schedule variance has improved by \$5M as the contractor has completed design and succeeded in integration of the initial system components. Monthly schedule performance

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15. (U) Contract Information (Cont'd):

index exceeded 1.0 during the last nine consecutive months.

b. Procurement --	Initial Contract Price		
(U) <u>AH-64D RFI Multiyr Prod:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin Federal, Owego, NY			
DAAJ09-97-C-0124, FFP	\$92.3	N/A	207
Award: November 26, 1997			
Definitized: November 26, 1997			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$107.2	N/A	207	\$107.2	\$107.2

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Target price increase was due to purchase of War Reserve Spares and user data module (UDM) capabilities evaluation.

(U) <u>AH-64D FCR Multiyr Prod:</u>	Initial Contract Price		
Longbow LLC, Orlando, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH23-98-C-0008, FFP			
Award: November 11, 1997	\$565.3	N/A	207
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>
\$571.4	N/A	207	\$571.4	\$571.4

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Target price increase is due to additional Contractor Field Service Representative effort.

15. (U) Contract Information (Cont'd):

(U) <u>AH-64D Multiyear II:</u>			Initial Contract Price		
McDonnell Douglas, Mesa, AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAH23-00-C-0001, FFP	\$2329.7	N/A	269		
Award: September 20, 2000					
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>	
\$2515.5	N/A	269	\$2515.5	\$2515.5	

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Target price increase was due to additional R&S improvements being added to the MYII contract.

(U) <u>R&amp;S/Recapitalization:</u>			Initial Contract Price		
McDonnell Douglas, Mesa, AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAH23-01-C-0092, FFP	\$20.7	\$			
Award: July 31, 2001					
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>	
\$291.1	\$	559	\$291.1	\$291.1	

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 has appeared in the SAR. The initial contract price reflected a not-to-exceed letter 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 (FY85-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-10)</u>	<u>Total</u>
RDT&E	1491.5	-	-	-	1491.5
Procurement	5397.6	766.9	486.7	962.2	7613.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6889.1	766.9	486.7	962.2	9104.9

Airframe Modifications

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY88-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-10)</u>	<u>Total</u>
RDT&E	729.6	-	-	-	729.6
Procurement	4559.3	761.4	481.8	953.6	6756.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5288.9	761.4	481.8	953.6	7485.7

FCR MISSION KIT

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY85-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-08)</u>	<u>Total</u>
RDT&E	761.9	-	-	-	761.9
Procurement	838.3	5.5	4.9	8.6	857.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1600.2	5.5	4.9	8.6	1619.2

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LONGBOW APACHE, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Airframe Modifications

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 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				112.5	112.0
1996				21.7	22.0
1997				10.4	10.7
1998					
1999					
2000				30.0	31.8
2001				15.8	17.0
2002				36.6	39.6
2003				40.2	44.1
Subtotal				757.8	729.6

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		39.5		74.9	75.6
1996	24	118.0	163.3	331.3	338.9
1997	24	67.3	195.7	304.1	314.5
1998	44	11.4	266.5	375.8	392.3
1999	66	3.5	402.4	488.3	513.6
2000	74	0.5	473.4	609.9	649.8
2001	52		444.1	586.3	631.4
2002	60		590.3	721.8	785.8
2003	74		656.3	776.5	857.4
2004	64		566.2	678.4	761.4
2005	19		335.2	422.4	481.8
2006			287.1	375.0	435.0
2007			194.5	268.3	316.8
2008			54.6	82.5	99.2
2009			33.4	45.7	55.9
2010			33.5	37.5	46.7
Subtotal	501	240.2	4696.5	6178.7	6756.1

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16b. (U) Program Funding Summary (Cont'd):  
Airframe Modifications

(U) Fiscal years 2006 through 2010 contain recurring flyaway costs with no associated end item quantities. These funds are programmed for the Modernized TADS program. The M-TADS is an integral component of the AH-64 weapon system. FY06 and FY07 also include residual costs for the Reliability and Safety program as well as Focused Recapitalization program.

Funds to FY10 are for the purchase of Internal Auxiliary Fuel Tanks. G-8 added these fuel tanks to the operational requirement definition in FY02.

Currently, the Longbow Budget lines have funds programmed through FY18. All dollars associated with the Longbow Modernization Program, a program that takes the aircraft beyond the current ORD technical requirements, have been excluded.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	501	240.2	4696.5	6936.5	7485.7

b. Annual Summary -- FCR MISSION KIT

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 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

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LONGBOW APACHE, December 31, 2002

16b. (U) Program Funding Summary (Cont'd):  
FCR MISSION KIT

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		14.0		40.9	41.3
1996	10	5.3	91.6	94.1	96.3
1997	10	14.5	81.8	92.5	95.7
1998	21		95.7	108.4	113.2
1999	40		102.1	113.5	119.4
2000	45		119.7	123.7	131.8
2001	44		119.4	117.8	126.9
2002	57		109.4	102.1	111.2
2003				2.3	2.5
2004				4.9	5.5
2005				4.3	4.9
2006				4.5	5.2
2007				1.5	1.8
2008				1.3	1.6
2009					
Subtotal	227	33.8	719.7	811.8	857.3

(U) FCR dollars without associated quantities beyond FY02 are programmed to install and integrate FCRs on aircraft deliveries.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	227	33.8	719.7	1675.4	1619.2

17. (U) Delivery/Expenditure Information:

Airframe Modifications

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	274	274

(U) Percent Total Program Quantities Delivered: 54.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3412

(U) Percent Total Program Expended: 45.6%

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17b. (U) Delivery/Expenditure Information (Cont'd):

FCR MISSION KIT

FCR MISSION KIT

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	153	154

(U) Percent Total Program Quantities Delivered: 67.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1245.6

(U) Percent Total Program Expended: 76.9%

18. (U) Operating and Support Costs:

Airframe Modifications

a. (U) Assumptions and Ground Rules --

Assumes 498 fielded operational aircraft each flying 18.0 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: Current January 2001 proposed Army Cost Position. The Longbow aircraft system has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Airframe Modifications Avg Annual Cost Per Longbow aircraft	Antecedent System 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	2.4	0.0
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Replenishment	726.8	0.0
Military Personnel	591.6	0.0
Other	103.7	0.0
Total	1424.5	0.0

Total O&S Cost	Airframe Modifications	Antecedent System
BY\$ (In Millions)	8272.9	N/A
TYS (In Millions)	10662.3	N/A

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LONGBOW APACHE, December 31, 2002

18a. (U) Operating and Support Costs (Cont'd):

FCR MISSION KIT

a. (U) Assumptions and Ground Rules --

Assumes 227 fielded operational Fire Control Radars each flying 18.0 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 (January 2001). The Longbow Fire Control Radar system has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	FCR MISSION KIT Avg Annual Cost Per Fire Control Radar	Antecedent System 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	56.4	0.0
Other	9.7	0.0
Total	66.1	0.0

Total O&S Cost	FCR MISSION KIT	Antecedent System
BY\$ (In Millions)	300.2	N/A
TY\$ (In Millions)	387.9	N/A

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