

# N-16 H-1 UPGRADES

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

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): 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, 47123 BUSE RD, BLDG 2272 DSN 757-5534; COMM 301 757-5534  
PATUXENT RIVER, MD 20670-1547 DOUGLAS.ISLEIB@NAVY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603266N (Shared) (FY96) SUNK Project H2279

PE 0604245N Project H2279, H2419

PROCUREMENT:

APPN 1506 ICN 01/800 (Navy)

5. References:

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) 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 25 2004

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-E-216  
2002  
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**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 for the United States Marine Corps (USMC). The mission of the UH-1Y utility helicopter is to provide command, control and assault support under day/night and adverse weather conditions. The 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:**

The H-1 Upgrades program continues to perform satisfactorily to the Performance Measurement Baseline (PMB). The Engineering and Manufacturing Development (EMD) phase is nearly complete and going well with no major technical issues. There are five EMD aircraft (three AH-1Z and two UH-1Y) in flight test status. Technical performance of the flight test program remains strong with over 1500 flight hours at the end of CY03. The AH-1Z has achieved 222 knots max airspeed, +2.79 g's and 2996 pounds payload. The UH-1Y has achieved 193 knots max airspeed, +2.63 g's and 3079 pounds payload. The program is on track for a second Operational Assessment in the Spring of 2004 timeframe. The flight test aircraft are meeting all Key Performance Parameters (KPPs) based on developmental test results.

The USD(AT&L) approved the first lot of Low Rate Initial Production Aircraft (LRIP) on October 22, 2003. The LRIP Lot I contract, with a priced option for LRIP Lot II, was awarded to Bell Helicopter Textron, Inc. (BHTI) on December 29, 2003. The LRIP Lot II Component Acquisition Executive (CAE) decision is planned for August 2004, and the Full Rate Production Defense Acquisition Board review is planned for August 2005.

The approved procurement profile remains matched to USMC requirement of 180 AH-1Z and 100 UH-1Y. The USMC is procuring UH-1Y aircraft earlier than originally planned to replace the aging fleet of UH-1N's as soon as possible.

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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 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	MAR 2005 (Ch-1)
OPEVAL Testing Complete (UH-1Y)	MAY 2003	FEB 2005	MAR 2005 (Ch-1)
Milestone III (SAE FRP Review - Navy)	FEB 2004	AUG 2005	AUG 2005
IOC (UH-1Y)	JUN 2005	MAR 2008	MAR 2008
IOC (AH-1Z)	SEP 2006	MAR 2008	MAR 2008
Navy Support Date (AH 1Z)	SEP 2009	MAR 2012	MAR 2012
Navy Support Date (UH-1Y)	SEP 2007	MAR 2012	MAR 2012
Integrated Testing Complete	N/A	JUN 2004	AUG 2004 (Ch-1)
DAB LRIP Review	DEC 2001	AUG 2003	OCT 2003 (Ch-2)
CAE LRIP #2 Review	N/A	AUG 2004	AUG 2004

ACRONYMS:

CAE - Component Acquisition Executive  
DAB - Defense Acquisition Board  
FRP - Full Rate Production  
IOC - Initial Operational Capability  
LRIP - Low Rate Initial Production  
OPEVAL - Operational Evaluation  
SAE - Service Acquisition Executive

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) The program has been unable to meet the previous flight test schedule due to weather, an increase in an aircraft modification period, and an increase in the flight test period for main rotor yoke testing and active elevator incorporation. This has resulted in an increase of two months for the completion of integrated testing and one month for completion of OPEVAL testing. The changes to the current estimates are:

<u>Milestones</u>	<u>From</u>	<u>To</u>
Integrated Testing Complete	JUN 2004	AUG 2004
OPEVAL Testing Complete (AH-12)	FEB 2005	MAR 2005
OPEVAL Testing Complete (UH-1Y)	FEB 2005	MAR 2005

(Ch-2) The DAB LRIP Review date has been adjusted to reflect the date on the USD(AT&L) Acquisition Decision Memorandum. The change to the current estimate is:

<u>Milestones</u>	<u>From</u>	<u>To</u>
DAB LRIP Review	AUG 2003	OCT 2003

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-12)					
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	142	142	
Payload (Hot Day) (lbs)	3500	3500 / 2500	2996	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	-.5 to +2.79	-.5 to +2.79	(Ch-1)
Mission Radius (nm)	200 x 1 (Aux Fuel)	200 x 1 / 50 x 2 (Aux / or 110 x Fuel) / 1	TBD	131nm x 1	(Ch-2)
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	152.6	153	(Ch-1)
Payload (Hot Day) (lbs)	4500	4500 / 2800	3079	3079	(Ch-1)
Weapon Stations	2 Univ. Mounts	2 Univ. / 2 Hard Mounts / Mounts	2 Hard Mounts	2 Hard Mounts	

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	-0.5 to +2.63	-0.5 to +2.63	(Ch-1)
Mission Radius (nm)	200 x 1 (Aux Fuel)	200 x 1 / 50 x 2 (Aux / or 110 x Fuel) / 1 /	TBD	115nm x 1	

Acronyms:

MFHBA - Mean Flight Hours Between Abort

MMH/FH - Maintenance Man Hours per Flight Hours

b. Current Change Explanations --

(Ch-1) Current estimate changes have been updated to reflect demonstrated performance within the flight test program. The changes to the current estimates are:

		<u>From</u>	<u>To</u>
4BW (AH-1W/AH-1Z)	Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to +2.79
4BN (UH-1N/UH-1Y)	Cruise Speed	155	153
	Payload (Hot Day) (lbs)	3211	3079
	Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to +2.63

(Ch 2) The current estimate for the AH-1Z Mission Radius has changed from 120nm x 1 to 101nm x 1 based on the most recent NAVAIR performance model update. Demonstrated performance remains TBD, as the exact mission configuration has not yet been flown.

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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	1101.8
Procurement	2254.7	4588.6	4543.7
Recurring Flyaway	(1892.2)		(3347.8)
Non-Recurring Flyaway			(285.9)
Total Flyaway	(1892.2)		(3633.7)
Other Wpn System Costs	(240.4)		(214.7)
Peculiar Support	(40.1)		(536.3)
Initial Spares	(82.0)		(159.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	2792.5	5629.8	5645.5
Escalation	755.0	1225.4	1181.8
Development (RDT&E)	(54.5)	(83.5)	(83.2)
Procurement	(700.5)	(1141.9)	(1098.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3547.5	6855.2	6827.3
b. Quantity --			
Development (RDT&E)	4	4	4
Procurement	280	280	280
Total	284	284	284

A fifth flight test aircraft (Zulu #1) is presently in Navy inventory. The aircraft is leased to BHTI and was modified under an Independent Research and Development (IRAD) program as a demonstrator for the 4-bladed rotor system and structure.

The Acquisition Decision Memorandum (ADM) for LRIP I approval, with a priced LRIP II option in FY05 for 6 UH-1Ys and 3 AH-1Zs was signed October 22, 2003. Total planned LRIP quantity is for the production of 12 UH-1Ys and 6 AH-1Zs, which represents 6 percent of the total procurement quantity.

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 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	5629.8	5645.5	
(2) Quantity	284	284	
(3) Unit Cost	19.823	19.879	+0.28
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	4588.6	4543.7	
(2) Quantity	280	280	
(3) Unit Cost	16.388	16.227	-0.98

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	-32.0	-358.5	-	-390.5
Quantity	-	-	-	-
Schedule	-5.1	+202.2	-	+197.1
Engineering	+106.2	+351.5	-	+457.7
Estimating	+498.9	+1917.2	-	+2416.1
Other	-	-	-	-
Support	-	+493.3	-	+493.3
Subtotal	+568.0	+2605.7	-	+3173.7
Current Changes:				
Economic	+0.4	+24.7	-	+25.1
Quantity	-	-	-	-
Schedule	+29.4	+21.2	-	+50.6
Engineering	-	-	-	-
Estimating	-5.1	-157.2	-	-162.3
Other	-	-	-	-
Support	-	+192.1	-	+192.1
Subtotal	+24.7	+81.4	-	+106.1
Total Changes	+592.7	+2687.1	-	+3279.8
Current Estimate	1185.0	5642.3	-	6827.3

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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	+37.9	-	+33.1
Engineering	+96.3	+285.1	-	+381.4
Estimating	+450.8	+1531.4	-	+1982.2
Other	-	-	-	-
Support	-	+388.7	-	+388.7
Subtotal	+542.3	+2243.1	-	+2785.4
Current Changes:				
Quantity	-	-	-	-
Schedule	+25.8	+3.1	-	+28.9
Engineering	-	-	-	-
Estimating	-4.1	-116.0	-	-120.1
Other	-	-	-	-
Support	-	+158.8	-	+158.8
Subtotal	+21.7	+45.9	-	+67.6
Total Changes	+564.0	+2289.0	-	+2853.0
Current Estimate	1101.8	4543.7	-	5645.5

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	+0.2
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Increase to accommodate extended Flight Test schedule. (Schedule)	+25.8	+29.4
Adjustment for Current and Prior Inflation (Estimating)	+5.4	+6.5
Increase in estimate for Integrated Mechanical Diagnostics (IMD). (Estimating)	+1.3	+1.4
RDT&E Subtotal	+21.7	+24.7
(2) Procurement		
Revised escalation indices. (Economic)	N/A	+14.7
Economic adjustment for negative program change. (Economic)	N/A	+10.0
Reduction of annual procurement buy quantities within the FYDP. (Schedule)	0.0	+16.7
Additional schedule variance related to the movement of aircraft beyond the FYDP. (Schedule)	+3.1	+4.5

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.9
Refinement of BHTI Airframe Estimate and change in acquisition strategy to move location of Teardown. (Estimating)	-49.0	-61.1
Adjustment in Target Sight System estimate. (Estimating)	-32.3	-46.7
Refinement of estimate to reflect updated GFE pricing. (Estimating)	-104.4	-140.8
Increase Nonrecurring Engineering (NRE) estimate. (Estimating)	+52.3	+67.8
Increase in contractor labor and overhead rates. (Estimating)	+16.7	+22.7
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Decrease in Initial Spares. (Support)	-21.3	-25.0
Change in Peculiar Support (Please see note below). (Support)	+344.5	+417.8
Change in Other Wpn System Costs (Please see note below). (Support)	-164.7	-200.4
Procurement Subtotal	+45.9	+81.4

The December 2002 SAR estimate for Peculiar Support only included the estimate for Peculiar Training Equipment. The estimate for Peculiar Support has been updated to include the estimates for Support Equipment, Peculiar Training Equipment, Pubs/Tech Data, and Other ILS. Funding for long-term logistics issues is also included in the change estimate for Peculiar Support.

The December 2002 SAR estimate for Other Weapon System Costs included the estimates for Production Support, Support Equipment, Pubs/Tech Data, and Other ILS. The estimate for Other Weapon System Costs has been updated to only include the estimate for Production Support.

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.49	-1.29	-0.003	+0.872	+1.61	+7.94	--	+2.42	+11.55	24.04

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.55	-1.19	-0.011	+0.798	+1.26	+6.29	--	+2.45	+9.60	20.15

**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	6827.3
Total Quantity	N/A	284	N/A	284
Prog Acq Unit Cost	N/A	12.5	N/A	24.0

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

EMD:		Initial Contract Price		
		Target	Ceiling	Qty
Bell Helicopter Textron, Fort Worth TX		\$498.0	N/A	4
N00019-96-C-0128, CPAF				
Award: November 15, 1996				
Definitized: November 15, 1996				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Contractor	Program Manager	
\$587.5	N/A	\$953.7	\$986.9	
			Qty	
			4	

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$7.2	\$-1.3
Cumulative Variances To Date (12/31/03)	\$3.8	\$-8.5
Net Change	\$-3.4	\$-7.2

Explanation of Change:

The net unfavorable changes are attributed to the contractor's performance from November 2002 to November 2003. The contract is 90 percent complete relative to the performance measurement baseline.

The net unfavorable change in the schedule variance has been caused by late delivery of parts, growth of the flight test and the modification period, and inclement weather. The flight test schedule remains a program area of focus. Although technical performance within the flight test program remains strong, the program continues to apply additional funding to mitigate schedule slips by sustaining higher resource levels than originally planned. The net unfavorable change in cost variance is likely to deteriorate as these additional resources are needed.

Contract Comments:

BHTI's semi-annual review of their Latest Revised Estimate (LRE) has recognized some cost growth, which brings their LRE closer to the program office Estimated Cost at Completion (EAC) of \$986.9M. The program office continues to report monthly EVM data to OSD.

The delta between the initial contract target price and current contract target price is additional scope growth since February 1997.

The delta between the estimated price at completion and the current contract target price is a result of three over target baselines (OTBs) in June 2000, January 2001 and June 2002.

b. Procurement --  
H-1 LRIP:  
 BELL HELICOPTER TEXTRON, FORT WORTH TX  
 N00019-04-C-0001, FFP  
 Award: December 29, 2003  
 Definitized: December 29, 2003

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$183.8	\$183.8	9

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$183.8	\$183.8	9	\$183.8	\$183.8

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15b. Contract Information (Cont'd):

Explanation of Change:

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

Contract Comments:

The LRIP I contract for the production of six UH-1Y and three AH-1Z helicopters (with a priced option for LRIP II aircraft) was awarded on December 29, 2003.

Estimated price at completion, current target and ceiling prices will change upon completion of planned contract modifications to include training devices and logistics.

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 (FY06-14)</u>	<u>Total</u>
RD&E	977.9	91.0	90.4	25.7	1185.0
Procurement	6.0	324.7	250.9	5060.7	5642.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	983.9	415.7	341.3	5086.4	6827.3

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				154.9	167.7
2003				212.1	232.2
2004				82.0	91.0
2005				80.3	90.4
2006				9.6	11.0
2007				6.6	7.7

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16b. 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 \$
2008				2.9	3.5
2009				2.9	3.5
Subtotal	4			1101.8	1185.0

Excludes FY96 funds which were used for studies and analyses.

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 \$
2001		5.5		5.6	6.0
2002					
2003					
2004	9	22.2	173.0	289.6	324.7
2005	9	7.5	141.5	220.4	250.9
2006	12	14.3	173.9	316.9	367.1
2007	19	33.5	253.0	406.9	480.4
2008	21	16.5	266.8	458.3	551.7
2009	21	15.2	260.6	370.2	454.6
2010	44	41.5	506.2	595.8	746.3
2011	44	37.2	497.3	587.3	750.3
2012	42	37.5	463.0	558.9	728.3
2013	38	39.7	391.4	481.8	640.3
2014	21	15.3	221.1	252.0	341.7
Subtotal	280	285.9	3347.8	4543.7	5642.3

The Navy increased the quantity in FY05 to smooth the production ramp rate as recommended by the LRIP Lot I Acquisition Decision Memorandum. Consistent with the OSD-approved acquisition strategy as a "Buy to Budget" program, the Navy reduced the quantities in FY06 through FY09 to initially fund long-term logistics requirements. The Navy is addressing restoration of those aircraft during development of the FY06 budget, and H-1 program acceleration remains a high priority for the Marine Corps.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	284	285.9	3347.8	5645.5	6827.3

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17. Delivery/Expenditure Information:

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

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 910.1

Percent Total Program Expended: 13.3%

Five EMD aircraft are in 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) 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.

Operating and Support costs will be updated prior to MS III, currently scheduled for August 2005.

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

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H-1 Upgrades, December 31, 2003

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

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

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

Report Creation Date: 03/21/2004 6:04:20 PM

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A-19 PATRIOT PAC-3

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

AS OF DATE: December 31, 2003

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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: Army

Joint Participants:  
Missile Defense Agency

3. (U) Responsible Office and Telephone Number:

Project Manager	COL John K. Vaughn
Lower Tier Project Office	Assigned: October 31, 2003
PO Box 1500	DSN 645-3240; COMM (256) 955-3240
Huntsville, AL 35807-3801	john.vaughn@amd.army.mil

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

RDT&E:

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

PROCUREMENT:

(U)	APPN 0300	ICN 0208060C (DoD) (Shared)
(U)	APPN 0300	ICN 0208865C (DoD)
(U)	APPN 2032	ICN C49200 (Army)

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FOR OPEN PUBLICATION

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MAR 2 2 2004

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: [redacted] Security Classification Guide dated 23 Apr 03  
Downgrade instructions: [redacted] when separated from CLASS sections  
Declassify on: Originating Agency Determination Required (OADR)~~

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PATRIOT PAC-3, December 31, 2003

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

(U) APPN 2032 ICN C50700 (Army)

(U) APPN 2032 ICN CA0267 (Army)

5. (U) References:

FIRE UNIT

SAR Baseline (Production Estimate):

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

Approved Program:

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

MISSILE SEGMENT

SAR Baseline (Production Estimate):

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

Approved Program:

(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), up to eight Launching Stations (LS), and associated communications equipment. At the battalion level, command and control is exercised through the Information and Coordination Central (ICC) and associated communications equipment including Communications Relay Groups (CRG). The PATRIOT RS is a multifunction phased array radar which performs a variety of surveillance, acquisition, and guidance tasks. The only manned element of the FU during air battle, the ECS, provides the human interface for control of automated operations.

The PAC-3 program is the result of a series of integrated, phased system

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PATRIOT PAC-3, December 31, 2003

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

improvements fielded in combination with the PAC-3 missile. 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 PATRIOT system was deployed in support of Operation Iraqi Freedom (OIF) and represented the first wartime usage of the PAC-3 missile. United States PATRIOT forces engaged nine Tactical Ballistic Missiles (TBMs); two engagements were by PAC-3 missiles. Detailed analysis from a variety of data sources confirm that eight of the nine TBM warheads intercepted were destroyed. There is insufficient data on the ninth intercept to conclusively validate a warhead kill.

The Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) approved the transfer of management of the PAC-3 program from the Missile Defense Agency (MDA) to the Army on March 31, 2003.

At the direction of the USD(AT&L) in the December 2, 2002, Acquisition Decision Memorandum, the Army was required to pursue a plan for combining management, development, and fielding of PATRIOT and the Medium Extended Air Defense System (MEADS). The Defense Acquisition Board (DAB) convened on April 7, July 23, and December 17, 2003, to review the Army's plan to integrate PATRIOT and Medium Extended Air Defense System (MEADS) capabilities. The PATRIOT/MEADS Combined Aggregate Program is based on the concept that the MEADS objective capability will be attained through insertion of MEADS major end items into the current PATRIOT system. A Milestone B is scheduled for third quarter Fiscal Year (FY) 2004 for the Combined Aggregate Program.

The PAC-3 Missile Segment Enhancement (MSE) contract was awarded on June 27, 2003, to Lockheed Martin Missiles and Fire Control (LMMFC). The MSE contract was awarded to develop, test, and integrate an improved missile. The MSE improves upon the current PAC-3 missile capability with a higher performance solid rocket motor, modified lethality enhancer, more responsive control surfaces, upgraded guidance software, and insensitive munitions improvements. These improvements provide a more agile, lethal interceptor.

A letter contract was awarded to LMMFC on February 12, 2004, for the FY 2004 PAC-3 missile production buy. The letter contract for the OIF supplemental (22 PAC-3 missiles) was modified to add the FY 2004 production buy of 135 PAC-3 missiles.

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

Three flight tests to demonstrate the remaining Initial Operational Test and Evaluation data requirements are scheduled for FY 2004. The first test, originally planned for August 2003, was conducted on March 4, 2004, at White Sands Missile Range. Preliminary test data indicate the first missile successfully intercepted the target and mission objectives were achieved. The flight test objectives included demonstrating the PAC-3 missile segment software and ground system improvements, demonstrating the system capability to intercept and kill a short-range full body TBM target, and demonstrating and validating successful operation of the PAC-3 missile seeker with a domestic source traveling wave tube.

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

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PATRIOT PAC-3, December 31, 2003

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 --

	Production Estimate (SAR)	Approved Program (APB)	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	APR 2000	APR 2000	APR 2000
Configuration 3 First Unit Equipped	JUN 2000	JUN 2000	DEC 2000

b. Current Change Explanations -- None

MISSILE SEGMENT

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PATRIOT PAC-3, December 31, 2003

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

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current 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	APR 1997	APR 1997	SEP 1997
Complete	OCT 2001	OCT 2001	OCT 2001
Low Rate Initial Production	OCT 1999	OCT 1999	OCT 1999
Decision			
Low Rate Initial Production	NOV 1999	NOV 1999	DEC 1999
Contract Award			
Low Rate Production First	MAY 2001	MAY 2001	SEP 2001
Delivery			
First Unit Equipped	SEP 2001	SEP 2001	SEP 2001
IOT&E			
Start	JAN 2002	JAN 2002	JAN 2002
Complete	SEP 2002	SEP 2002	SEP 2002
Initial Operational Capability	SEP 2005	SEP 2005	SEP 2005
Block 2002 Production Decision	OCT 2002	OCT 2002	OCT 2002
Block 2002 Production Contract Award	DEC 2002	DEC 2002	DEC 2002
Block 2004 Production Decision	SEP 2004	SEP 2004	SEP 2004
Block 2004 Production Contract Award	DEC 2004	DEC 2004	DEC 2004
Block 2006 Production Decision	SEP 2007	SEP 2007	SEP 2007
Block 2006 Production Contract Award	DEC 2007	DEC 2007	DEC 2007
Block 2008 Production Decision	SEP 2009	SEP 2009	SEP 2009
Block 2008 Production Contract Award	DEC 2009	DEC 2009	DEC 2009

(U) **ACRONYMS:**

DAB - Defense Acquisition Board

DT&E - Development Test and Evaluation

IOT&E - Initial Operational Test and Evaluation

PAC-3 missile Initial Operational Capability 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 -- None

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PATRIOT PAC-3, December 31, 2003

10. (U) Performance Characteristics:

FIRE UNIT

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1. Missile Reliability (launch and flight to TBM intercept)	(b)(1)			
2. Operational Availability (Ao)	(b)(1)			
3. Fire Unit Mean Time Between Failure (hrs)				
4. Nuclear Hardening (EMP) missile in flight (hr/m)				
(b)(1)				
5. Theater Ballistic Missiles (TBMs)	(b)(1)			
6. TBM Threat Range				
7. TBM Keep-Out Altitude				
8. Battlespace (Non-TBMs) First Intercept Capability (given line of sight for sufficient time to support intercept)				

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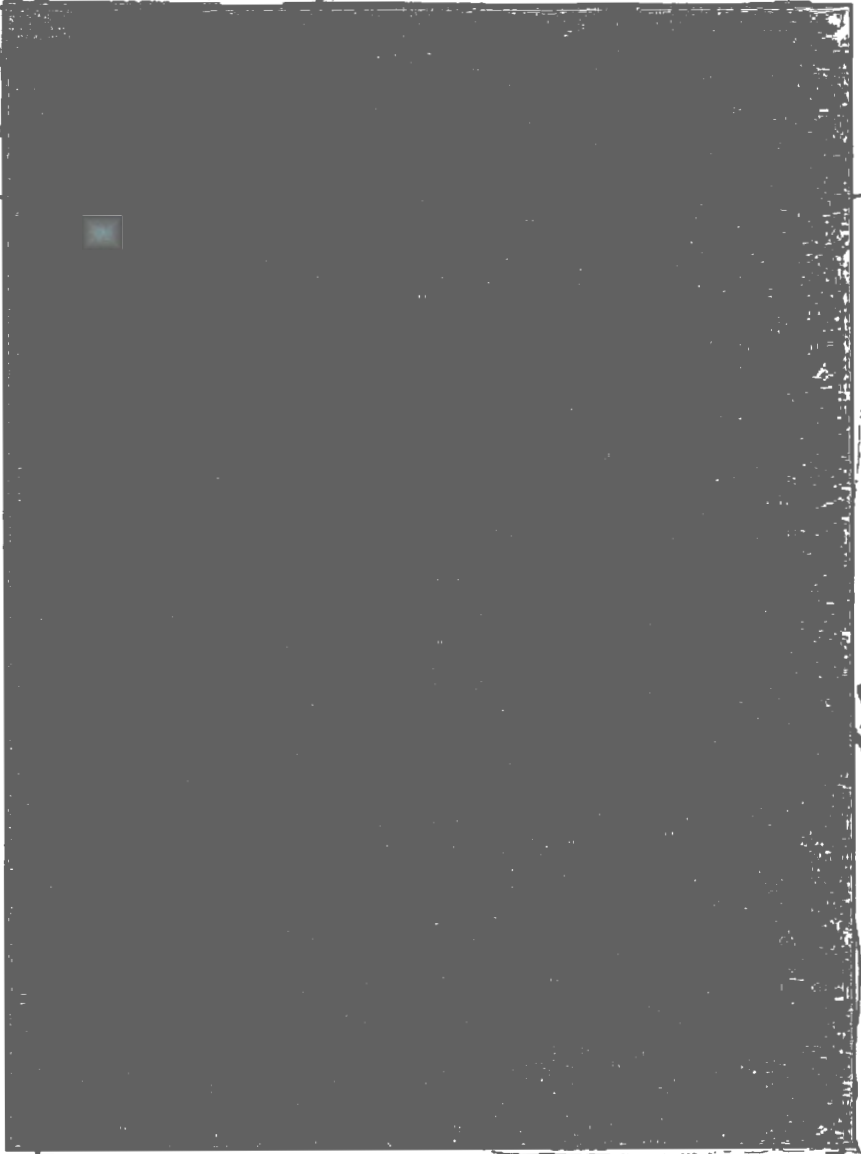
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PATRIOT PAC-3, December 31, 2003

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Single Shot Engagement Kill Probability (SSEKP)				
TBM				
Non-TBM (Destroyed or out of control within 30 sec of intercept)				
Mass Attack (Defend any single critical asset within its defended area)				
TBM				
Non-TBM				
System Effectiveness (TBM)				
Joint Interoperability	Battery and Bn should be	Battery / and Bn / should / be /	Tactical Demon- Data strated / Link via / TADIL-J HWIL,	Battery and Bn should be

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PATRIOT PAC-3, December 31, 2003

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

FIRE UNIT

<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>
capable of integra- ting into a joint compos- ite tracking network	capable / shall be of / primary integra- / protocol ting / for into a / receiv- joint / ing, pro- compos- / cessing, ite / and tracking / trans- network / mitting / jointly / approved / tactical / Air / Missile / Defense / (AMD) / specific / messages	ASCIET/ JCIET and Roving Sands	capable of integra- ting into a joint compos- ite tracking network

~~(S)~~ Performance Characteristics Footnotes

(U) ACRONYMS

ABT - Air Breathing Threat  
AGL - Above Ground Level  
AMD - Air Missile Defense  
ASCIET - All Services Combat Identification and Evaluation Team  
Bn - Battalion  
ECM - Electronic Countermeasure  
EMP - Electromagnetic Pulse  
HWIL - Hardware In The Loop  
JCIET - Joint Combat Identification and Evaluation Team  
km - kilometer  
kv/m - kilovolts/meter  
MSL - Mean Sea Level  
TADIL-J - Tactical Data Link-Joint  
TBM - Tactical Ballistic Missile

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

~~(S)~~ Tactical Ballistic Missile (TBM) performance characteristics are for TBMs with radar cross section of more than or equal to [REDACTED] meters square at worst aspect angle.

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PATRIOT PAC-3, December 31, 2003

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



(U) System Effectiveness =  $P(\text{DET}) \times [1 - (1 - P(\text{SSK}))^n]$ , 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 JROC validated characteristics.

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

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.

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PATRIOT PAC-3, December 31, 2003

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

b. Current Change Explanations -- None

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	907.3	907.3	895.2
Procurement	2606.7	2606.7	2596.8
Recurring Flyaway	(915.2)		(907.5)
Nonrecurring Flyaway	(1423.3)		(1423.2)
Total Flyaway	(2338.5)		(2330.7)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(268.2)		(266.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	3514.0	3514.0	3492.0
Escalation	-112.8	-112.8	-104.0
Development (RDT&E)	(-70.8)	(-70.8)	(-66.2)
Procurement	(-42.0)	(-42.0)	(-37.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3401.2	3401.2	3388.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	40	40	40
Total	40	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.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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PATRIOT PAC-3, December 31, 2003

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

MISSILE SEGMENT

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	3578.2	3578.2	3510.4
Procurement	5505.8	5505.8	5726.2
Recurring Flyaway	(4928.2)		(5110.4)
Nonrecurring Flyaway	(577.6)		(615.8)
Total Flyaway	(5505.8)		(5726.2)
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	0.0	0.0	0.0
Total FY 2002 Base-Year \$	9084.0	9084.0	9236.6
Escalation	121.8	121.8	116.8
Development (RDT&E)	(-276.1)	(-276.1)	(-254.3)
Procurement	(397.9)	(397.9)	(371.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	9205.8	9205.8	9353.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1159	1159	1263
Total	1159	1159	1263

(U) The Low Rate Initial Production (LRIP) quantity is 164 PAC-3 missiles as approved by the Under Secretary of Defense (Acquisition, Technology and Logistics) on December 2, 2002. The LRIP missile quantity exceeds 10% of the total planned production quantity of 1263, because this was the minimum LRIP quantity needed to avoid a production break.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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PATRIOT PAC-3, December 31, 2003

12. (U) Unit Cost Summary:

FIRE UNIT

	UCR Baseline (DEC 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	3514.0	3492.0	
(2) Quantity	40	40	
(3) Unit Cost	87.850	87.300	-0.63
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	2606.7	2596.8	
(2) Quantity	40	40	
(3) Unit Cost	65.167	64.920	-0.38

MISSILE SEGMENT

	UCR Baseline (DEC 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	9084.0	9236.6	
(2) Quantity	1159	1263	
(3) Unit Cost	7.838	7.313	-6.70
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	5505.8	5726.2	
(2) Quantity	1159	1263	
(3) Unit Cost	4.750	4.534	-4.55

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PATRIOT PAC-3, December 31, 2003

13. (U) Cost Variance Analysis:  
FIRE UNIT

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	836.5	2564.7	-	3401.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.9	-10.4	-	-12.3
Other	-	-	-	-
Support	-	-1.5	-	-1.5
Subtotal	-1.9	-11.9	-	-13.8
Current Changes:				
Economic	-0.3	+0.7	-	+0.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.3	+6.1	-	+0.8
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	-5.6	+6.2	-	+0.6
Total Changes	-7.5	-5.7	-	-13.2
Current Estimate	829.0	2559.0	-	3388.0

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	907.3	2606.7	-	3514.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-7.0	-13.4	-	-20.4
Other	-	-	-	-
Support	-	-1.5	-	-1.5
Subtotal	-7.0	-14.9	-	-21.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.1	+5.6	-	+0.5
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	-5.1	+5.0	-	-0.1
Total Changes	-12.1	-9.9	-	-22.0
Current Estimate	895.2	2596.8	-	3492.0

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PATRIOT PAC-3, December 31, 2003

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	-0.3
Revised estimate in FY 2004, and FY 2010 - FY 2012 for Army adjustments. (Estimating)	-2.3	-2.5
Revised estimate in FY 2003 to reflect actuals. (Estimating)	-2.4	-2.4
Revised estimate in FY 2005 - FY 2009 for Department inflation adjustments. (Estimating)	-0.4	-0.4
RDT&E Subtotal	<u>-5.1</u>	<u>-5.6</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Revised estimate in FY 2004 for Congressional adjustment and efficiencies gained by consolidating PATRIOT and MEADS programs. (Estimating)	-11.0	-11.5
Army realignment of recapitalization funding in FY 2005 - FY 2009. (Estimating)	+10.0	+10.9
Army realignment of funds in FY 2009 - FY 2012 for future modifications to ground support equipment. (Estimating)	+6.2	+6.3
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Revised estimate for initial spares in FY 2002 to reflect actuals. (Support)	-0.4	-0.4
Congressional adjustment to initial spares in FY 2004. (Support)	-0.3	-0.3
Procurement Subtotal	<u>+5.0</u>	<u>+6.2</u>

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PATRIOT PAC-3, December 31, 2003

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

MISSILE SEGMENT

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	3302.1	5903.7	-	9205.8
Previous Changes:				
Economic	-	-2.2	-	-2.2
Quantity	-	+300.0	-	+300.0
Schedule	-	+70.0	-	+70.0
Engineering	-	-	-	-
Estimating	-9.6	-304.0	-	-313.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.6	+63.8	-	+54.2
Current Changes:				
Economic	-0.4	+9.2	-	+8.8
Quantity	-	+13.2	-	+13.2
Schedule	-	-13.8	-	-13.8
Engineering	-	-	-	-
Estimating	-36.0	+121.2	-	+85.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-36.4	+129.8	-	+93.4
Total Changes	-46.0	+193.6	-	+147.6
Current Estimate	3256.1	6097.3	-	9353.4

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PATRIOT PAC-3, December 31, 2003

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	3578.2	5505.8	-	9084.0
Previous Changes:				
Quantity	-	+257.4	-	+257.4
Schedule	-	+68.9	-	+68.9
Engineering	-	-	-	-
Estimating	-30.6	-229.6	-	-260.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-30.6	+96.7	-	+66.1
Current Changes:				
Quantity	-	+11.3	-	+11.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-37.2	+112.4	-	+75.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-37.2	+123.7	-	+86.5
Total Changes	-67.8	+220.4	-	+152.6
Current Estimate	3510.4	5726.2	-	9236.6

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Revised estimate in FY 2008 for Evolutionary Development program. (Estimating)	+18.0	+20.0
Budget adjustment in FY 2003 for missile production acceleration. (Estimating)	-22.6	-23.0
Revised estimate in FY 2004 for Congressional adjustments and efficiencies gained by combining PATRIOT and MEADS programs. (Estimating)	-17.1	-17.3
Revised estimate in FY 2003 for Missile Defense Agency higher priority program. (Estimating)	-9.4	-9.6
Reductions in FY 2003 for Small Business Innovative Research. (Estimating)	-3.6	-3.7
Revised estimate in FY 2002 and FY 2003 to reflect actuals. (Estimating)	-1.3	-1.2
Inflation adjustments for FY 2005 - FY 2008. (Estimating)	-1.0	-1.0

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PATRIOT PAC-3, December 31, 2003

**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>
Realignment of Army funds from FY 2005 to 2007. (Estimating)	-0.4	-0.4
RDT&E Subtotal	-37.2	-36.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+9.2
Increase of four PAC-3 missiles from 1259 to 1263. (Quantity)	+11.3	+13.2
Realignment of annual procurement buy profile in FY 2003 - FY 2010. (Schedule)	0.0	-13.8
Revised estimate of missile unit cost to reflect realignment of buy profile in FY 2003 - FY 2010. (Estimating)	+124.7	+133.6
Adjustment for Current and Prior Inflation. (Estimating)	-0.8	-0.8
Revised estimate in FY 2002 to reflect actuals. (Estimating)	-5.1	-5.2
Revised estimate for Congressional reduction in FY 2004. (Estimating)	-4.6	-4.6
Revised estimate in FY 2003 for Department adjustment. (Estimating)	-1.8	-1.8
Procurement Subtotal	+123.7	+129.8

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

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	
39.73	-1.14	+6.55	+1.33	+13.99	+19.22	--	+5.35	+45.30	85.03

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PATRIOT PAC-3, December 31, 2003

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

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	
85.03	+0.010	--	--	--	-0.287	--	-0.053	-0.330	84.70

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	
31.35	-0.580	+3.61	+1.33	+11.15	+11.91	--	+5.35	+32.77	64.12

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	
64.12	+0.017	--	--	--	-0.107	--	-0.053	-0.143	63.97

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE	N/A	SEP 1998	JUN 2000	DEC 2000
Total Cost	0.0	2145.4	3401.2	3388.0
Total Quantity	0	54	40	40
Prog Acq Unit Cost	0.0	39.7	85.0	84.7

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PATRIOT PAC-3, December 31, 2003

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

MISSILE SEGMENT

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	
3.53	-0.166	+0.867	+0.480	+0.421	+2.81	--	--	+4.41	7.94

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	
7.94	+0.005	-0.405	+0.044	--	-0.181	--	--	-0.537	7.41

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	
1.88	-0.184	+0.943	+0.244	+0.166	+2.04	--	--	+3.21	5.09

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

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.09	+0.006	-0.171	+0.044	--	-0.145	--	--	-0.266	4.83

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PATRIOT PAC-3, December 31, 2003

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

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	MAY 1994	MAY 1994
Milestone III	N/A	AUG 1998	OCT 2002	OCT 2002
IOC	N/A	NOV 1999	SEP 2005	SEP 2005
Total Cost	0.0	4236.2	9205.8	9353.4
Total Quantity	0	1200	1159	1263
Prog Acq Unit Cost	0.0	3.5	7.9	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 --  
(U) PAC-3 MSE:  
LOCKHEED, DALLAS, TX  
DAAH01-03-C-0164, CPIF  
Award: June 27, 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>
\$260.0	N/A	0	\$260.0	\$260.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/03)	\$1.1	\$-0.4
Net Change	\$1.1	\$-0.4

Explanation of Change:

(U) This is the initial report for the Missile Segment Enhancement (MSE) contract.

The favorable net change in cost variance is due to greater than planned efficiencies with the solid rocket motor subcontract effort. The unfavorable net change in schedule variance is due to delays in initiating efforts due to shortage of personnel committed to other contract efforts.

(U) Contract Comments:  
The MSE contract effort was authorized on June 27, 2003, at a not-to-exceed

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PATRIOT PAC-3, December 31, 2003

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

price of \$260M. The MSE contract was awarded to develop, test, and integrate an improved solid rocket motor for the PAC-3 missile. Definitization is expected in third quarter FY 2004.

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$697.0	N/A	54	\$697.0	\$697.0

Explanation of Change:

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.

The Current Contract Price and Estimated Price at Completion increased \$147.2M from the previous annual Selected Acquisition Report due to the FY 2003 and FY 2004 procurements for additional modification kits and spares. The FY 2004 procurement represents the last planned procurement of REP-3 kits; therefore, this is the last submission for this contract.

(U) <u>PAC-3 LRIP:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED, DALLAS, TX DAAH01-98-C-0062, CPIF Award: December 12, 1997 Definitized: September 29, 1998	\$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	\$565.1	\$565.1

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PATRIOT PAC-3, December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.7	\$-6.6
Cumulative Variances To Date (09/28/03)	\$22.2	\$-7.2
Net Change	\$22.9	\$-0.6

Explanation of Change:

(U) The favorable net change in cost variance is attributed to improved production efficiencies, which resulted in completion of the LRIP-1 and LRIP-2 efforts at less than target cost. The unfavorable net change in schedule variance is primarily due to delayed seeker deliveries and extended rework for component replacements. Accelerated production schedules were achieved by using assets from the LRIP-3 contract on a borrow/payback basis.

The PAC-3 Low Rate Initial Production (LRIP) contract is the summary of performance on the following separate LRIP efforts: Long Lead Time Item (LLTI) materials, LRIP Basic, Special Configuration Hardware, LRIP-1, and LRIP-2. Deliveries of all major end-items were completed in August 2003; therefore, this is the final submission for this contract.

(U) Contract Comments:

The PAC-3 LRIP contract was awarded in December 1997 for the procurement of LLTI materials to support the first 20 PAC-3 missiles. The contractor's original proposal was for \$39.5M, but subsequent to the contract award, the contractor submitted a firm proposal for \$56.7M. The LLTI contract was modified in December 1999, May 2000, and December 2000 for the following additional LRIP effort: LRIP Basic (\$48.4M) for assembly of the first 20 PAC-3 missiles; Special Configuration Test Hardware (\$17.6M) for three additional Engineering, Manufacturing, and Development test missiles; LLTI for LRIP-1 (\$78.0M) for long lead components for the LRIP-1 procurement; LRIP-1 (\$208.9M) for assembly of 32 missiles; and LRIP-2 (\$212.0M) for assembly of 40 missiles. In March 2003, the LRIP-2 contract was modified to accelerate missile production in support of Operation Iraqi Freedom.

The difference between the Current Contract Price and the Estimated Price 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> LOCKHEED, DALLAS, TX DAAH01-02-C-0050, FPI/S Award: March 20, 2002 Definitized: December 18, 2003	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$326.6	\$375.0	72

<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>
\$373.5	\$381.4	72	\$373.5	\$373.5

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PATRIOT PAC-3, December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.6	\$3.3
Cumulative Variances To Date (12/31/03)	\$17.2	\$-6.5
Net Change	\$14.6	\$-9.8

Explanation of Change:

(U) The favorable net change in cost variance is due to replanning efforts for acceleration of missile production. The unfavorable net change in schedule variance is due to delays in receipt of materials at the seeker subcontractor, and delays in deliveries of the missile mid-section components.

(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. The difference between the Initial Contract Price and the Current Contract Price is due to the acceleration of the LRIP-3 missile deliveries in support of Operation Iraqi Freedom.

(U) IPF-2:

LOCKHEED, DALLAS, TX

DAAH01-02-C-0075, CPIF

Award: May 7, 2002

Definitized: March 27, 2003

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$145.0	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$157.3	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$157.3	\$157.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/03)	\$1.5	\$-9.1
Net Change	\$1.5	\$-9.1

Explanation of Change:

(U) The favorable net change in cost variance is due to less than planned effort associated with new facilities due to delays in receipt of materials. The unfavorable net change in schedule variance is due to impacts of program acceleration and delays in facilitization at the seeker subcontractor.

(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

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PATRIOT PAC-3, December 31, 2003

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

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.

The Initial Contract Price for IPF-2 was authorized at a not-to-exceed price of \$145M. The difference between the initial contract price and current price is due to \$12.3M authorized effort that has not been negotiated.

(U) Government FY 03:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
LOCKHEED, DALLAS, TX				
DAAH01-03-C-0017, FPIS	\$375.0	\$409.0	100	
Award: December 30, 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>
\$375.0	\$409.0	100	\$375.0	\$375.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/03)	\$5.5	\$4.0
Net Change	\$5.5	\$4.0

Explanation of Change:

(U) This is the initial report for the FY 2003 PAC-3 missile buy.

The favorable net change in cost and schedule variance is due to less than planned effort in engineering, quality, and manufacturing engineering to accommodate a later start up. Also, the early award of materials held in inventory has contributed to the favorable schedule variance.

(U) Contract Comments:

The Government FY 2003 contract was authorized on January 2, 2003, at an estimated price of \$375M. Definitization is expected by third quarter FY 2004.

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PATRIOT PAC-3, December 31, 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 (FY83-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	3693.5	172.8	76.7	142.1	4085.1
Procurement	4204.8	800.0	554.5	3097.0	8656.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7898.3	972.8	631.2	3239.1	12741.4

FIRE UNIT

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

<u>Appropriation</u>	<u>Prior Years (FY89-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	729.0	16.0	12.5	71.5	829.0
Procurement	1927.4	183.0	65.2	383.4	2559.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2656.4	199.0	77.7	454.9	3388.0

MISSILE SEGMENT

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

<u>Appropriation</u>	<u>Prior Years (FY83-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-11)</u>	<u>Total</u>
RDT&E	2964.5	156.8	64.2	70.6	3256.1
Procurement	2277.4	617.0	489.3	2713.6	6097.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5241.9	773.8	553.5	2784.2	9353.4

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PATRIOT PAC-3, December 31, 2003

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

b. Annual Summary -- FIRE UNIT

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 \$
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

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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
2002				4.1	4.1
2003				12.4	12.7
2004				15.5	16.0
2005				11.9	12.5
2006				7.4	7.9
2007				7.3	7.9
2008				9.2	10.2
2009				9.4	10.6
2010				9.7	11.2
2011				9.9	11.7
2012				10.0	12.0
Subtotal				528.9	494.7

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PATRIOT PAC-3, December 31, 2003

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

FIRE UNIT

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		48.5	65.7	65.9
2002		64.7		80.8	81.9
Subtotal	40	328.7	907.5	1389.1	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
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		24.6	25.1
2003		118.2		134.3	138.7
2004		157.4		174.8	183.0
2005		51.2		61.3	65.2
2006		29.6		39.5	42.8
2007		45.3		50.2	55.4
2008		47.3		51.6	58.1
2009		45.1		48.5	55.7
2010		44.3		49.1	57.6
2011		44.7		46.9	56.1
2012		45.1		47.3	57.7
Subtotal		1094.5		1207.7	1235.8

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PATRIOT PAC-3, December 31, 2003

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	40	328.7	907.5	1755.4	1657.5
Army		1094.5		1736.6	1730.5
Grand Total	40	1423.2	907.5	3492.0	3388.0

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
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				129.5	130.4
2003				136.4	138.9
Subtotal				3232.8	2964.5

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				151.5	156.8
2005				61.1	64.2
2006				20.1	21.4

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

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 \$
2007				27.0	29.4
2008				17.9	19.8
Subtotal				277.6	291.6

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		290.6	290.6	291.5
2002	72	207.3	480.9	688.2	697.6
2003	122	11.3	578.5	589.8	605.4
Subtotal	286	418.3	1849.7	2268.0	2277.4

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	135	38.6	550.7	589.3	617.0
2005	108		459.8	459.8	489.3
2006	113		452.0	452.0	489.7
2007	124		444.0	444.0	490.4
2008	212		596.5	596.5	672.0
2009	232		630.9	630.9	724.9
2010	53	87.0	126.8	213.8	250.6
2011		71.9		71.9	86.0
Subtotal	977	197.5	3260.7	3458.2	3819.9

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	286	418.3	1849.7	5500.8	5241.9
Army	977	197.5	3260.7	3735.8	4111.5
Grand Total	1263	615.8	5110.4	9236.6	9353.4

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17. (U) Delivery/Expenditure Information:

FIRE UNIT

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	32	32

(U) Percent Total Program Quantities Delivered: 80.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2454.2

(U) Percent Total Program Expended: 72.4%

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

MISSILE SEGMENT

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	128	128

(U) Percent Total Program Quantities Delivered: 10.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 4211.4

(U) Percent Total Program Expended: 45.0%

18. (U) Operating and Support Costs:

FIRE UNIT

a. (U) Assumptions and Ground Rules --

The O&S assumptions and costs are based on the PATRIOT O&S cost estimate dated September 2002. The O&S cost estimate covers FY 1980 through FY 2033, and assumes that the Fire Units are not withdrawn from the field.

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

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

FIRE UNIT

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 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

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 costs are for all missile configurations in the PATRIOT system. The O&S estimate covers FY 1980 - FY 2033. The majority of the Depot Maintenance cost is attributed to the recertification effort on the missile every ten years.

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

Cost Element	MISSILE SEGMENT Avg Annual Cost Per 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

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

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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N-8 CVN 68

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

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): CVN-68 Class/Carrier Replacement Program (Nuclear Aircraft Carriers)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
Program Executive Officer      CAPT Thomas Moore  
Aircraft Carriers      Assigned: June 5, 2003  
614 Sicard Street SE Stop 7007      DSN 326-0470; COMM (202) 781-0470  
Washington, DC 20376-7007      MooreTJ1@navsea.navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0604567N Project 42301  
PROCUREMENT:  
(U) APPN 1611 ICN 20200100 (Navy)  
(U) APPN 1611 ICN 200100 (Navy)

04-C-214

B. Fitz

Derived from: UNCLASSIFIED Classification Guide CG-RN-1 Dated 1 Jan 1977  
Downgrade instructions: (See Subject: Automatic Downgrade)  
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DEPARTMENT OF DEFENSE 0706

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5. (U) References:

SAR Baseline (Production Estimate):

(U) Navy Acquisition Executive (NAE) 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 nine 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), USS HARRY S. TRUMAN (CVN 75), and USS RONALD REAGAN (CVN 76) were delivered in 1975, 1977, 1982, 1986, 1989, 1992, 1995, 1998, and 2003, respectively. One new ship, the GEORGE H.W. BUSH (CVN 77), is targeted for delivery in March 2008.

7. (U) Executive Summary:

(U) CVN 76: USS RONALD REAGAN was delivered to the Navy on June 14, 2003 and was commissioned on July 12, 2003. This ship will no longer be reported in the SAR.

CVN77: As a result of reverting to a legacy-based, government furnished warfare system, a Request for Proposal (RFP) was issued to the contractor on November 18, 2002. A proposal was received August 1, 2003 and Navy technical assessment report (TAR) completed on August 29, 2003. The contract modification award is anticipated to occur by the 3rd quarter of FY2004.

The Fiscal Year 2003 Defense Appropriations Act included \$90M SCN plus-up for the CVN77 Integrated Warfare System (IWS) specifying its use towards transformational technologies as the ship is being constructed. The program office screened potentially transformational technology candidates and recommended detailed plans be developed for those that were executable within the SCN window and would lay a cornerstone for risk and cost reduction on the CVN21 (previously referred to as CVN(X)) program. Detailed plans were presented and final transformation technology candidates selected. The program

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

office is executing the FY2003 Congressional Plus-up funding for transformational technologies for CVN77 in accordance with individual technology project plans and Navy guidance.

In the most recent cost information submitted by the contractor, reflecting data through December 31, 2003, the shipbuilder's final price estimate has increased. Currently the shipbuilder is taking a variety of management actions to reverse this trend while maintaining schedule and controlling cost. However, while an on-schedule ship delivery is possible, a negative cost variance remains a reality and a major issue with which to be dealt. The CVN77 program is under funded to the shipbuilder's final price estimate. Throughout the year, the shipbuilder aggressively worked with the supplier base to greatly reduce delays in material receipts and embarked on an outsourcing initiative to cover schedule. However, due to subcontractor issues, at the end of 2003, the subcontracted work was returned to the shipbuilder in various stages of completion, and the impact is reflected in the latest cost information. However, the cost information reported by the contractor does not incorporate the programmatic impacts due to the Warfare System Request for Proposal that is under negotiation.

This report supports the FY2005 President's Budget which did not include additional funding. The Program Manager is working with the resource sponsor to include required funding in the FY2006 budget submission. Absent funding, the PM will commence descoping work in Fall 2004 to stay within budget. This will result in an incomplete ship at delivery.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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:

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

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. Program Deviation Report (PDR) and revised Acquisition Program Baseline (APB) are in preparation.

9. (U) Schedule:

a. Milestones --

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

b. Current Change Explanations --

(U) (Ch-1) Ceremonial keel laying changed from May 2003 to September 2003 to deconflict planning resources required for CVN76 commissioning. This schedule change had no cost impact on the program.

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>
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 i/	97337
Propulsion	(b)(1)			
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	2451	2400 / 2400	2451	2451
Ordnance (Long Tons)	(1)			
Average Fuel (gals)	(1)			
Operational Number of Aircraft (Deck Multiple in A4 Equivalents)	151	151 / 151	151 3/	151

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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 1998.

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

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)	0.0	215.5	306.0
Procurement	4557.1	4719.2	4613.9
Basic	(2901.1)		(3209.5)
Government Furnished Eq	(1547.8)		(1024.4)
Other Costs	(21.9)		(255.6)
OF/PD	(86.3)		(124.4)
Unknown			(0.0)
Unknown			(0.0)
Total Sailaway	(4557.1)		(4613.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1995 Base-Year \$	4557.1	4934.7	4919.9
Escalation	983.7	1039.0	591.7
Development (RDT&E)	(0.0)	(19.3)	(29.2)
Procurement	(983.7)	(1019.7)	(562.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5540.8	5973.7	5511.6

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

b. (U) Quantity --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0	0	0
Procurement	1	1	1
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)

12. (U) Unit Cost Summary:

	UCR Baseline (APR 1999 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	4934.7	4919.9	
(2) Quantity	1	1	
(3) Unit Cost	4934.700	4919.900	-0.30
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	4719.2	4613.9	
(2) Quantity	1	1	
(3) Unit Cost	4719.200	4613.900	-2.23

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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	-	5540.8	-	5540.8
Previous Changes:				
Economic	-9.0	-468.8	-	-477.8
Quantity	-	-	-	-
Schedule	-	-141.4	-	-141.4
Engineering	+157.3	-223.0	-	-65.7
Estimating	+189.6	+371.4	-	+561.0
Other	-	+127.0	-	+127.0
Support	-	-	-	-
Subtotal	+337.9	-334.8	-	+3.1
Current Changes:				
Economic	0.0	+47.6	-	+47.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.7	-77.2	-	-79.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.7	-29.6	-	-32.3
Total Changes	+335.2	-364.4	-	-29.2
Current Estimate	335.2	5176.4	-	5511.6

(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	+167.2	+204.6	-	+451.8
Other	-	+114.7	-	+114.7
Support	-	-	-	-
Subtotal	+308.4	+113.9	-	+422.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.4	-57.1	-	-59.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.4	-57.1	-	-59.5
Total Changes	+306.0	+56.8	-	+362.8
Current Estimate	306.0	4613.9	-	4919.9

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

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-0.1
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Programmatic reductions in controls. (Estimating)	-2.4	-2.7
RDT&E Subtotal	-2.4	-2.7
(2) Procurement		
Revised escalation indices. (Economic)	N/A	+39.0
Economic adjustment for negative program change. (Economic)	N/A	+8.6
Adjustment for Current and Prior Inflation. (Estimating)	-35.6	-44.8
Reductions in out year program funds associated with outfitting and post delivery. (Estimating)	-21.5	-32.4
Procurement Subtotal	-57.1	-29.6

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5540.80	-430.20	--	-141.40	-65.70	+481.10	+127.00	--	-29.20	5511.60

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	-421.20	--	-141.40	-223.00	+294.20	+127.00	--	-364.40	5176.40

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

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

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	DEC 2008	JAN 2008
Total Cost	N/A	N/A	5540.8	5511.6
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	5540.8	5511.6

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

a. RDT&E --

(U) Warfare Sys Development:  
 NGNN, Newport News, VA  
 N00024-98-C-2104, CPAF - CLIN 15  
 Award: January 26, 2001  
 Definitized: January 26, 2001

Initial Contract Price		
Target	Ceiling	Qty
\$102.0	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$102.0	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$102.0	\$102.0

Previous Cumulative Variances  
 Cumulative Variances To Date  
 Net Change

Cost Variance	Schedule Variance
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

(U) Earned Value Management System (EVMS) is not required by this contract.

b. Procurement --

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

(U) Nuclear Components:			Initial Contract Price		
DEPARTMENT OF ENERGY, WASHINGTON DC			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-67-F-5110, FFP/CPFF			\$865.2	N/A	0
Award: February 1, 1988					
Definitized: February 1, 1988					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$859.2	N/A	0	\$859.2	\$859.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date			N/A	N/A	
Net Change			N/A	N/A	

Explanation of Change:

(U) Earned Value Management System (EVMS) is not required by this contract.

(U) Contract Comments:

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

(U) CVN 77 Construction:			Initial Contract Price		
NGNN, Newport News, VA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-98-C-2104, FPIF			\$3144.4	\$3683.7	1
Award: January 26, 2001					
Definitized: January 26, 2001					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$3172.2	\$3715.9	1	\$3285.2	\$3445.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/03)			\$-47.5	\$-93.1	
Net Change			\$-70.9	\$-75.1	
			\$-23.4	\$18.0	

Explanation of Change:

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

Two primary components constitute the unfavorable net cost variance: 1) the escalation forecast at contract award is \$194.2M lower than the

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

shipbuilder's current escalation projection, and 2) the shipbuilder's current overhead rate of 155.6% is above the 143.7% overhead rate in the contract. The increase in overhead rate is attributable to the CVN21 shift, shifting the CVN70 Refueling Complex Overhaul (RCOH) start date from November 2004 to November 2005, and Hurricane Isabel. Additionally, labor performance and material costs have not met expectations. The PM estimates a labor overrun of approximately 2.5M manhours and a material overrun of \$100-\$150M.

(U) <u>Warfare Sys Design/Proc:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NGNN, Newport News, VA			
N00024-98-C-2104, CPAF - CLIN 17	\$514.0	N/A	0
Award: January 26, 2001			
Definitized: January 26, 2001			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$514.0	N/A	0	\$514.0	\$514.0

	<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) This CLIN was terminated at less than 1% complete.

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 (FY98-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	274.8	28.3	25.5	6.6	335.2
Procurement	5023.7	-	15.0	137.7	5176.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5298.5	28.3	40.5	144.3	5511.6

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CVN 68 Class, December 31, 2003

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

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				46.7	51.6
2003				42.2	47.1
2004				25.0	28.3
2005				22.2	25.5
2006				5.1	5.9
2007				0.6	0.7
Subtotal				306.0	335.2

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			44.9	44.9	48.7
1999			112.3	112.3	122.9
2000			674.9	674.9	747.5
2001	1		3580.0	3580.0	4016.4
2002					
2003			77.4	77.4	88.2
2004					
2005			12.8	12.8	15.0
2006			32.1	32.1	38.4
2007			5.5	5.5	6.7
2008			54.7	54.7	68.1
2009			19.3	19.3	24.5
Subtotal	1		4613.9	4613.9	5176.4

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		4613.9	4919.9	5511.6

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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): \$ 940.3

(U) Percent Total Program Expended: 17.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

These costs are based on the operating costs for supplies, equipage and pier side support when developed. This O&S estimate assumes carrier life cycle is 50 years vice the 48 years in the previous estimates. The personnel indirect support costs have been included as part of the Indirect Costs. These assumptions are carried over from CVN74/75/76. There is no antecedent for this program.

Date of cost estimate: February 2002.

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

Cost Element	CVN-77 Avg Annual Cost Per CVN	No Antecedent Pgm
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	11.0	N/A
Indirect Costs	110.0	N/A
Total	388.2	N/A

Total O&S Cost	CVN-77	No Antecedent Pgm
BY\$ (In Millions)	19400.0	N/A
TY\$ (In Millions)	64100.0	N/A

Report Creation Date: 03/21/2004 5:02:26 PM

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AF-21 NAVSTAR GPS

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

PROGRAM: Navstar GPS

AS OF DATE: December 31, 2003

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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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SECURITY REVIEW  
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## **5. References:**

Space & Control

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.

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.

(U) The Modernized program includes Block IIR, IIR-M, and IIF satellite capabilities. The Legacy Satellite and Control and the Legacy User Equipment (UE) programs are essentially complete and are therefore not included in this report. The Modernized User Equipment program will not procure user equipment, but will instead develop UE enabling technologies, demonstrate solutions, and assist platform managers. Therefore, UE quantities are not included in this report.

(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. The separate Acquisition Category (ACAT) III efforts: the Defense Advanced GPS Receiver (DAGR) and Miniaturized Airborne GPS Receiver 2000 (MAGR-2K) are not included in this Selected Acquisition Report (SAR).

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

**7. Executive Summary:**

**Overview:**

(U) The Joint Program Office (JPO) submitted a Program Deviation Report (PDR) on February 19, 2004 and is currently working on a subsequent proposed Approved Program Baseline (APB) due to Operational Control Segment (OCS) schedule acquisition milestone breaches.

**(U) GPS Satellites**

(U) There are currently three Block II and 17 Block IIA satellites on orbit. The final Block II/IIA satellite was launched November 5, 1997.

(U) There are currently nine Block IIR satellites on orbit, including the one successfully launched on December 21, 2003. Eleven Block IIR Satellites remain to be launched.

(U) Eight 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 Modernized Block IIR Satellite (redesignated as Block IIR-M) will be available for launch in 2004. Block IIR-M has successfully completed its Preliminary Design and Critical Design Reviews.

(U) The program office conducted two studies to incorporate a Flexible Power capability into the GPS IIR-M and IIF programs. The implementation approach involved 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 signals. These Lockheed Martin, the IIR-M contractor, and Boeing, the IIF contractor, studies identified technical approaches, requirements, and associated cost impacts to the satellites and Control Segment. Based on the unexpected high cost with implementing a "Max-Max" power over the sustainable life of the Block IIR-M satellites, the Joint Program Office (JPO) and Air Force Space Command jointly agreed to a subset of capabilities for this satellite configuration.

**(U) GPS Control Segment**

(U) Due to concerns with Architecture Evolution Plan (AEP) progress, on October 1, 2002 Boeing reallocated development efforts to Lockheed Martin and the Harris Corporation. The resulting restructure is complete, with the Air Force finishing an Integrated Baseline Review (IBR) in April 2003, which validated a \$49.5M over-target-baseline (OTB).

(U) The GPS Program deviates from a schedule threshold in the APB, dated February 14, 2003. This deviation is a result of compounding technical issues with spacecraft modernization development, both IIR-M and IIF, and development

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

cost overruns in the OCS and spacecraft modernization efforts. A PDR was submitted on February 19, 2004 and a revised APB is currently being worked.

(U) GPS User Equipment

(U) The Modernized User Equipment program awarded four Program Research Development Announcement (PRDA) contracts to further refine requirements, better integrate the Protection Navigation (PRONAV) security architecture, and pursue technology risk reduction. There will be a competitive award of Phase B efforts in FY05.

**8. Threshold Breaches:**

Space & Control

**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:**

(U) The GPS Program deviates from a schedule threshold in the approved Acquisition Program Baseline (APB), dated February 14, 2003. A Program Deviation Report (PDR) was submitted on February 19, 2004 and a revised APB is currently being worked.

(U) The Operational Control System Version 6 upgrade with Military-Code (M-Code), L2C, and L5 operational capability milestone has slipped from September 2007 to May 2010.

(U) The L5 operational signal in space milestone has slipped from June 2008 to July 2011. The M-Code and L2C IOC milestone has slipped from December 2008 to December 2010.

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8c. Threshold Breaches (Cont'd):

(U) These deviations are the result of compounding technical issues and development cost overruns in the OCS and spacecraft modernization efforts. The April 2003 Integrated Baseline Review (IBR) of the OCS Architectural Evolution Plan (AEP) Version 6 clarified requirements and costs that needed to be incorporated into the Boeing contract. This has resulted in a restructure and stretch-out of the OCS development effort and in-turn will delay the full implementation of the AEP software in support of M-Code operational capability.

(U) All available schedule compression options have been exhausted, to include a recent OCS restructure and requirement prioritization, which split the Version 6 software baseline into two releases, to be incorporated into a revised APB. A new Version 6.0 delivers a subset (L2C, L5, and Flexible Power) of the original Version 6 capabilities in May 2009 and supports the L2C IOC of December 2010. A new Version 6.1 completes the original Version 6 capabilities by delivering full M-Code capability in May 2010 and supports the M-Code IOC of December 2010.

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

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## 9. Schedule:

### Space & Control

#### 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
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	DEC 2004 (Ch-1)
Space Segment IIF			
Start Production	JUN 2002	JUN 2002	JUN 2002
1st IIF SV available for launch	JUN 2005	JUN 2006	APR 2006 (Ch-2)
Operational Control System			
Legacy Upgrade for IIR-M	DEC 2002	N/A	N/A (Ch-3)
Version 5.2 upgrade with test capability	DEC 2004	N/A	N/A (Ch-3)
AEP Ver 5 operational with Accuracy Improvement Initiative (AII) and M-Code, L2C, and L5 test capability	N/A	JUN 2006	NOV 2005 (Ch-4)
Version 6 upgrade with M-Code, L2C, and L5 operational capability	SEP 2007	SEP 2007	MAY 2010 (Ch-5)
System Schedules			
L5 Version 1 ICD	APR 2001	N/A	N/A (Ch-3)
L5 Version 2 ICD	JAN 2003	N/A	N/A (Ch-3)
DT&E Complete, L5	APR 2006	N/A	N/A (Ch-3)
SAASM OA complete	FEB 2007	N/A	N/A (Ch-3)
Final M-code space-to-user ICD	MAR 2008	N/A	N/A (Ch-3)
IOT&E Complete, M-code	SEP 2008	N/A	N/A (Ch-3)
Military and Civil Codes IOC	DEC 2008	N/A	N/A (Ch-3)
L5 operational signal in space	N/A	JUN 2008	JUL 2011 (Ch-6)
M-Code and L2C IOC	N/A	DEC 2008	DEC 2010 (Ch-6)

#### Acronym List:

AEP = Architectural Evolution Plan  
 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  
 Ver = Version

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

**Space & Control**

**b. Current Change Explanations --**

(Ch-1) The 1st IIR-M Space Vehicle (SV) available for launch slipped from July 2004 to December 2004 due to technical issues related to parts reliability in the Waveform Generator Modulator Intermediate Power Amplifier Converter (WGMIC). This new launch availability schedule allows for additional confidence testing and schedule margin to ensure a successful launch of the first IIR-M.

(Ch-2) 1st IIF SV available for launch was redefined/rebaselined per February 14, 2003 Acquisition Program Baseline (APB). There was an administrative error in the December 2002 SAR stating that the PM's Current Estimate for the "1st Block IIF SV available for launch" was June 2005. A Selected Acquisition Report (SAR) errata letter submitted to the Office of the Secretary Defense (OSD) (AT&L) in September 2003, explains the error and corrected the Current Estimate of June 2006.

The current estimate shows first IIF SV available for launch in April 2006. The estimate includes impacts due to incorporation of new Flex Power requirements.

(Ch-3) The following schedule milestones are no longer being tracked in the APB or at the system level due to program redefinition and thus no longer have current estimates for the SAR: Legacy Upgrade for IIR-M; Version 5.2 upgrade with test capability; L5 Version 1 Interface Control Document (ICD); L5 Version 2 ICD; Development Test and Evaluation (DT&E) Complete, L5; Selective Availability/Anti-Spoofing Module (SAASM) Operational Assessment (OA) complete; Final Military Code (M-Code) space-to-user ICD; Initial Operational Test and Evaluation (IOT&E) Complete, M-Code; and Military and Civil Codes Initial Operational Capability (IOC).

(Ch-4) AEP Ver 5 operational with Accuracy Improvement Initiative (AII) and M-Code, L2C, and L5 test capability was not reported in previous SAR due to an administrative error, but was in the approved APB, so it is reported in the current SAR.

(Ch-5) Version 6 Upgrade with M-Code, L2C, and L5 Operational Capability in Space has slipped from September 2007 to May 2010 as a result of technical issues with spacecraft modernization development, both IIR-M and IIF, and requirements maturation associated with AEP software to support M-Code.

(Ch-6) L5 operational signal in space, M-Code, and L2C IOC were not reported in the previous SAR due to an administrative error, but were in the approved APB, so they are reported in the current SAR.

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

**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	N/A	(Ch-1)
Modernized UE Specs and final drafts of ICDs	DEC 2005	N/A	N/A	(Ch-1)
Prototype M-code Receiver card from at least two manufacturers	FEB 2006	N/A	N/A	(Ch-1)
Producible M-code Receiver card from at least two manufacturers	DEC 2007	N/A	N/A	(Ch-1)
M-Code Receiver card ready for production	N/A	DEC 2007	FEB 2008	(Ch-2)

**Note:**

(U) Acronym List:

ICD = Interface Control Document

M-Code = Military Code

SAASM = Selective Availability/Anti-Spoofing Module

UE = User Equipment

**b. Current Change Explanations --**

(Ch-1) The following legacy milestones are no longer being tracked in the Acquisition Program Baseline (APB) or at the system level due to program redefinition and thus no longer have current estimates for the Selected Acquisition Report (SAR): High power trade study complete, Modernized User Equipment (UE) Specs and final drafts of Interface Control Documents (ICDs), Prototype Military Code (M-Code) Receiver card from at least two manufacturers, and Producible M-Code Receiver card from at least two manufacturers.

(Ch-2) The M-Code Receiver card ready for production was not reported in the previous SAR due to an administrative error, but was in the approved APB, so it is reported in the current SAR.

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# 10. Performance Characteristics:

## Space & Control

### a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
PPS System Perf				
Pos Accuracy	2.1m H 4.0m V	1.3m H / 17m H 2.6m V / 35m V	TBD	2.8m H (Ch-1) 5.8m V
Velocity	0.01m/s	N/A / N/A	TBD	.01 m/s
Time Transfer	10nsec	3.3ns / 40ns	TBD	6.7ns (Ch-2)
Availability	99.9%	N/A / N/A	TBD	better than 95% of having 24 satel- lites
SPS System Perf				
Pos Accuracy	1.0m H 4.0m V	1.3m H / 17m H 2.6m V / 35m V	TBD	2.8m H (Ch-3) 5.8m V
Time Transfer	40nsec	3.3ns / 40ns	TBD	6.7ns (Ch-4)
Availability	90%	N/A / N/A	TBD	>98%
L5 Signal Power	-154dBW	-154.0dB/ -154.9dB	TBD	-154.9 dBW
Backward Capability	N/A	N/A / N/A	TBD	
Flexible Power				
Max L1 P-Code	N/A	-152.6dB/ -155.2dB	TBD	-155.2dB (Ch-5) W
Max L2 P-Code	N/A	-152.9dB/ -156.6dB	TBD	-156.6dB (Ch-5) W
L2C Signal Power	N/A	-158.5dB/ -161.4dB	TBD	-160.0dB (Ch-5) W

### (U) Acronym List:

dBW = Decibels per Watt  
m H = Meters Horizontal  
m V = Meters Vertical  
m/s = Meters per Second  
ns = Nanoseconds  
Pos = Position  
PPS = Precise Positioning Service  
SPS = Standard Positioning Service

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

**Space & Control**

**b. Current Change Explanations --**

(Ch-1) The change from 1.6M Spherical Error Probable (SEP) to 2.8m H, 5.8m V accounts for a change in metric and assumptions (spherical error probable to horizontal and vertical at 95%) made in the February 2003 Acquisition Program Baseline (APB). The estimated performance is consistent with the expected improvement in satellite User Range Error (URE) and a 24 vehicle constellation.

(Ch-2) Changed from 10 ns to 6.7ns to account for February 2003 APB assumptions. (Previous APB addressed errors in space, control and user segments. The current APB addresses the space and control segment allocation only.)

(Ch-3) The change from <13M Horizontal, <22M Vertical to 2.8m H, 5.8m V accounts for the change in metric and assumptions (worst case location at 90% availability versus global average at 99%) made in the February 2003 APB. The new estimated performance is also consistent with the expected improvement in satellite URE and a 24 vehicle constellation. The previous estimate is not achievable until the GPS III modernization timeframe.

(Ch-4) Changed from <40 ns to 6.7ns to account for February 2003 APB assumptions. (Previous APB addressed errors in space, control and user segments. The current APB addresses the space and control segment allocation only.)

(Ch-5) Max L1 P-Code, Max L2 P-Code, and L2C Signal Power were not reported in the previous Selected Acquisition Report (SAR), but were added to the approved APB, dated February 14, 2003, so are reported in the current SAR.

**User Equipment**

**a. Performance --**

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
<b>PPS System Performance</b>				
Time-To-First-Fix	1 min	1 min / 2 min	TBD	.8 Min
Pos Accuracy	2.1m H	2.1m H / 19m H	TBD	7.9m H (Ch-1)
	4.0m V	4.0m V / 38m V		16.2m V
Velocity	0.01m/s	0.01m/s / 0.1 m/s	TBD	.01 m/s
Time Transfer	10nsec	10 ns / 44ns	TBD	10ns

**Note:**

(U) Acronym List:

m H = Meters Horizontal

m V = Meters Vertical

m/s = Meters per Second

ns = Nanoseconds

Pos = Position

PPS = Precise Positioning Service

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

**User Equipment**

**b. Current Change Explanations --**

(Ch-1) Position Accuracy changed from 2.1m H to 7.9m H, 16.2m V to account for the change in metric and assumptions (worst case location at 90% availability versus global average at 99%) made in the February 2003 Acquisition Program Baseline (APB). This change also reflects a change in User Equipment (UE) performance. Previously unspecified, the new UE error allocation is 2.6m. The new estimated performance is also consistent with the expected improvement in satellite User Range Error (URE) and a 24 vehicle constellation. The previous estimate is not achievable until the Global Positioning System (GPS) III modernization timeframe.

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

**Space & Control**

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
<b>a. Cost --</b>			
Development (RDT&E)	1776.2	1949.5	1983.8
Procurement	3239.4	3619.0	3640.3
Flyaway	(3205.8)		(0.0)
Recurring Flyaway			(3250.1)
Non-Recurring Flyaway			(207.6)
Total Flyaway	(3205.8)		(3457.7)
Other Weapon System	(33.6)		(179.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(3.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	5015.6	5568.5	5624.1
 Escalation	105.3	163.3	154.9
Development (RDT&E)	(53.1)	(41.4)	(43.2)
Procurement	(52.2)	(121.9)	(111.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5120.9	5731.8	5779.0
 <b>b. Quantity --</b>			
Development (RDT&E)	N/A	N/A	0
Procurement	33	37	37
Total	33	37	37

Low Rate Initial Production (LRIP) has not been approved for the Space and Control program.

c. Foreign Military Sales -- None.

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

Space & Control

d. Nuclear Costs -- None.

User Equipment

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	543.5	781.1	792.6
Procurement	254.3	260.2	257.3
Flyaway			(0.0)
Recurring Flyaway			(0.0)
Non-recurring Flyaway			(0.0)
Total Flyaway			(0.0)
Other Weapon System	(6.5)		(9.5)
Peculiar Support	(247.8)		(247.8)
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 2000 Base-Year \$	797.8	1041.3	1049.9
Escalation	76.6	67.8	65.1
Development (RDT&E)	(57.4)	(52.1)	(50.4)
Procurement	(19.2)	(15.7)	(14.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	874.4	1109.1	1115.0
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	0	0
Total	0	0	0

Low Rate Initial Production (LRIP) has not been approved for the Modernized User Equipment program.

The Modernized User Equipment (UE) program will not procure user equipment, but will instead develop UE enabling technologies, demonstrate solutions, and assist platform managers.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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**12. Unit Cost Summary:**

Space & Control

	UCR Baseline (FEB 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	5568.5	5624.1	
(2) Quantity	37	37	
(3) Unit Cost	150.500	152.003	+1.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	3619.0	3640.3	
(2) Quantity	37	37	
(3) Unit Cost	97.811	98.386	+0.59

User Equipment

	UCR Baseline (FEB 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	1041.3	1049.9	
(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	257.3	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

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Navstar GPS, December 31, 2003

**13. Cost Variance Analysis:**

**Space & Control**

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1829.3	3291.6	-	5120.9
Previous Changes:				
Economic	-17.7	-29.4	-	-47.1
Quantity	-	+288.4	-	+288.4
Schedule	-	-	-	-
Engineering	+198.0	+108.6	-	+306.6
Estimating	-18.4	-69.7	-	-88.1
Other	-	-	-	-
Support	-	+151.4	-	+151.4
Subtotal	+161.9	+449.3	-	+611.2
Current Changes:				
Economic	-0.9	-13.0	-	-13.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+78.7	-	-	+78.7
Estimating	-41.6	+18.7	-	-22.9
Other	-	-	-	-
Support	-0.4	+5.4	-	+5.0
Subtotal	+35.8	+11.1	-	+46.9
Total Changes	+197.7	+460.4	-	+658.1
Current Estimate	2027.0	3752.0	-	5779.0

**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	-	+260.5	-	+260.5
Schedule	-	-	-	-
Engineering	+191.1	+89.8	-	+280.9
Estimating	-17.1	-115.7	-	-132.8
Other	-	-	-	-
Support	-	+144.0	-	+144.0
Subtotal	+174.0	+378.6	-	+552.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+72.8	-	-	+72.8
Estimating	-38.8	+17.3	-	-21.5
Other	-	-	-	-
Support	-0.4	+5.0	-	+4.6
Subtotal	+33.6	+22.3	-	+55.9
Total Changes	+207.6	+400.9	-	+608.5
Current Estimate	1983.8	3640.3	-	5624.1

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

**Space & Control**

**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)	+0.3	+0.3
	Additional Operational Control Segment (OCS) technical requirements and IIF parts obsolescence (Engineering)	+72.8	+78.7
	Revised estimate for Evolved Expendable Launch Vehicle (EELV) integration costs (Estimating)	-2.3	-2.5
	Budget adjustment for higher Air Force priorities (Estimating)	-36.4	-39.0
	Adjustment for Systems Engineering/Program Support (Federally Funded Research and Development Center (FFRDC)) (Support)	-0.4	-0.4
	Revised estimate to reflect escalation (Estimating)	-0.4	-0.4
	<b>RDT&amp;E Subtotal</b>	<b>+33.6</b>	<b>+35.8</b>
(2)	<u>Procurement</u>		
	Revised escalation indices (Economic)	N/A	-13.0
	Adjustment for Current and Prior Inflation (Estimating)	+2.0	+2.2
	Revised estimate to reflect escalation (Estimating)	+4.9	+5.5
	Adjustment for Current and Prior Inflation (Support)	+0.5	+0.5
	Revised estimate to reflect escalation (Support)	+1.1	+1.2
	Reallocation adjustment between FY05 and FY03 for Commercial Off-the-Shelf (COTS) hardware upgrade (Support)	+1.3	+1.4
	Reallocation adjustment to support increased cost for the Modernized IIF satellite (Estimating)	+18.0	+19.0
	Reallocation adjustment for prior year Legacy (Estimating)	-0.4	-0.4
	Decrease in initial spare requirements (Estimating)	-7.0	-7.4
	Removal of initial spares (Support)	-0.1	-0.1
	Inclusion of prior year initial spares (Support)	+1.2	+1.3
	Increase in FY03 requirements for High Power Amplifier (Support)	+0.8	+0.9

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

Space & Control

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Correction to align flyaway and support costs		
(Support)	+0.2	+0.2
(Estimating)	-0.2	-0.2
Procurement Subtotal	+22.3	+11.1

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	-7.7	-2.2	-	-9.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+198.6	-	-	+198.6
Estimating	+56.6	-	-	+56.6
Other	-	-	-	-
Support	-	+5.5	-	+5.5
Subtotal	+247.5	+3.3	-	+250.8
Current Changes:				
Economic	-1.1	-0.6	-	-1.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.3	-0.1	-	-4.4
Other	-	-	-	-
Support	-	-4.1	-	-4.1
Subtotal	-5.4	-4.8	-	-10.2
Total Changes	+242.1	-1.5	-	+240.6
Current Estimate	843.0	272.0	-	1115.0

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

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	+182.5	-	-	+182.5
Estimating	+70.7	-	-	+70.7
Other	-	-	-	-
Support	-	+6.8	-	+6.8
Subtotal	+253.2	+6.8	-	+260.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.1	0.0	-	-4.1
Other	-	-	-	-
Support	-	-3.8	-	-3.8
Subtotal	-4.1	-3.8	-	-7.9
Total Changes	+249.1	+3.0	-	+252.1
Current Estimate	792.6	257.3	-	1049.9

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices (Economic)	N/A	-1.1
Adjustment for Current and Prior Inflation (Estimating)	+0.2	+0.2
Congressional rescission and reprogramming for higher priorities (Estimating)	-4.3	-4.5
RDT&E Subtotal	-4.1	-5.4
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-0.6
Adjustment for Current and Prior Inflation (Estimating)	+0.1	+0.1
Revised estimate to reflect escalation (Estimating)	+0.8	+0.7
FY03-FY05 reallocation of funds between Legacy and Modernization (FY03-FY09 withhold and FY05 AF rescission) (Support)	-4.2	-4.5
Adjustment for Current and Prior Inflation (Support)	+0.1	+0.1
Revised estimate to reflect escalation (Support)	-0.6	-0.6

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

User Equipment

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Correction to align flyaway and support costs		
(Support)	+0.9	+0.9
(Estimating)	-0.9	-0.9
Procurement Subtotal	-3.8	-4.8

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

Space & Control

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	-1.65	-8.98	--	+10.41	-3.00	--	+4.23	+1.01	156.19

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	-1.15	-2.99	--	+2.94	-1.38	--	+4.24	+1.66	101.41

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 1989	JUN 1989
IOC	N/A	N/A	DEC 2008	N/A
Total Cost	N/A	0.0	5120.9	5779.0
Total Quantity	N/A	N/A	33	37
Prog Acq Unit Cost	N/A	N/A	155.2	156.2

Note: Block IIR contract award is characterized as Milestone III

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

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

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	1115.0
Total Quantity	N/A	N/A	0	0
Prog Acq Unit Cost	N/A	N/A	0.0	0.0

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

a. RDT&E --  
GPS IIF OCS/MOSC DEV:  
Boeing North American, Seal Beach, CA  
F04701-96-C-0025, FFP/AF/EPA/CPAF  
Award: April 22, 1996  
Definitized: April 22, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$13.9	\$0.0	0

Current Contract Price		
Target	Ceiling	Qty
\$789.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$871.4	\$871.4

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-18.1	\$-5.5
Cumulative Variances To Date (12/18/03)	\$5.8	\$-3.4
Net Change	\$23.9	\$2.1

Explanation of Change:

(U) The Operational Control Segment (OCS) Development contract has a favorable cumulative Cost Variance (CV) of \$5.8M, compared to -\$18.1M reported in the December 2002 Selected Acquisition Report (SAR). There are two reasons for the change. First, the cumulative CV of -\$25.2M was reset to zero when the contractor conducted an Over Target Baseline (OTB) back in April 2003. The other reason for the CV is primarily due to Program Management, the OCS, and Integrated Logistics Support (ILS). The favorable cost variance is a result of staffing shortages. The contractor expects the cost variance to improve as staffing returns to full manning and normal work operations resume.

(U) The OCS Development contract improved to a cumulative Schedule Variance (SV) of -\$3.4M, compared to -\$5.5M reported in the December 2002 SAR. The cumulative SV of -\$6.8M was also reset to zero during the OTB back in March 2003. Boeing is currently experiencing a significant staffing shortage which is contributing to the SV. The contractor expects to be fully staffed by the end of the second quarter of FY04. The SV is primarily due to System Engineering, Launch Anomaly Disposal Operations (LADO), OCS, and ILS.

Contract Comments:

(U) The contract information above pertains to the Operational Control Segment (OCS) Research, Development, Test, and Evaluation (RDT&E) Cost Plus Award Fee (CPAF) development efforts.

(U) The Joint Program Office (JPO) conducted an Integrated Baseline Review (IBR) in March 2003 and implemented an OTB. The Estimated Price at Completion includes a \$49.5M overrun and an estimated cost of \$32.5M for authorized unpriced work.

(U) The current contract target price is \$789.5M, compared to the initial contract target price of \$13.9M. At the time the GPS IIF contract was signed (April 1996), the Government only envisioned needing to add the GPS IIF functionality to a completed distributed OCS architecture. However, completion of the distributed architecture (AEP - Architectural Evolution Plan) under the GPS OCS Support Contract (GOSC) became significantly more difficult than originally expected. In 1999, the government decided to alleviate Government Furnished Equipment (GFE) concerns and provide for a more efficient acquisition of AEP by transferring the responsibilities from GOSC into the Single Prime Initiative (SPI). Because of funding limitations, completion of the original GPS IIF functionality was stretched out into three different operational versions. Cumulatively, these actions raised the contract target price from \$13.9M to \$416M.

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15. Contract Information (Cont'd):

(U) In August 2000, Congress authorized the modernization of the entire GPS system - adding two new civil signals (L2C and L5) and a new military signal (M-Code). In order to ensure the Control Segment could command and control the new signals several subsequent modifications were added to provide the capability to build uploads for all the new signals and to modernize the monitor stations at the various remote sites. In April 2003, during the Control Segment Integrated Baseline Review (IBR), the government found there was additional work that needed to be placed on contract for both AEP and LADC. This increased the contract target price to \$789.5M.

<u>GPS IIR-M SAT DEV:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Valley Forge, PA			\$50.8	N/A	0
F04701-00-C-0006, FFP/CPIF					
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>
\$67.4	N/A	0	\$75.0	\$75.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.1	\$-0.9
Cumulative Variances To Date (12/31/03)	\$-6.3	\$0.0
Net Change	\$-2.2	\$0.9

Explanation of Change:

(U) The Global Positioning System (GPS) Block IIR Modernization Development has an unfavorable cumulative Cost Variance (CV) of \$-6.3M, compared to -\$4.1M reported on the December 2002 Selected Acquisition Report (SAR). The increase in the CV was mainly due to navigation payload design problems related to the Navigation Processor subsystem. The contractor had been working extra hours to minimize schedule impact.

(U) Since all work has been completed, there is no schedule variance. However, the contract will continue until March 2004 in order to resolve some issues related to the Navigation Processor subsystem.

Contract Comments:

(U) The contract information above pertains to the IIR Modernization Research, Development, Test, and Evaluation (RDT&E) Cost Plus Incentive Fee (CPIF) development efforts.

(U) The Estimated Price at Completion for both the contractor and the Program manager is \$75M. As of December 2003, estimated cost to complete is \$1.5M. The completion date for the development portion of the contract is March 2004.

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15. Contract Information (Cont'd):

<u>GPS IIF Space Segment DEV:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Boeing North American, Seal Beach, CA	\$205.0	N/A	0	
F04701-96-C-0025, CPIF				
Award: April 22, 1996				
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>
\$206.2	N/A	0	\$230.8	\$237.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.5	\$-3.7
Cumulative Variances To Date (12/19/03)	\$0.3	\$0.0
Net Change	\$1.8	\$3.7

Explanation of Change:

(U) Boeing implemented an Over Target Baseline (OTB) during December 2003. The cumulative cost variance was -\$4.9M before it was reset to zero. We currently have a favorable cumulative cost variance of \$0.3M because the contractor conducted its annual labor rate adjustment during December 2003, after the OTB.

(U) As a result of the OTB, the cumulative schedule variance of -\$6.5M was reset to zero.

Contract Comments:

(U) The contract information above pertains to the IIF Satellite Vehicle Research, Development, Test, and Evaluation (RDT&E) Cost Plus Award Fee (CPAF) development efforts.

(U) The Estimated Price at Completion for the contractor is \$230.8M, which includes approximately \$14.6M of proposed Over Target Baseline (OTB) (overrun), \$8.3M of estimated cost of authorized unpriced work, and \$1.7M of fees associated with authorized unpriced work and with the pending request for equitable adjustment (REA).

(U) The Estimated Price at Completion for the Program Manager is \$237.2M, which includes an additional \$6.4M of cost associated with the potential overrun and is based on the contractor's worst case estimate at completion and the government's independent estimate.

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15b. Contract Information (Cont'd):

b. Procurement --			Initial Contract Price		
<u>GPS IIF Sat Production:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing North American, Seal Beach, CA					
F04701-96-C-0025, CPAF			\$157.6	N/A	0
Award: October 24, 2002					
Definitized: October 24, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$185.1	N/A	0	\$195.6	\$195.6	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			N/A	N/A	
Cumulative Variances To Date (12/30/03)			\$-1.0	\$-0.9	
Net Change			\$-1.0	\$-0.9	

Explanation of Change:

The Cost Variance (CV) was mainly due to the following four areas:

(U) 1. Program Management

The cost variance is due to the following reasons: Increased participation required for negotiation support over and above what was estimated in the final submittal of the Modernization Production proposal and Flex Power proposal.

(U) 2. Navigation Payload

Variance attributed to the following past activities: subcontractor cost growth for the L-Band Material, L3 incremental audit costs related to documentation preparation, unplanned parts activity related to working with L5 parts shortages, resolution of the quadruplexer non-compliant performance issues including specification updates and waiver resolution.

(U) 3. Assembly, Integration, and Test (AIT) Design Integration

Variance due to increased effort in software support of the factory support equipment database design because of inefficiencies in operations training for procedure task support.

(U) 4. Antennas

The contractor believes that the scope required to perform antenna system production is greater than anticipated.

(U) The Schedule Variance (SV) was mainly due to the following three areas:

(U) 1. Integration, Assembly, Test & Checkout (IAT&C)

Variance results from slips in assembly engineering release and delays in completion of tests procedures. Also, delays in the commencement of the procedure writing tasks were caused by training, familiarization, and preparations for the tasks.

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

**(U) 2. Navigation Payload**

The variance is due to the following part related issues: resolving shelf life issues related to electric/electronic components, getting parts tested, delays with the supplier for L5 modules, and rework for the Direct Current to Direct Current (DC/DC) converter.

**(U) 3. System Engineering**

Variance is due to the rescheduling of the completion date of non-standard parts for Enhanced X-Link to March 30, 2004. Also the Enhanced X-Link Survivability Design Analysis Task was rescheduled to second quarter of FY04 due to support issues related to the L1 Global Positioning System (GPS) IIR recovery time analysis.

**Contract Comments:**

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

(U) The Estimated Price at Completion for the contractor and the Program Manager is \$195.6M, which consists of the \$185.1M contract target price, \$9.3M of estimated cost of authorized unpriced work, and the \$1.2M of fees associated with authorized unpriced work.

(U) The government intends to conduct an Integrated Baseline Review (IBR) in late May 2004. The government will update the estimated price at completion at that time.

GPS IIR-M SAT PRODUCTION:			Initial Contract Price	
	Target	Ceiling	Qty	
Lockheed Martin Space Sys, Philadelphia, PA	\$89.8	N/A	8	
F04701-00-C-0006, FPIF				
Award: October 24, 2002				
Definitized: October 24, 2002				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$119.4	\$127.4	8	\$119.4	\$119.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/30/03)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

**Explanation of Change:**

The contractor conducted a re-baseline and the schedule and cost variances were reset to zero in December 2003.

**Contract Comments:**

(U) The contract information above pertains to the IIR Satellite Vehicle

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15. Contract Information (Cont'd):

Fixed Price Incentive Firm (FPIF) production efforts for the space vehicles one to three.

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	1637.9	244.2	252.4	735.5	2870.0
Procurement	2322.6	280.2	355.1	1066.1	4024.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3960.5	524.4	607.5	1801.6	6894.0

Space & Control

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	1330.3	144.8	148.3	403.6	2027.0
Procurement	2173.1	268.3	338.3	972.3	3752.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3503.4	413.1	486.6	1375.9	5779.0

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	307.6	99.4	104.1	331.9	843.0
Procurement	149.5	11.9	16.8	93.8	272.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	457.1	111.3	120.9	425.7	1115.0

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Navstar GPS, December 31, 2003

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

b. Annual Summary -- Space & Control

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 \$
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				272.3	284.0
2004				137.0	144.8
2005				138.3	148.3
2006				108.2	117.8
2007				85.3	94.6
2008				38.7	43.7
2009				34.4	39.7
2010				24.1	28.4
2011				37.6	45.1
2012				21.8	26.7
2013				6.1	7.6
Subtotal				1983.8	2027.0

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	216.3	207.6
1996	4	8.6	116.5	149.2	145.0

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Navstar GPS, December 31, 2003

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

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	141.9	178.4	177.7
1999		10.8	69.0	79.8	80.4
2000		13.3	105.3	116.8	119.0
2001		12.3	156.1	156.8	161.3
2002		11.4	122.3	147.1	153.3
2003		11.4	229.3	237.9	249.8
2004		11.8	255.0	240.2	255.8
2005	3	11.6	291.9	306.0	330.5
2006	3	11.4	298.9	310.7	341.5
2007	3	11.3	208.6	237.7	266.0
2008	1	11.3	95.8	115.8	132.1
2009		11.0	59.8	70.8	82.4
2010		11.1	66.2	77.3	91.7
Subtotal	37	207.6	3250.1	3457.7	3563.2

Note: Flyaway dollars with no associated quantities include advance procurement funding, launch operations, and on-orbit support. Additional funding was also added for modernization of IIF satellites originally procured in FY96 and FY97.

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				6.4	6.6
2001				14.2	14.7

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

Space & Control

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 \$
2002				9.8	10.3
2003				19.1	19.9
2004				11.8	12.5
2005				7.3	7.8
2006				12.5	13.6
2007				10.8	12.0
2008				9.1	10.3
2009				19.6	22.7
Subtotal				182.6	188.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	37	207.6	3250.1	5624.1	5779.0

b. Annual Summary -- 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

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Navstar GPS, December 31, 2003

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

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 \$
2001				40.5	41.4
2002				39.4	40.7
2003				68.7	71.7
2004				94.0	99.4
2005				97.1	104.1
2006				85.1	92.7
2007				80.4	89.2
2008				67.3	76.0
2009				64.2	74.0
Subtotal				777.0	827.9

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				8.8	9.3
2004				10.3	11.0
2005				14.6	15.8
2006				17.5	19.3
2007				14.0	15.7
2008				23.3	26.7
2009				23.8	27.8
Subtotal				247.8	262.0

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**16b. Program Funding Summary (Cont'd):**  
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 \$
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				0.9	0.9
2004				0.9	0.9
2005				0.9	1.0
2006				0.9	1.0
2007				1.0	1.1
2008				1.0	1.1
2009				1.0	1.1
Subtotal				9.5	10.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				15.6	15.1
USAF				1034.3	1099.9
Grand Total				1049.9	1115.0

**17. Delivery/Expenditure Information:**

Space & Control

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

Percent Total Program Quantities Delivered: 56.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2883.4

Percent Total Program Expended: 49.9%

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

**User Equipment**

**User Equipment**

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): \$ 461.7

Percent Total Program Expended: 41.4%

**18. Operating and Support Costs:**

**Space & Control**

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 and the alternate MCS (AMCS) located at Vandenberg AFB, CA. 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 receive mission payload data and transfer this data to the MCS to ensure spacecraft are operating as desired. These costs do not include the unallocated costs associated with the shared use of remote tracking stations, which are programmed and funded 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 February 2, 2004.

The Total O&S Costs for the Space and Control system are not calculable in a manner that is relevant for comparison to other space systems, as each element within the system has a different life cycle and associated upgrade, repair, and/or replacement sustainment cycle.

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**18b. Operating and Support Costs (Cont'd):**  
Space & Control

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

Cost Element	Space & Control Avg Annual Cost for 24-Sat Constellation	Block I/II Legacy Avg Annual Cost for 24-Sat Constellation
Mission Pay & Allowances	22.4	19.2
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	22.4	16.8
Contractor Support	5.6	2.4
Sustaining Support	5.6	2.4
Indirect Costs	N/A	N/A
Total	56.0	40.8

Total O&S Cost	Space & Control	Block I/II Legacy
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

**User Equipment**

a. Assumptions and Ground Rules --

Note: The Modernized User Equipment (UE) program will not procure user equipment, but will instead develop UE enabling technologies, demonstrate solutions, and assist platform managers.

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

Cost Element	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	User Equipment	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

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

Report Creation Date: 3/25/2004 1:54:53 PM

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AF-9 EELV

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

AS OF DATE: December 31, 2003

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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/EV

2420 Vela Way, Suite 1467

El Segundo, CA 90245-4659

Col John L. Insprucker

Assigned: December 12, 2003

DSN 833-4615; COMM (310) 336-4615

john.insprucker@losangeles.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603011F

PE 0603226E

PE 0603855F

PE 0604853F

PROCUREMENT:

APPN 3020 ICN 23EELV (Air Force)

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DEPARTMENT OF DEFENSE

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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (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:**

Since the September 2003 Selected Acquisition Report (SAR) submission, in which the Program Office declared an APB schedule breach, a revised APB has not been approved. An APB schedule breach for the Heavy Lift Vehicle (HLV) configuration Operational Launch Service Demonstration (OLSD) and a schedule breach for the HLV First Operational Flight are still being reflected. The HLV OLSD is still on schedule for July 2004. Due to a launch scheduling conflict, the HLV First Operational Flight (carrying Defense Support Program Satellite number 23) has been moved from February 2005 to March 2005.

The Program Manager's current estimate for Total Program Cost has resulted in a Total Procurement Cost increase, Average Procurement Unit Cost (APUC) increase, and Program Acquisition Unit Cost (PAUC) increase of greater than 25% over the current APB objectives. This increase is mainly due to expected price increases as a result of the collapse of the commercial launch market. While loss of the commercial market constitutes the bulk of the cost estimate increases, there are several other past and present reasons behind the cost increase. These additional reasons include: (1) Assured Access funding required to improve reliability and maintain two viable launch service providers, (2) the addition of Mission Assurance funding outside the Future Years Defense Program in FY10 through FY20, (3) satellite weight growth driving the need to switch to rockets that obtain more mass to orbit and thus are more expensive rockets, (4) increased prices on the seven Buy I missions reallocated to Lockheed Martin under the Procurement Integrity Act (PIA) investigation, (5) increased prices on the four Buy II missions, (6) increased Vandenberg support costs to include stand-up of a second West Coast launch pad, and (7) incorrect inflation assumptions. A Program Deviation Report (PDR) notifying the Under

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

Secretary of the Air Force for Space (USecAF/Space) of EELV cost and schedule breaches was signed out December 5, 2003, by the System Program Director (SPD). USecAF/Space notified the Secretary of the Air Force of the Nunn-McCurdy breach on January 13, 2004, and the SecAF notified Congress via letters dated January 15, 2004.

This SAR is written in compliance with the law and protects contractor proprietary data and the competition sensitive nature of this program. Due to SAR regulatory restrictions, this document reflects only funding requested in the FY05 President's Budget (PB). As part of the FY05 PB, the Office of the Secretary of Defense (OSD) authorized funding to cover an expected 50% increase in prices due to the collapse of the commercial market. While this SAR features a 50% increase in the price of all future services, we cannot publish the launch price estimates in order to protect the competition for future services. Also in the FY05 PB was the funding (in response to direction) to accommodate assured access to space and support two launch service providers. The Program Office is in the process of formalizing the new Acquisition Strategy to address both of these issues and this revised Acquisition Strategy will be reflected in the next SAR.

The USAF ordered the Wideband Gapfiller Satellite (WGS) numbers 2 and 3 launch services from Lockheed Martin/Atlas V on 22 and 24 October 2003, respectively. The target launch dates are June 2006 and November 2006 according to SAF/USAL.

EELV is meeting all but one system key performance parameter (KPP). The Boeing Delta IV system is not meeting the full requirement of the Standard Interface Specification for the 5 meter payload fairing separation shock. The EELV Program Office is aggressively working this issue with Boeing Launch Services. Since the last report, the Boeing Delta IV system is now meeting the KPP for HLV geosynchronous missions and is working to improve performance margins for ascending node injections.

The Delta IV booster (for the launch of NROL-22 payload) was erected on Space Launch Complex 6 (Vandenberg AFB) on October 30, 2003. The NRO completed spacecraft pathfinder operations in early December 2003. Launch is now planned for mid-December 2004, delayed at the request of the NRO.

With the successful launch of the last West Coast Atlas IIAS on December 2, 2003, Space Launch Complex 3 East (SLC-3E) at Vandenberg AFB is now available for Lockheed Martin to begin modifications to support Atlas V launches.

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**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	Yes
-- Average Procurement Unit Cost (APUC)	Yes

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	Yes
Average Procurement Unit Cost	Yes

c. Explanation of Breach:

Since the September 2003 Selected Acquisition Report (SAR) submission, in which the Program Office declared an APB schedule breach, a revised APB has not been approved. An APB schedule breach for the Heavy Lift Vehicle (HLV) configuration Operational Launch Service Demonstration (OLSD) and a schedule breach for the HLV First Operational Flight are still being reflected. The HLV OLSD is still on schedule for July 2004. Due to a launch scheduling conflict, the HLV First Operational Flight (carrying Defense Support Program Satellite number 23) has been moved from February 2005 to March 2005.

The Program Manager's current estimate for Total Program Cost has resulted in a Total Procurement Cost increase, Average Procurement Unit Cost (APUC) increase, and Program Acquisition Unit Cost (PAUC) increase of greater than 25% over the current APB objectives. This increase is mainly due to expected price increases as a result of the collapse of the commercial launch market. While loss of the commercial market constitutes the bulk of the cost estimate increases, there are several other past and present reasons behind the cost increase. These additional reasons include: (1) Assured Access funding required to improve reliability and maintain two viable launch service providers, (2) the addition of Mission Assurance funding outside the Future Years Defense Program in FY10 through FY20, (3) satellite weight growth driving the need to switch to rockets that obtain more mass to orbit and thus are more expensive rockets, (4) increased prices on the seven Buy I missions reallocated to Lockheed Martin under the Procurement Integrity Act (PIA) investigation, (5) increased prices on the four Buy II missions, (6) increased Vandenberg support costs to include stand-up of a second West Coast launch pad, and (7) incorrect inflation assumptions. A Program Deviation Report (PDR) notifying the Under Secretary of the Air Force for Space (USecAF/Space) of EELV cost and schedule breaches was signed out December 5, 2003, by the System Program Director (SPD).

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EELV, December 31, 2003

**8c. Threshold Breaches (Cont'd):**

USecAF/Space notified the Secretary of the Air Force of the Nunn-McCurdy breach on January 13, 2004, and the SecAF notified Congress via letters dated January 15, 2004.

This SAR is written in compliance with the law and protects contractor proprietary data and the competition sensitive nature of this program. Due to SAR regulatory restrictions, this document reflects only funding requested in the FY05 President's Budget (PB). As part of the FY05 PB, the Office of the Secretary of Defense (OSD) authorized funding to cover an expected 50% increase in prices due to the collapse of the commercial market. While this SAR features a 50% increase in the price of all future services, we cannot publish the launch price estimates in order to protect the competition for future services. Also in the FY05 PB was the funding (in response to direction) to accommodate assured access to space and support two launch service providers. The Program Office is in the process of formalizing the new Acquisition Strategy to address both of these issues and this revised Acquisition Strategy will be reflected in the next SAR.

**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	TBD
Initial Operational Capability	TBD	TBD	TBD
HLV OLSD Flight/5	N/A	OCT 2003	JUL 2004
HLV First Operational Flight/2	JUL 2003	OCT 2004	MAR 2005 (Ch-1)

**Notes:**

The Milestone III (Production Decision) is currently TBD as EELV transitions to a Key Decision Point (KDP) milestone.

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:**

CDR      Critical Design Review  
DSCS     Defense Satellite Communications System

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9a. Schedule (Cont'd):

DSP Defense Support Program  
HLV Heavy Lift Vehicle  
MLV Medium Launch Vehicle  
OLSD Operational Launch Service Demonstration  
TBD To Be Determined

b. Current Change Explanations --

(Ch-1) Since the September 2003 Selected Acquisition Report (SAR) submission, in which the Program Office declared an APB schedule breach, a revised APB has not been approved. An APB schedule breach for the Heavy Lift Vehicle (HLV) configuration Operational Launch Service Demonstration (OLSD) and a schedule breach for the HLV First Operational Flight are still being reflected. The HLV OLSD is still on schedule for July 2004. Due to a launch scheduling conflict, the HLV First Operational Flight (carrying Defense Support Program Satellite number 23) has been moved from February 2005 to March 2005.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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	Standard/ ized and/ able to launch /	Standard East Coast: 2 Atlas V configur	Standard ized and able to launch

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	all	all / all	ations	all
	configs	configs / configs	and 2	configs
	of	of / of	Delta IV	of
	EELV for	EELV for/ EELV for	configur	EELV for
	that	that / that	ations	that
	site	site / site	successf	site
			ully	
Payload interfaces	One std	One std / Std	TBD	Std
	payload	payload / payload		payload
	inter-	inter- / inter-		interfac
	face	face / face		e
		/ for each		for each
		/ vehicle		vehicle
		/ class		class
		/ (add'l		(add'l
		/ inter-		inter-
		/ face		face
		/ rqmts		rqmts
		/ met		met
		/ by		by
		/ payload		payload
		/ adapter)		adapter)

Notes:

Despite six successful launches (two Government and four commercial), the "Demonstrated Performance" section remains To-Be-Determined (TBD). These 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	A highly inclined highly elliptical orbit first used by the Russian MOLNIYA satellite
POLAR	Polar Orbit
SEMI-SYNC	Semi-Synchronous Orbit

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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)	1344.0	1496.5	7565.7
Procurement	11772.6	13150.2	23290.2
Flyaway Cost	(11772.6)		(23290.2)
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	0.0	0.0	0.0
Total FY 1995 Base-Year \$	13116.6	14646.7	24855.9
Escalation	4231.2	4192.8	7490.6
Development (RDT&E)	(107.1)	(125.5)	(130.3)
Procurement	(4124.1)	(4067.3)	(7360.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	17347.8	18839.5	32346.5

Note:

All EELV Launch Services are fully funded in the year the launch is ordered and are fixed price.

b. Quantity --

Development (RDT&E)	0	1	1
Procurement	181	181	181
Total	181	182	182

Note:

There was no Low Rate Initial Production (LRIP) for the EELV Program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (DEC 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	14646.7	24855.9	
(2) Quantity	182	182	
(3) Unit Cost	80.476	136.571	+69.70
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	13150.2	23290.2	
(2) Quantity	181	181	
(3) Unit Cost	72.653	128.675	+77.11

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. The predominant swing in launch prices is due to the fact that the growth forecast for the commercial launch market failed to materialize. As a result, the Government is now paying a larger portion of the substantial fixed costs of each contractor.

	UCR Baseline (DEC 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
c. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	18839.5	32346.5	
(2) Unit Cost	103.514	177.728	+71.69
d. Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	17217.5	30650.5	
(2) Unit Cost	95.124	169.340	+78.02
e. Changes from Previous SAR (SEP 2003)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	46.340	+51.36	
(2) APUC (BY\$)	46.490	+56.57	
(3) PAUC Quantity	0	0.00	
(4) PAUC (TY\$)	63.460	+55.54	
(5) APUC (TY\$)	63.690	+60.28	
f. Initial SAR Information			
Initial SAR Date (DEC 1998):			
(1) Program Acquisition Cost (BY\$)	13116.6		
(2) Program Acquisition Cost (TY\$)	17347.8		

Pursuant to 10 USC 2432, procurement costs were not presented in the initial December 1996 SAR because the program was pre-Milestone II. Unit costs were first reported in December 1998, following Milestone II approval in October 1998.

g. Unit Cost PAUC Changes --

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**12g. Unit Cost Summary (Cont'd):**

This increase is mainly due to expected price increases as a result of the collapse of the commercial launch market. While loss of the commercial market constitutes the bulk of the cost estimate increases, there are several other past and present reasons behind the cost increase. These additional reasons include: (1) Assured Access funding required to improve reliability and maintain two viable launch service providers, (2) the addition of Mission Assurance funding outside the Future Years Defense Program in FY10 through FY20, (3) satellite weight growth driving the need to switch to rockets that obtain more mass to orbit and thus are more expensive rockets, (4) increased prices on the seven Buy I missions reallocated to Lockheed Martin under the Procurement Integrity Act (PIA) investigation, (5) increased prices on the four Buy II missions, (6) increased Vandenberg support costs to include stand-up of a second West Coast launch pad, and (7) incorrect inflation assumptions.

**Unit Cost APUC Changes --**

This increase is mainly due to expected price increases as a result of the collapse of the commercial launch market. While loss of the commercial market constitutes the bulk of the cost estimate increases, there are several other past and present reasons behind the cost increase. These additional reasons include: (1) Assured Access funding required to improve reliability and maintain two viable launch service providers, (2) the addition of Mission Assurance funding outside the Future Years Defense Program in FY10 through FY20, (3) satellite weight growth driving the need to switch to rockets that obtain more mass to orbit and thus are more expensive rockets, (4) increased prices on the seven Buy I missions reallocated to Lockheed Martin under the Procurement Integrity Act (PIA) investigation, (5) increased prices on the four Buy II missions, (6) increased Vandenberg support costs to include stand-up of a second West Coast launch pad, and (7) incorrect inflation assumptions.

**h. Impact of Perf or Sched Changes --**

The Nunn-McCurdy breach has not impacted performance or schedule. The primary reason for the breach is the collapse of the commercial launch market and the resultant inability to spread fixed infrastructure costs across many commercial and government missions. The large number of commercial launches which were an underlying premise of the Buy I acquisition strategy have not materialized. The Program Office is currently drafting a new acquisition strategy for future launch services that seeks to address the new environment by allowing a flexible contract structure, preserving the industrial base and minimizing gaps in launch operations.

**i. Program Management & Control --**

The Program Office is currently drafting a revised acquisition strategy that will maintain and incentivize mission success as the number one priority,

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**12i. Unit Cost Summary (Cont'd):**

and ensure assured access to space with a national launch capability consisting of two technically and financially viable launch service providers. Additionally, provide sufficient long-term business viability and stability to justify investment and continued contractor participation and increased business capture.

**j. Cost Control Actions --**

Cost changes are due to a reduction in the projected future commercial market, and therefore, are outside of the EELV program's control. A basic tenet of the revised strategy is to recognize and budget for costs appropriate to maintain a mission assurance-driven production and operations tempo. The Government requires launch capability regardless of the state of the commercial launch market. The Government needs access to space, even during depressed market conditions.

**k. Contract Information (In Millions of Then-Year Dollars) -- None.**

**1. General Comments --**

Contractor: Lockheed Martin Corp

Contract Title: EELV Initial Launch Services

Contract Number: F04701-98-D-001, Firm Fixed Price (no Earned Value)

Contractor: McDonnell Douglas Corp (subsidiary of The Boeing Company)

Contract Title: EELV Initial Launch Services

Contract Number: F04701-98-D-002, Firm Fixed Price (no Earned Value)

EELV has two contractors, Lockheed Martin and McDonnell Douglas (subsidiary of Boeing). Anticipated price increases on future missions account for the majority of the cost breach, not the existing fixed price launch service contracts.

Since EELV contracts are firm fixed price, no cost or schedule variances are required.

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### 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	-6.0	-880.8	-	-886.8
Quantity	+141.1	-	-	+141.1
Schedule	-	+338.7	-	+338.7
Engineering	+28.2	-	-	+28.2
Estimating	+45.3	+3768.8	-	+3814.1
Other	+13.2	-	-	+13.2
Support	-	-	-	-
Subtotal	+221.8	+3226.7	-	+3448.5
Current Changes:				
Economic	+0.2	+20.8	-	+21.0
Quantity	-	-	-	-
Schedule	-	+92.4	-	+92.4
Engineering	-	-	-	-
Estimating	+22.9	+11413.9	-	+11436.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+23.1	+11527.1	-	+11550.2
Total Changes	+244.9	+14753.8	-	+14998.7
Current Estimate	1696.0	30650.5	-	32346.5

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	+38.0	+3103.8	-	+3141.8
Other	+12.0	-	-	+12.0
Support	-	-	-	-
Subtotal	+201.9	+3103.8	-	+3305.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.8	+8413.8	-	+8433.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+19.8	+8413.8	-	+8433.6
Total Changes	+221.7	+11517.6	-	+11739.3
Current Estimate	1565.7	23290.2	-	24855.9

The total procurement cost increase reported in this SAR includes the Current Changes listed below in section 13b. In addition, the Assured Access funding

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

and Mission Assurance increases were reported in the December 2002 SAR, and the Procurement Integrity Act violation remedy, Buy II cost increases and Vandenberg support costs for second west coast pad for Lockheed Martin were reported in the September 2003 SAR.

**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	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	-0.3	-0.3
Additional hardware development, test, range safety certification, transition, and implementation for Global Positioning System Metric Tracking (Estimating)	+20.2	+23.3
Recisions and Federally Funded Research and Development Center (FFRDC) funding decrease (Estimating)	-0.1	-0.1
 RDT&E Subtotal	<u>+19.8</u>	<u>+23.1</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+20.8
Stretchout of annual procurement buy profile. (Schedule)	N/A	+92.4
Adjustment for Current and Prior Inflation. (Estimating)	+8.7	+9.9
Launch Services Adjustment for shifts between vehicle class to increase lift capability to accomodate satellite weight growth (Estimating)	+750.7	+1060.0
Launch Services Adjustment for price increases as a result of commercial market collapse (Estimating)	+5638.0	+7522.3
Launch Services Adjustment for price inflation not previously accounted for in program (Estimating)	+2016.4	+2821.7
 Procurement Subtotal	<u>+8413.8</u>	<u>+11527.1</u>

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes								PAUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
95.84	-4.76	+0.246	+2.37	+0.155	+83.80	+0.073	--	+81.88	177.73

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	-4.75	+0.003	+2.38	--	+83.88	--	--	+81.51	169.34

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	DEC 1996	DEC 1996	N/A	DEC 1996
Milestone II	JUN 1998	JUN 1998	N/A	OCT 1998
Milestone III	JUL 2003	JUN 2003	N/A	TBD
IOC	TBD	DEC 2001	N/A	AUG 2002
Total Cost	2000.0	17347.8	N/A	32346.5
Total Quantity	N/A	181	N/A	182
Prog Acq Unit Cost	N/A	95.8	N/A	177.7

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

a. RDT&E --

Prototype Dev. Agreement:

Lockheed Martin Corp., Denver, CO

F04701-98-9-0004, OTA

Award: October 16, 1998

Definitized: October 16, 1998

Initial Contract Price  
Target Ceiling Qty

\$500.0 N/A 0

Current Contract Price  
Target Ceiling Qty  
\$514.9 N/A 0

Estimated Price At Completion  
Contractor Program Manager  
\$514.9 \$514.9

Explanation of Change:

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

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15. Contract Information (Cont'd):

Contract Comments:

A Request for Equitable Adjustment (REA) of \$879.9K for the deployment of the Wallops Radar to Antigua in April 2003 was erroneously omitted from the previous report. This increased the Lockheed Martin Other Transaction Agreement contract value from \$507.1M to \$507.9M.

Approximately \$6.4M for Assured Access to Space funding was added to the Lockheed OTA contract in December 2003, increasing the total contract value from \$507.9M to an estimated \$514.9M

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

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$671.3	N/A	1	\$671.3	\$671.3

Explanation of Change:

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.
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.

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

b. Procurement --  
Initial Launch Services:  
Lockheed Martin Corp., Denver, CO  
F04701-98-D-0001, FFP  
Award: October 16, 1998  
Definitized: October 16, 1998

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$649.0	N/A	9

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1246.7	N/A	15	\$1246.7	\$1246.7

Explanation of Change:

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

Contract Comments:

Contracting actions resulting from the PIA investigation were completed in October 2003 to add seven Buy I missions reallocated from Boeing to Lockheed Martin. Additionally, one mission was awarded to Lockheed Martin. These actions resulted in a net increase of the Initial Launch Services (ILS) contract from \$505.8M to \$1,246.7M.

Initial Launch Services:  
McDonnell Douglas Corp., Huntington Beach CA  
F04701-98-D-0002, FFP  
Award: October 16, 1998  
Definitized: October 16, 1998

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1378.0	N/A	19

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1352.7	N/A	15	\$1352.7	\$1352.7

Explanation of Change:

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

Contract Comments:

Contracting actions resulting from the PIA investigation were completed in October 2003 to subtract seven Buy I missions reallocated to Lockheed Martin. As part of Buy II, one additional mission was awarded to Boeing due to urgent and compelling reasons. These actions resulted in a net decrease of the Initial Launch Services (ILS) contract from \$1,525.3M to approximately \$1,352.7M.

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15. Contract Information (Cont'd):

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

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

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

<u>Appropriation</u>	<u>Prior Years (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-20)</u>	<u>Total</u>
RDT&E	1625.9	7.9	27.0	35.2	1696.0
Procurement	920.0	1012.4	1016.0	27702.1	30650.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2545.9	1020.3	1043.0	27737.3	32346.5

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				107.2	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				290.7	321.8
2003				50.9	57.0
2004				7.0	7.9
2005				23.5	27.0
2006				14.7	17.2
2007				15.2	18.0
Subtotal	1			1565.7	1696.0

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

National User Funding Break out (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		327.6	327.6	361.3
2002	1		134.3	134.3	150.0
2003	2		302.5	302.5	340.6
2004	7		887.3	887.3	1012.4
2005	6		877.4	877.4	1016.0
2006	12		1464.3	1464.3	1724.9
2007	9		1143.3	1143.3	1370.8
2008	10		1219.9	1219.9	1491.9
2009	7		964.9	964.9	1203.2
2010	14		1850.7	1850.7	2354.1
2011	14		1893.8	1893.8	2458.1
2012	14		1708.9	1708.9	2262.6
2013	14		1888.6	1888.6	2549.6
2014	13		1719.2	1719.2	2367.4
2015	14		1778.7	1778.7	2499.1
2016	13		1528.1	1528.1	2189.8
2017	13		1664.5	1664.5	2431.9
2018	13		1766.3	1766.3	2633.6
2019			53.8	53.8	81.8
2020			53.7	53.7	83.3
Subtotal	181		23290.2	23290.2	30650.5

Notes:

1) Due to competition sensitivity, 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.

2) 117 launches represents all Air Force missions that are purchased with 3020 (Missile Procurement) funds. The remaining 64 missions in the table above includes funding and quantities from other sources to include the National Reconnaissance Office and the Department of the Navy. 182 launches represents the previously mentioned missions and includes the Air Force Heavy Lift Vehicle Demonstration mission, to be purchased with RDT&E.

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

3600 funds.

		Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	Qty 182		23290.2	24855.9	32346.5

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RD&E	0	0
Procurement	2	2

Percent Total Program Quantities Delivered: 1.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2156

Percent Total Program Expended: 6.7%

1) Boeing Delta IV placed DSCS III-A3 mission in orbit on March 10, 2003.

2) Boeing Delta IV placed DSCS III-B6 mission in orbit on August 29, 2003.

**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 estimate.

Notes:

O&S costs are allocated across all 182 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.

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

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

Cost Element	EELV Average 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
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

Report Creation Date: 03/22/2004 11:45:06 AM

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# N-30 TRIDENT II MSL

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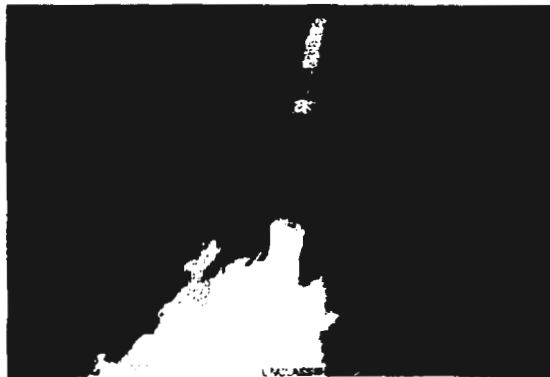
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: TRIDENT II MISSILE

AS OF DATE: December 31, 2003

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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)

MILCON:

(U) PE 0101221N

AS AMENDED

AS AMENDED

~~Derived from: CONAVINST 5513.5A - (27)  
Downgrade instructions:  
Declassification: X2~~

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5. (U) References:

SAR Baseline (Production Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) 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. Flight testing from the flat pad at Cape Canaveral was completed in January 1989. Performance Evaluation Missile (PEM) tests began on March 21, 1989 and 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, 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.

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. The inventory objective is required to outload submarines and conduct flight tests through the system life.

In the late 1990's the Navy determined that the TRIDENT SSBN service life could

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

be extended by 15 years (30 to 45 years). The Department of Defense subsequently directed and funded a service life extension of the D-5 missile to match the extended SSBN service life. This extension delays the need for funds to replace TRIDENT SSBNs, effectively delaying the expenditure of more than \$25 billion in new construction costs. 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.

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. SSBNs 732 and 733 deployed as a D-5 capable SSBNs in August 2002 and August 2003, respectively. 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

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9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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 (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current
(U) Max Range Full Payload (nm)				
(U) System Circular Error Probable (CEP) (ft)				Ch-1)
(U) System Reliability				Ch-2)
(U) Max Payload - Yield				

b. Current Change Explanations --

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

(U) (Ch-2) System reliability changed from [REDACTED] based on current TRIDENT submarine launch data and other representative data sources.

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	8434.9	8414.8	8435.2
Procurement	17588.5	17155.2	17193.7
Flyaway	(14471.2)		(13214.1)
Other weapon systems	(3082.9)		(3955.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(23.7)
Construction (MILCON)	532.9	373.7	375.1
Acquisition O&M	0.0	0.0	0.0
Total FY 1983 Base-Year \$	26556.3	25943.7	26004.0
Escalation	8962.2	11600.2	11314.8
Development (RDT&E)	(1018.3)	(996.5)	(976.1)
Procurement	(7808.4)	(10528.5)	(10261.9)
Construction (MILCON)	(135.5)	(75.2)	(76.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	35518.5	37543.9	37318.8
b. (U) Quantity --			
Development (RDT&E)	30	28	28
Procurement	815	540	540
Total	845	568	568

c. Foreign Military Sales -- None.

d. ~~(U)~~ Nuclear Costs -- ~~CONFIDENTIAL~~ Million (Then-Year \$).

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12. (U) Unit Cost Summary:

	UCR Baseline (JUN 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1983 BY\$)	25943.7	26004.0	
(2) Quantity	568	568	
(3) Unit Cost	45.676	45.782	+0.23
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1983 BY\$)	17155.2	17193.7	
(2) Quantity	540	540	
(3) Unit Cost	31.769	31.840	+0.22

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	-752.2	-11.5	-785.2
Quantity	-48.0	-6444.7	-	-6492.7
Schedule	-	+1812.1	+25.6	+1837.7
Engineering	-	-	-	-
Estimating	+27.6	+5440.5	-231.1	+5237.0
Other	-	-	-	-
Support	-	+1981.4	-	+1981.4
Subtotal	-41.9	+2037.1	-217.0	+1778.2
Current Changes:				
Economic	-18.1	+17.5	+0.1	-0.5
Quantity	-	-	-	-
Schedule	-	-	+0.4	+0.4
Engineering	-	-	-	-
Estimating	+18.1	-60.7	-	-42.6
Other	-	-	-	-
Support	-	+64.8	-	+64.8
Subtotal	-	+21.6	+0.5	+22.1
Total Changes	-41.9	+2058.7	-216.5	+1800.3
Current Estimate	9411.3	27455.6	451.9	37318.8

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

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-3823.2	-	-3863.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.9	+2608.5	-157.8	+2470.6
Other	-	-	-	-
Support	-	+838.5	-	+838.5
Subtotal	-20.1	-376.2	-157.8	-554.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+20.4	-42.4	-	-22.0
Other	-	-	-	-
Support	-	+23.8	-	+23.8
Subtotal	+20.4	-18.6	-	+1.8
Total Changes	+0.3	-394.8	-157.8	-552.3
Current Estimate	8435.2	17193.7	375.1	26004.0

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Correction of prior year escalation indices. (Economic)	N/A	-18.1
Correction for Current and Prior Inflation. (Estimating)	+20.4	+18.1
RD&E Subtotal	+20.4	0.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+16.3
Economic adjustment for negative program change. (Economic)	N/A	+1.2
Adjustment for Current and Prior Inflation. (Estimating)	+3.0	+5.4
Revised estimates resulting from the FY 2004 Congressional reduction which delayed missile electronics and guidance redesign efforts and delayed procurement of hardware. (Estimating)	+5.1	+13.3
Revised estimate for age-driven replacement of the Mk-4 reentry body, Arming, Fuzing and Firing system. (Estimating)	-17.6	-34.3

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Revised estimates for age-driven supportability modifications. (Estimating)	-32.9	-45.1
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.3
Revised estimates for special purpose instrumentation, tooling and test equipment. (Support)	+23.7	+64.5
Procurement Subtotal	-18.6	+21.6

(3) MILCON

Revised escalation indices. (Economic)	N/A	+0.1
Deferral of Bangor Washington Projects (Schedule)	0.0	+0.4
MILCON Subtotal	0.0	+0.5

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
PAUC	Changes								PAUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
42.03	-1.38	+9.06	+3.24	--	+9.15	--	+3.60	+23.67	65.70

b. (U) 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
31.16	-1.36	+3.93	+3.36	--	+9.96	--	+3.79	+19.68	50.84

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

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	OCT 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	37318.8
Total Quantity	N/A	740	845	568
Prog Acq Unit Cost	N/A	50.9	42.0	65.7

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

a. Procurement --  
 (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	
Target	Ceiling	Qty	Contractor	Program Manager
\$690.1	N/A	12	\$721.1	\$721.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$3.4	\$-0.1
Cumulative Variances To Date (03/30/03)	\$4.6	\$-0.4
Net Change	\$1.2	\$-0.3

Explanation of Change:

(U) The favorable cost variance is primarily due to labor efficiencies at the motor manufacturer, Alliant Techsystems.

The unfavorable schedule variance is primarily due to delays on the third stage eject motor at Alliant Techsystems.

(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.

This contract is complete and will no longer be reported.

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

(U) MISSILE FOLLOW-ON PROD: LOCKHEED MARTIN, SUNNYVALE, CA N00030-00-C-0100, CPIF/FF Award: October 1, 2000 Definitized: October 31, 2000			<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>\$541.0</td> <td>N/A</td> <td>12</td> </tr> </table>			Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$541.0	N/A	12							
Initial Contract Price																					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>																			
\$541.0	N/A	12																			
<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>\$612.8</td> <td>N/A</td> <td>12</td> </tr> </table>			Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$612.8	N/A	12	<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>\$603.3</td> <td>\$603.3</td> </tr> </table>			Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$603.3	\$603.3	
Current Contract Price																					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>																			
\$612.8	N/A	12																			
Estimated Price At Completion																					
<u>Contractor</u>	<u>Program Manager</u>																				
\$603.3	\$603.3																				
<table border="0"> <tr> <th colspan="2">Cost Variance</th> <th colspan="2">Schedule Variance</th> </tr> <tr> <td>Previous Cumulative Variances</td> <td>\$1.1</td> <td>\$-0.6</td> <td></td> </tr> <tr> <td>Cumulative Variances To Date (11/30/03)</td> <td>\$0.2</td> <td>\$-1.3</td> <td></td> </tr> <tr> <td>Net Change</td> <td>\$-0.9</td> <td>\$-0.7</td> <td></td> </tr> </table>			Cost Variance		Schedule Variance		Previous Cumulative Variances	\$1.1	\$-0.6		Cumulative Variances To Date (11/30/03)	\$0.2	\$-1.3		Net Change	\$-0.9	\$-0.7				
Cost Variance		Schedule Variance																			
Previous Cumulative Variances	\$1.1	\$-0.6																			
Cumulative Variances To Date (11/30/03)	\$0.2	\$-1.3																			
Net Change	\$-0.9	\$-0.7																			

Explanation of Change:

(U) The unfavorable change in cost variance is primarily due to the stretch-out of the first, second and third stage nozzles at Alliant Techsystems.

The unfavorable schedule variance is due to the stretch-out of the first, second and third stage nozzles at Alliant Techsystems.

(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.

(U) MISSILE FOLLOW-ON PROD: LOCKHEED MARTIN, SUNNYVALE, CA N00030-01-C0100, CPIF/FF Award: October 1, 2001 Definitized: December 14, 2001			<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>\$557.1</td> <td>N/A</td> <td>12</td> </tr> </table>			Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$557.1	N/A	12						
Initial Contract Price																				
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>																		
\$557.1	N/A	12																		
<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>\$572.3</td> <td>N/A</td> <td>12</td> </tr> </table>			Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$572.3	N/A	12	<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>\$571.4</td> <td>\$571.4</td> </tr> </table>			Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$571.4	\$571.4
Current Contract Price																				
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>																		
\$572.3	N/A	12																		
Estimated Price At Completion																				
<u>Contractor</u>	<u>Program Manager</u>																			
\$571.4	\$571.4																			

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.9	\$3.7
Cumulative Variances To Date (11/30/03)	\$9.7	\$-0.3
Net Change	\$7.8	\$-4.0

Explanation of Change:

(U) The favorable cost variance is due to process improvements and labor efficiencies at Alliant Techsystems and Lockheed Martin.

The unfavorable change in schedule variance is primarily due to Alliant Techsystems motor production effort reverting to the planned schedule.

(U) <u>Missile Follow-ON PROD:</u> Lockheed Martin, Sunnyvale, CA N00030-02-C-0100, CP1F/FF Award: October 1, 2002 Definitized: January 30, 2003	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$605.3	N/A	12

<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>
\$612.8	\$0.0	12	\$612.6	\$612.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/03)	\$5.6	\$-0.2
Net Change	\$5.6	\$-0.2

Explanation of Change:

(U) The favorable cost variance is due to favorable overhead rates and labor efficiencies at Lockheed Martin.

The unfavorable schedule variance is primarily due to the halted bonding work in electronics and late receipt of initiator blocks.

(U) Contract Comments:  
This is the first time this contract is being reported.

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

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

<u>Appropriation</u>	<u>Prior Years (FY78-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-18)</u>	<u>Total</u>
RDT&E	9411.3	-	-	-	9411.3
Procurement	16081.6	645.4	768.6	9960.0	27455.6
MILCON	439.1	-	-	12.8	451.9
O&M	-	-	-	-	-
Total	25932.0	645.4	768.6	9972.8	37318.8

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

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1983 Dollars Nonrec</u>	<u>Flyaway FY 1983 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1978				7.2	5.0
1979				6.5	5.0
1980				30.1	25.6
1981				104.2	96.7
1982				203.1	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			8435.2	9411.3

Appropriation: 1507 - Weapons Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1983 Dollars Nonrec</u>	<u>Flyaway FY 1983 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1985				137.7	160.8
1986				420.7	508.4

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

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987	21		954.3	1075.6	1346.9
1988	66		1674.0	1562.7	2033.5
1989	66		1533.2	1359.8	1839.0
1990	41		1020.0	1001.1	1400.6
1991	52		1150.0	1054.4	1512.6
1992	28		708.6	745.8	1096.9
1993	21		595.0	653.1	978.1
1994	24		778.6	720.8	1100.7
1995	18		489.0	428.9	665.4
1996	6		151.4	325.1	510.7
1997	7		170.0	199.8	316.9
1998	5		121.3	167.2	268.3
1999	5		134.3	194.3	315.7
2000	12		268.6	294.7	484.8
2001	12		256.6	262.6	436.5
2002	12		234.4	317.8	532.8
2003	12		234.5	337.5	573.0
2004	12		236.9	374.9	645.4
2005	5		101.9	439.6	768.6
2006				520.9	926.6
2007				511.3	926.7
2008	12		250.5	565.4	1045.0
2009	24		501.2	602.4	1135.6
2010	24		501.2	603.9	1161.1
2011	24		501.2	601.8	1180.2
2012	24		501.2	471.6	943.3
2013	7		146.2	397.7	811.4
2014				175.1	364.5
2015				166.8	354.0
2016				163.3	353.5
2017				145.7	321.8
2018				193.7	436.3
Subtotal	540		13214.1	17193.7	27455.6

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

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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 \$
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
2001				0.9	1.4
2002				2.4	3.9
2003				4.4	7.2
2004					
2005					
2006					
2007					
2008					
2009					
2010				6.9	12.8
Subtotal				375.1	451.9

(U) MILCON costs in FY 2000 through FY 2010 are necessary to upgrade facilities at Bangor, Washington in order to support 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		13214.1	26004.0	37318.8

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TRIDENT II MISSILE, December 31, 2003

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	28	28
Procurement	401	402

(U) Percent Total Program Quantities Delivered: 75.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 24920.1

(U) Percent Total Program Expended: 66.8%

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 2005 President's 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 (BOS). Responsibility for BOS was transferred to Commander Navy Installations beginning in FY 2004 and therefore is no longer included in FY 2004 and subsequent years. Operating and Support costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

Date of estimate: December 31, 2003

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	N/A
Intermediate Maintenance	57.6	N/A
Depot Maintenance	63.0	N/A
Contractor Support	N/A	N/A
Sustaining Support	417.1	N/A
Indirect Costs	1.5	N/A
Total	539.2	N/A

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

Total O&S Cost	TRIDENT II (D-5) MISSILE	N/A
By\$ (In Millions)	23189.0	N/A
TY\$ (In Millions)	52522.0	N/A

Report Creation Date: 03/22/2004 9:32:02 AM

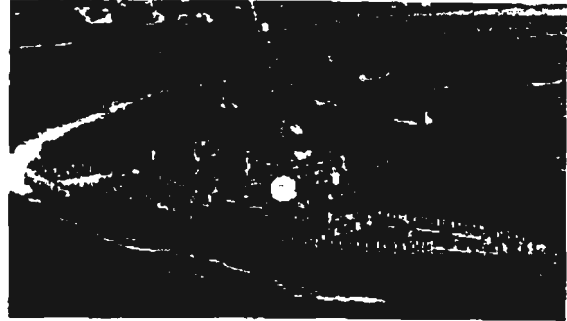
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**PROGRAM:** DDG 51 DESTROYER

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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 CAPT D.H. LEWIS, USN  
1333 ISAAC HULL AVENUE SE 23015 Assigned: June 1, 2001  
WASHINGTON, DC 20376-2301 DSN 336 2177; COMM (202) 781 2177  
Lewisdh@navsea.navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0604303N  
(U) PE 0604307N (Shared)  
PROCUREMENT:  
(U) APPN 1611 ICN 0204222N (Navy)  
MILCON:  
(U) PE P-261  
(U) PE P-263

Derived from: ~~CONFIDENTIAL S5512 02(30)~~  
Downgrade instructions: ~~Not subject to automatic downgrade~~  
Declassify on: ~~X4~~

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FOR OPEN APPLICATION

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-C-0704

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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 Strike Groups (CSG), Expeditionary Strike Groups (ESG), and Missile Defense Action Groups 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 (Cooperative Engagement Capability (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 multiple 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 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 (Anti-Surface Warfare); 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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6. (U) Mission and Description (Cont'd):

capability.

7. (U) Executive Summary:

(U) The DDG 51 Class Destroyers are the most advanced State-of-the-Art warships built in the world. In 2003, the DDG 51 Class Shipbuilding Program added three multi-mission destroyers to the Fleet: DDG 89 (USS MUSTIN); DDG 90 (USS CHAFEE); and DDG 91 (USS PINCKNEY). DDG 91 is the first Baseline 7 Phase I ship and during the past year successfully tested new weapon systems, including the SPY-1D(V) Radar, Cooperative Engagement Capability (CEC), and the Remote Minehunting System (RMS). This ship includes the first all-Commercial-Off-The-Shelf (COTS) AEGIS Baseline, and the first surface ship implementation of Acoustic Rapid COTS Insertion (ARCI), along with the first use of organic minehunting. Sixteen DDG 51 Class Destroyers took part in Operation Iraqi Freedom during 2003. These DDGs provided air coverage and protection for all Naval assets in Theater. DDGs fired over 275 Tomahawks during the conflict. USS HIGGINS provided track data over Link 16 on eleven hostile ballistic missiles to In-Theater users.

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 Navy requests authorization and appropriations in FY05 to fund the last three ships of the 62 ship program. All 62 ships have been awarded, 34 to BIW and 28 to NGSS. Currently, there are 41 ships delivered meeting the Fleet's mission requirements and 21 ships in various stages of planning and construction.

The FY04 DoD Appropriations and Authorizations Acts authorized and provided funding for three DDG 51 class ships in FY04. Two ships were funded to BIW and one ship to NGSS. These ships are part of the ten ship FY02-05 Multi-Year Procurement (MYP) contracts that were awarded September 13, 2002 to BIW (6 ships) and NGSS (4 ships). The FY02-FY05 MYP is projected to save the government \$330M compared to an annual with-option procurement contracting strategy.

Funding stability is required to execute the DDG 51 FY02-FY05 MYP as planned. Prior to award of the FY02-FY05 MYP, the Under 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. As a result of the FY04 Appropriations Act, the DDG Program was forced to absorb \$25.3M in Congressional undistributed reductions. The Navy will attempt to resolve this budget reduction in upcoming budget reviews.

DDG 51 Class program has achieved numerous production milestones since the last

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

(December 31, 2002) report. The more significant are the following:

USS MASON (DDG 87) commissioned April 12, 2003 in Pt. Canaveral, FL.

DDG 89 (MUSTIN) delivered February 28, 2003 in Pascagoula, MS.

USS MUSTIN (DDG 89) commissioned July 26, 2003 in San Diego, CA.

DDG 90 (CHAFEE) delivered August 6, 2003 in Bath, ME.

USS CHAFEE (DDG 90) commissioned October 18, 2003 in Newport, RI.

DDG 91 (PINCKNEY) delivered October 27, 2003 in Pascagoula, MS.

DDG 92 (MOMSEN) launched July 19, 2003 in Bath, ME.

DDG 92 (MOMSEN) christened August 9, 2003 in Bath, ME.

DDG 93 (CHUNG-HOON) christened January 11, 2003 in Pascagoula, MS.

DDG 95 (JAMES E. WILLIAMS) launched June 25, 2003 in Pascagoula, MS.

DDG 95 (JAMES E. WILLIAMS) christened June 28, 2003 in Pascagoula, MS.

DDG 100 fabrication started March 24, 2003 in Pascagoula, MS.

DDG 101 fabrication started February 3, 2003 in Bath, ME.

DDG 102 fabrication started September 18, 2003 in Bath, ME.

DDG 107 ship construction at NGSS funded on December 18, 2003.

DDG 108 and 109 ship construction at BIW funded December 18, 2003.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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
SM-606 Hellfire IOC	N/A	DEC 1997	DEC 1997
DDG 51 Flight IIA Delivery	N/A	MAY 2000	MAY 2000
DDG 51 Flight IIA IOC	N/A	OCT 2001	OCT 2001
ESSM IOC	N/A	JAN 2004	FEB 2004 (Ch-1)

b. Current Change Explanations --

(U) (Ch-1) The DDG 51 Class schedule adjustment is as follows:

	FROM	TO
ESSM IOC	JAN 2004	FEB 2004

ESSM IOC was rescheduled to February 2004 to correspond with the current planned missile load-out date and software certification on the DDG 90 (USS CHAFEE).

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10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
SHIP:				
Length (ft)	466	N/A / N/A	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
MOBILITY:				
Speed (knots)	30	30 / 30	30	30
Endurance (@ 20 Knots) (nm)				
ANTI-AIR WARFARE:				
CONDUCT SUCCESSFUL AAW ENGAGEMENT:				
Probability of Successful Engage- ment-ESSM	N/A			1) (Ch-1)
ANTI-SURFACE WARFARE:				
CONDUCT SUCCESSFUL ASW ENGAGEMENT:				
Probability of Suc- cessful Engagement HELO	N/A			
NAVAL SURFACE FIRE SUPPORT				
Probability of Suc- cessful Engagement HELO	N/A			
ANTI-SUBMARINE WARFARE:				
CONDUCT SUCCESSFUL ASW ENGAGEMENT:				
Figure of Merit:				
Probability of Achieving Attack Criteria	N/A			
Number VLS Missiles	N/A			
MINE WARFARE:				
Detection Range of Moored/Floating Mine (YDS)	N/A			
SIGNATURE:				
Radar Cross section (dbsm)	N/A			

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
SURVIVABILITY/ VULNERABILITY:				
Nuclear				
Airblast	N/A			(4)
Overpressure (psi)				
Armament				
Anti-Submarine Warfare				
ASW System	AN/SQQ- 89	N/A / N/A	AN/SQQ- 89(V)10	AN/SQQ- 89(V)10
ASROC	VLA	N/A / N/A	VLA	VLA
Helo	SEAHAWK; LAMPS	2 / 2 EMBARKED/ HELOS / HELOS	2 EMBARKED HELOS	2 EMBARKED HELOS
Anti-Air Warfare 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	3 MK 99	N/A / N/A	3 MK 99	3 MK 99
Control System				
Guns	2 PHALANX	N/A / N/A	2 PHALANX	2 PHALANX/ ESSM
Anti-Surface/Strike Warfare				
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 DF	SLQ 32 (V) 3, SRBOC, Combat DF
Radars				
Surface	SPS-67	N/A / N/A	SPS-67	SPS-67
3D	SPY-1D	N/A / N/A	SPY-1D	SPY-1D

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10a. ~~1/~~ Performance Characteristics (Cont'd):

[REDACTED]

(U) 1/ Probability of Kill Single Shot (PKSS)

[REDACTED]

(U) 2/ Comparison from conventionally constructed ships of similar displacement, e.g. CG 47 Class ship.

(U) 4/ For structure and developmental systems.

b. Current Change Explanations

[REDACTED]

(U) (Ch-2)

FROM TO

[REDACTED]

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	979.8	2610.5	2674.2
Procurement	15948.3	46421.9	44590.3
Basic Ship Costs	(5383.6)		(19652.7)
HM&E and Combat Systems	(9427.9)		(22263.5)
Other Costs	(621.9)		(869.5)
OF/PD	(514.9)		(1804.6)
Total Sailaway	(15948.3)		(44590.3)
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	0.0	0.0	0.0
Total FY 1987 Base-Year \$	16953.7	49067.2	47302.2
Escalation	3163.8	16956.0	15538.3
Development (RDT&E)	(-63.2)	(586.3)	(603.9)
Procurement	(3224.8)	(16363.5)	(14927.6)
Construction (MILCON)	(2.2)	(6.2)	(6.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	20117.5	66023.2	62840.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	23	64	62
Total	23	64	62

c. (U) Foreign Military Sales --

There are 64 Japanese AEGIS Weapon System FMS cases totaling \$3.0B. There are three 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 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1987 BY\$)	49067.2	47302.2	
(2) Quantity	64	62	
(3) Unit Cost	766.675	762.939	-0.49
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1987 BY\$)	46421.9	44590.3	
(2) Quantity	64	62	
(3) Unit Cost	725.342	719.198	-0.85

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	-132.9	-5115.6	-	-5248.5
Quantity	-	+36929.9	-	+36929.9
Schedule	+144.9	+840.2	-	+985.1
Engineering	+213.2	+2120.0	+16.7	+2349.9
Estimating	+2107.9	+5560.9	-	+7668.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2333.1	+40335.4	+16.7	+42685.2
Current Changes:				
Economic	-0.8	+229.1	-	+228.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-99.2	-	-99.2
Estimating	+29.2	-120.5	-	-91.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+28.4	+9.4	-	+37.8
Total Changes	+2361.5	+40344.8	+16.7	+42723.0
Current Estimate	3278.1	59517.9	44.5	62840.5

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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	-	+24694.7	-	+24694.7
Schedule	+89.1	-	-	+89.1
Engineering	+142.4	+1392.5	+11.9	+1546.8
Estimating	+1448.9	+2703.5	+0.2	+4152.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1680.4	+28790.7	+12.1	+30483.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-67.5	-	-67.5
Estimating	+14.0	-81.2	-	-67.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+14.0	-148.7	-	-134.7
Total Changes	+1694.4	+28642.0	+12.1	+30348.5
Current Estimate	2674.2	44590.3	37.7	47302.2

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised Escalation Indices (Economic)	N/A	-0.8
Adjustment for Current and Prior Inflation (Estimating)	-0.1	-0.2
Revised cost estimates to support AEGIS Open Architecture and Commercial Off-the-Shelf (COTS) technology integration (Estimating)	+14.1	+29.4
<u>RDT&amp;E Subtotal</u>	<u>+14.0</u>	<u>-10.5</u>
(2) <u>Procurement</u>		
Revised Escalation Indices (Economic)	N/A	+229.1
Adjustment for Current and Prior Inflation (Estimating)	-88.9	-130.8
Additional funds for prior year requirements funded as Special Transfer Authority in FY03 (Estimating)	+9.8	+13.3
Funds transferred from prior year requirements in the FY04 Appropriations Act (Estimating)	-14.1	-18.1
Revised Program funding to defer CEC Procurement to a backfit installation (Engineering)	-67.5	-99.2

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Revised cost estimates for ship construction, outfitting, post delivery and GFE (Estimating)	+12.0	+15.1
Procurement Subtotal	-148.7	+9.4

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

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

Initial SAR Baseline to Current SAR Baseline

PAUC Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1217.10	-233.23	-263.20	+15.10	-25.10	+145.80	--	+18.20	-342.43	874.67

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
874.67	-80.97	+45.44	+15.89	+36.30	+122.22	--	--	+138.88	1013.56

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

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1119.26	-205.16	-197.71	+13.94	+61.66	+27.38	--	+14.24	-285.65	833.61

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	-78.81	+71.27	+13.55	+32.59	+87.75	--	--	+126.35	959.97

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DDG 51 DESTROYER, December 31, 2003

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

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUN 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	62840.5
Total Quantity	9	14	23	62
Prog Acq Unit Cost	1217.1	1065.0	874.7	1013.6

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

a. Procurement --

(U) 89, 91, 93, 95, 97, 98, 100:

Northrop Grumman (NGSS), Pascagoula MS

N00024-98-C-2307, FPI

Award: March 6, 1998

Definitized: March 6, 1998

Initial Contract Price  
Target      Ceiling      Qty

\$2530.5      \$2882.5      7

Current Contract Price  
Target      Ceiling      Qty  
\$2677.1      \$3053.7      7

Estimated Price At Completion  
Contractor      Program Manager  
\$2745.2      \$2873.2

Previous Cumulative Variances  
Cumulative Variances To Date (11/30/03)  
Net Change

Cost Variance      Schedule Variance  
\$-67.9      \$-55.6  
\$-156.8      \$-65.1  
\$-88.9      \$-9.5

Explanation of Change:

(U) Cost variance change is primarily driven by increased overhead and labor costs. Overhead increases are due to Facility Capitalization, pension, and health care costs resulting from the latest labor agreement signed in March 2003. The reduced business base resulting from the loss of American Classic Voyages (AMCV) work also adversely impacted the cost variance during the year. Change in schedule variance is considered insignificant. Program is budgeted to the Program Manager's Estimated Price at Completion.

(U) Contract Comments:

This is a multiyear contract to procure 6 ships (FY98-FY01) with an exercised option for one additional ship, bringing the total ships to be procured under this contract to 7. Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$116.3M).

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DDG 51 DESTROYER, December 31, 2003

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

(U) DDG 90,92,94,96,99,101: General Dynamics (BIW), Bath, ME N00024-98-C-2306, FPI Award: March 6, 1998 Definitized: March 6, 1998	<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>\$2181.4</td> <td>\$2492.9</td> <td>6</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$2181.4	\$2492.9	6						
Initial Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$2181.4	\$2492.9	6														
<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>\$2247.6</td> <td>\$2562.9</td> <td>6</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$2247.6	\$2562.9	6	<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>\$2512.4</td> <td>\$2604.1</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$2512.4	\$2604.1
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$2247.6	\$2562.9	6														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$2512.4	\$2604.1															
Previous Cumulative Variances	<table border="0"> <tr> <th><u>Cost Variance</u></th> <th><u>Schedule Variance</u></th> </tr> <tr> <td>\$-155.2</td> <td>\$-8.4</td> </tr> </table>	<u>Cost Variance</u>	<u>Schedule Variance</u>	\$-155.2	\$-8.4											
<u>Cost Variance</u>	<u>Schedule Variance</u>															
\$-155.2	\$-8.4															
Cumulative Variances To Date (11/30/03)	<table border="0"> <tr> <td>\$-136.8</td> <td>\$13.9</td> </tr> </table>	\$-136.8	\$13.9													
\$-136.8	\$13.9															
Net Change	<table border="0"> <tr> <td>\$18.4</td> <td>\$22.3</td> </tr> </table>	\$18.4	\$22.3													
\$18.4	\$22.3															

Explanation of Change:

(U) Cost and schedule variances improved as a result of the Performance Measurement Baseline reprogramming in December 2002. Program is budgeted to the Program Manager's Estimated Price at Completion.

(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 (\$131.6M).

(U) <u>AWS PRODUCTION CONTRACT:</u> Lockheed Martin, Middletown, CT N00024-98-C-5178, FPI Award: May 1, 1998 Definitized: January 9, 2002	<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>\$833.7</td> <td>\$857.1</td> <td>13</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$833.7	\$857.1	13						
Initial Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$833.7	\$857.1	13														
<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>\$903.9</td> <td>\$975.2</td> <td>13</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$903.9	\$975.2	13	<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>\$900.9</td> <td>\$900.9</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$900.9	\$900.9
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$903.9	\$975.2	13														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$900.9	\$900.9															

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DDG 51 DESTROYER, December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$15.9	\$3.1
Cumulative Variances To Date (12/31/03)	\$28.9	\$0.7
Net Change	\$13.0	\$-2.4

Explanation of Change:

(U) Cost variance is attributable to labor and overhead efficiencies in production. Schedule variance is 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>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) DDG 102/104/106/108/109/:			
GENERAL DYNAMICS (BIW), BATH, ME	\$3599.8	\$3993.7	7
N00024-02-C-2303, FPI			
Award: September 13, 2002			
Definitized: September 13, 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>
\$3597.2	\$3990.9	7	\$3572.2	\$3707.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/03)	\$-17.7	\$75.0
Net Change	\$-17.7	\$75.0

Explanation of Change:

(U) Cost and schedule variances are the result of material acquisition. At this early stage of construction (DDG 102 is 1% complete) these variances have little significance. Program is budgeted to the Program Manager's Estimated Price at Completion.

(U) Contract Comments:

This is a multiyear contract to procure 6 ships (FY02-05; DDGs 104/106/108/109/111/112) and 1 additional FY02 ship (DDG 102) for a total of 7 ships. 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 (\$257.1M).

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DDG 51 DESTROYER, December 31, 2003

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

(U) DDG 103/105/107/110 Cons:			Initial Contract Price		
NORTHROP GRUMMAN (NGSS), PASCAGOULA MS			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-02-C-2304, FPI			\$1950.3	\$2146.8	4
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>	
\$1950.8	\$2147.7	4	\$1874.3	\$2004.7	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$0.0	\$0.0	
Cumulative Variances To Date (11/30/03)			\$-0.6	\$-30.7	
Net Change			\$-0.6	\$-30.7	

Explanation of Change:

(U) Cost and schedule variances are the result of material acquisition. At this early stage of construction (DDG 103 is less than 1% complete) these variances have little significance. Program is budgeted to the Program Manager's Estimated Price at Completion.

(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 (\$139.6M).

(U) AWS PRODUCTION CONTRACT:			Initial Contract Price		
LOCKHEED MARTIN, MOORESTOWN, NJ			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-01-C-5168, FPI			\$331.5	\$334.8	5
Award: April 23, 2001					
Definitized: January 20, 2003					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$332.9	\$336.4	5	\$324.8	\$324.8	

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DDG 51 DESTROYER, December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$1.6
Cumulative Variances To Date (11/30/03)	\$3.3	\$0.1
Net Change	\$2.9	\$-1.5

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).

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	2626.1	124.6	98.7	428.7	3278.1
Procurement	51030.7	3424.5	3735.4	1327.3	59517.9
MILCON	44.5	-	-	-	44.5
O&M	-	-	-	-	-
Total	53701.3	3549.1	3834.1	1756.0	62840.5

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
1987				98.5	100.4
1988				88.7	93.4
1989				47.6	52.3
1990				36.1	41.2

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DDG 51 DESTROYER, December 31, 2003

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 \$
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				163.6	230.7
2003				139.5	199.0
2004				86.2	124.6
2005				67.3	98.7
2006				60.0	89.4
2007				64.0	97.1
2008				76.1	117.6
2009				79.0	124.6
Subtotal				2674.2	3278.1

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	307.5	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	2463.9	2876.5
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	2571.8	2634.6	3397.4
1994	3	67.5	2098.1	2171.0	2793.9
1995	3	28.5	2106.5	2133.1	2830.7
1996	2	42.3	1550.2	1627.4	2373.2
1997	4	27.5	2632.4	2588.4	3637.4
1998	4	87.2	2808.6	2793.2	3541.7
1999	3	29.9	2169.7	2156.4	2724.7
2000	3	23.2	2149.5	2128.3	2759.3

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DDG 51 DESTROYER, December 31, 2003

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 \$
2001	3		2159.9	2170.3	3290.0
2002	3	10.2	2381.3	2402.4	3397.1
2003	2	39.4	1734.6	1725.7	2836.1
2004	3	3.2	2411.7	2286.6	3424.5
2005	3	15.0	2497.6	2375.8	3735.4
2006				234.2	350.9
2007				297.6	456.5
2008				106.9	161.4
2009				84.0	129.4
2010				91.0	143.0
2011				50.4	80.9
2012				3.2	5.2
Subtotal	62	875.0	43715.3	44590.3	59517.9

(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, 2003

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	875.0	43715.3	47302.2	62840.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	41	41

(U) Percent Total Program Quantities Delivered: 66.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 44303.6

(U) Percent Total Program Expended: 70.5%

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 (VAMOSC) database. Estimates are based on data collected through 2002 for operational hulls DDG 51 to DDG 87.

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.

Manpower optimization initiatives have been sought to leverage new technology and reduce costs. Reductions have been achieved across all DDG Flights. For example, the initial Flight II Billet Allotment (BA) was 333 officers and enlisted personnel. Policies have been implemented and new technologies deployed to reduce billets by 28 to 305, as reflected in the FY04 Ship Manpower Document (SMD) for Flight IIA ships. The Navy is currently evaluating the DDG Modernization recommendations for Mid-Life Upgrade which will reduce an additional 37 billets, resulting in a billet total of 268.

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

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DDG 51 DESTROYER, December 31, 2003

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

installed. CG 47 estimates are based on 27 ships with a service life of 35 years.

(Cost Estimate was updated December 2003).

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	10.5	12.1
Unit Level Consumption	4.4	5.6
Intermediate Maintenance	0.4	0.5
Depot Maintenance	6.1	7.2
Contractor Support	0.5	0.5
Sustaining Support	3.5	4.2
Indirect Costs	9.6	10.9
Total	35.0	41.0

Total O&S Cost	DDG 51 Program	CG 47 Program
BY\$ (In Millions)	75950.0	38745.0
TY\$ (In Millions)	109146.2	58981.8

Report Creation Date: 03/21/2004 5:10:48 PM

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AF-2 AMRAAM

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

AS OF DATE: December 31, 2003

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Operating and Support Costs	25

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25 2004

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SECURITY REVIEW  
OF DEFENSE

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

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3. (U) Responsible Office and Telephone Number:

Counterair Joint Systems Program	SES-2 THOMAS J. ROBILLARD
Office (JSPO)	Assigned: July 14, 2002
(AAC/YA)	DSN 872-3531; COMM (850) 882-3531
Eglin AFB, FL 32542-6844	thomas.robillard@eglin.af.mil

(U) Navy Program Director	GS-15 PASQUALE D. GAMBATESE
Counterair Joint Systems Program	Assigned: January 26, 2003
Office (JSPO) (AAC/YA)	DSN 872-2412, AC(850)882-2412
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

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04-C-103

Call 697-3222/697-8832  
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Classified by: AMRAAM SECURITY CLASSIFICATION GUIDE, 01 Apr 00  
Downgrade instructions: Reason for classifying, Category 1.5a, and 1.5g.  
Declassification Exempt Category 3 (X3)

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AMRAAM (AIM-120), December 31, 2003

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

(U) PE 0604314F

(U) PE 0604314N

**PROCUREMENT:**

(U) APPN 1507 ICN 2206 (Navy)

(U) APPN 3020 ICN MAMRAO (Air Force)

**5. (U) References:**

**SAR Baseline (Production Estimate):**

(U) Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated January 17, 1992.

**Approved Program:**

(U) DAE Approved Acquisition Program Baseline (APB) dated September 27, 1996.

**6. (U) Mission and Description:**

(U) The Advanced Medium Range Air-to-Air Missile (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) 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 (IOC) on the F-15 occurred in September 1991, and the first F-16 unit established IOC 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 Preplanned Product Improvement (P3I) missile design was delivered in November 1995, providing increased Electronic Protection (EP) capability and a compressed airframe for F/A-22 internal carriage. In December 1997 Raytheon and Hughes merged into the Raytheon Systems Company. The first missile incorporating the Phase 2 P3I missile design was delivered in August 1999 providing additional EP capability and a more lethal warhead. This design also included an improved kinematic +5 inch rocket motor with deliveries beginning in May 2000. 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. Twenty-seven countries have AMRAAM operational capability: Australia, Bahrain, Belgium, Canada, Denmark, Finland, Germany, Greece, Israel, Italy, Japan, Netherlands, Norway, Oman, Poland, Portugal, Saudi Arabia, South Korea, Singapore, Spain, Sweden, Switzerland, Taiwan,

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

Thailand, Turkey, United Arab Emirates, and the United Kingdom.

The P3I Phase 3 Engineering and Manufacturing Development (EMD) program was nearing completion at year-end 2003. Although flight test has continued to pace the program, testing has been very successful. The last four flight test missions in 2003 resulted in three direct hits and one within lethal distance (very small miss). One more flight test mission remains prior to program completion in March 2004. In preparation for the Operational Test program, planned for start in Spring of 2004, the Operational Requirements Document (ORD) has been modified to correctly reflect the Phase 3 capabilities and is currently in the approval process. A cost growth driven by late hardware deliveries, hardware/software integration challenges, lower yields in flight testing, and flight test rate increases resulted in a contract rebaselining in April 2003. The associated contract modification converted the contract from Cost Plus Award Fee (CPAF) to Cost Plus Fixed Fee (CPFF), deferred two non-Key Performance Parameter (KPP) capabilities, and adjusted for increases in test costs. With these contract changes, funding was available to complete the program in March 2004 within the original program baseline schedule threshold.

During 2003, AMRAAM maintained a tactical availability rate above 95% which exceeds the Air Force goal of 91%.

During 2003, missile integration continued on the F/A-22 with a number of successful safe separations and guided launches. Two successful AMRAAM supersonic separations were completed in May 2003. On June 4, 2003, the F/A-22 conducted a successful guided launch of an AIM-120C-4. The missile went into terminal mode and maneuvered prior to killing the drone. In July 2003, another safe separation of an AMRAAM was conducted. In August 2003, two successful AMRAAM firings were conducted killing a full scale drone in the first shot, and the second shot flying within lethal range of a subscale drone. After several delayed missions, a successful dual launch was accomplished on January 30, 2004 at White Sands Missile Range, NM. Two F/A-22s launched AMRAAMs in a look-down scenario against two targets employing electronic countermeasures (ECM).

The Lot 17 production contract was awarded on March 25, 2003. The contract is for AIM-120C-7 missiles for US and AIM-120C-5 missiles for FMS customers. The award was for 260 missiles [130 USAF (includes 6 for Joint Strike Fighter (JSF)(F-35)), 76 USN, and 54 FMS]. The quantities were 61 missiles less than budgeted for by the two services (USAF 37 short and USN 24 short) as a result of the low FMS sales and resulting higher unit costs.

The Lot 18 production contract was awarded on December 19, 2003. The initial contract award is for AIM-120C-7 missiles for US and AIM-120C-5 missiles for FMS customers. The award was for 257 missiles [166 USAF (one funded by JSF (F-35) and six funded by USMC), 42 USN, 15 USA, and 34 FMS]. The quantities were 53 missiles less than budgeted for by the two services (USAF 42 short and USN 11 short) as a result of the low FMS sales and resulting higher unit costs. Additional quantities may be added to the contract at a later date.

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

The Counterair Joint System Program Office (JSPO) initiated a Phase 3 software update program (SWUP) in July 2003. This program will test a deferred capability developed during the P3I Phase 3 program and will provide additional capabilities being selected from a list of candidates by the Warfighter community. The first operational capability will be fielded with Phase 3 in Fiscal Year (FY) 05 and additional upgrades will follow in FY06.

Dollars were added last year in the FY04 President's Budget (PB) documentation for the next step in AMRAAM performance evolution, Phase 4. In December 2003, a contract was awarded to Raytheon for the AMRAAM Phase 4 System Design and Demonstration (SDD) contract. The contract is CPAF valued at \$71M. The Phase 4 program will meet key operational requirements that were documented, but unfunded under the Phase 3 effort. Phase 4 efforts include improved software, an enhanced data link, and Global Positioning System (GPS)-aided guidance, which collectively deliver missile improvements in kinematics, Pwe (Probability of weapon effectiveness), high off bore-sight (HOBS) engagements, and Electronic Protection. This joint (USAF/USN) 36-month development effort will lead to a projected Lot 20 production cut in decision in FY06. This will support Required Assets Available (RAA) dates for both the USAF/USN starting in FY08. IOC will first be met on the F/A-18E/F in December 2007. Significant platform integration efforts are underway to include the F/A-18C/D/E/F, F-15C/D/E, F-16MMC, F/A-22, and JSF (F-35).

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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
P3I Phase 1 CDR Complete	OCT 1992	OCT 1992	JAN 1993
Complete AF FOT&E Phase I	MAR 1992	FEB 1993	APR 1993
Initial Operational Capability (IOC) (Navy)	SEP 1992	SEP 1993	SEP 1993
Complete FOT&E (OPEVAL) (Navy)	MAR 1992	JAN 1994	MAR 1994

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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

(U) Acronyms:

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

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current
(1) [REDACTED]				
Ready Storage (hrs) (mature msl - 90K operational flight hours)	60000	60000 / 45000	N/A	45000
Availability (%)	86	86 / 82	N/A	96
Captive-Carry (MTBM- Type I) (hrs)	600	600 / 450	1152	1270 (Ch-1)
On Alert Storage MTBM	30000	30000 / 22500	N/A	30000

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Aircraft Configure/ Load - 3 Man Load Crew				
Install 4 Rail Launchers (mins)	20	20 / 25	21	21
Load 4 Missiles from trailer (mins)	15	15 / 20	18	18
Load 4 Missiles from container (mins)	20	20 / 30	22	22
Missile checks (mins)	1	1 / 5	1	1
All Weather Capability	Day, Night,	Day, Night, / Day, Night,	Day, Night,	Day, Night,

Aircraft	F-15,	F-15, / F-15,	F-15,	F-15,
Compatibility	F-16,	F-16, / F-16,	F-16,	F-16,
	F-14,	F-14, / F-14,	F/A-18	F/A-18
	F/A-18	F/A-18 / F/A-18		F-22
All-Up Round	Control	Control / Control	Control	Control
	Surfaces	Surfaces/ Surfaces	Surfaces	Surfaces
	field	field / field	field	field
	in-	in- / in-	in-	in-

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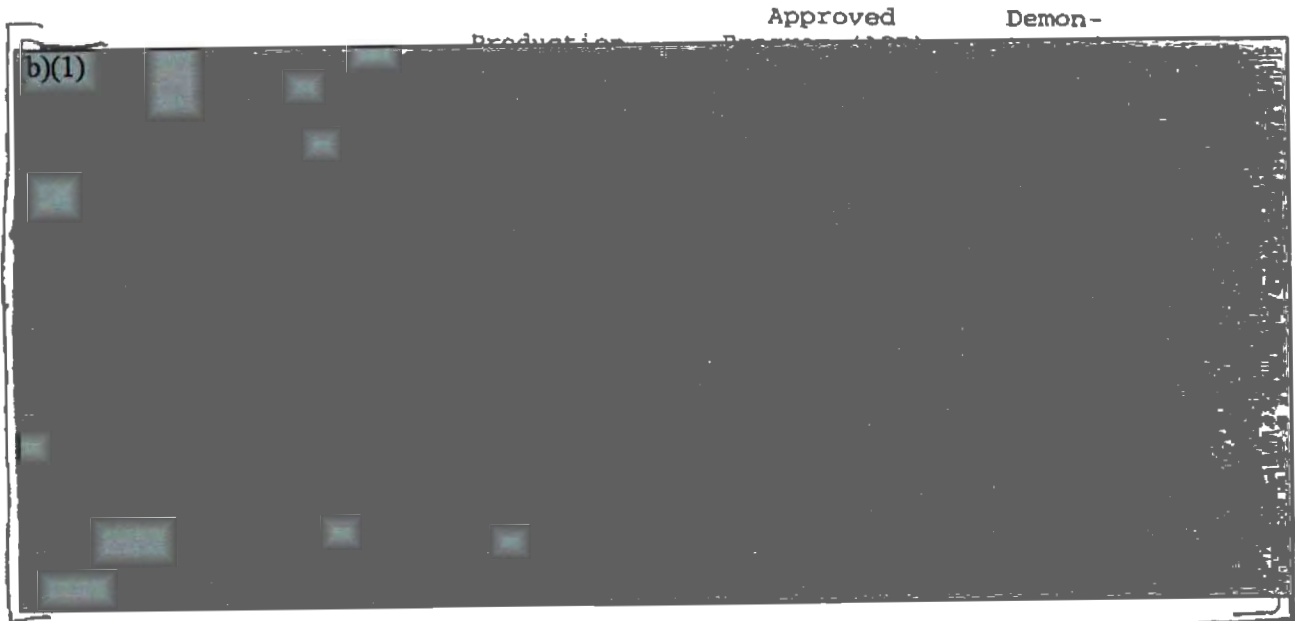
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10a. (U) Performance Characteristics (Cont'd):



(U) Acronyms and definitions:

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.  
Mins - Minutes  
Msl - Missile  
MTBM - Mean Time Between Maintenance  
NM - Nautical Mile  
Pk - Probability of Kill

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

b. Current Change Explanations --

(U) (CH-1) The Field Captive Carry Mean Time Between Maintenance (MTBM) is changed from an estimate of 1270 hours to cumulative actuals to date for the USAF which are: 1,159 hours for the AIM-120A, 779 hours for the AIM-120B, and 1,197 hours for the AIM-120C missile. Field Captive Carry MTBM actuals for the USN are: 744 hours for the AIM-120A, 449 hours for the AIM-120B, and 807 hours for the AIM-120C missile. The Joint Service Operational Requirement (JSOR) for the missile is 450 hours.

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1725.7	2097.2	2291.1
Procurement	10552.5	10205.7	8290.4
Flyaway	(10038.5)		(7796.4)
Non-Recurring Flyaway			(1914.5)
Total Flyaway	(10038.5)		(9710.9)
Other Weapon Cost	(378.0)		(0.0)
Peculiar Support	(0.0)		(402.0)
Initial Spares	(136.0)		(92.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1992 Base-Year \$	12278.2	12302.9	12496.0
Escalation	834.2	1025.0	179.8
Development (RDT&E)	(-375.1)	(-275.7)	(-252.9)
Procurement	(1209.3)	(1300.7)	(432.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	13112.4	13327.9	10761.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	15450	13038	10999
Total	15450	13038	10999

(U) Excludes 169 non-fully configured RDT&E missiles in the development estimate and 111 in the current estimate.

AMRAAM received a favorable Low Rate Initial Production (LRIP) decision during the Milestone IIIA review by the Defense Acquisition Board (DAB) in June 1987. 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 from two actions: (1) the planned total procurement decreased from 24,320 missile at Milestone IIIA to

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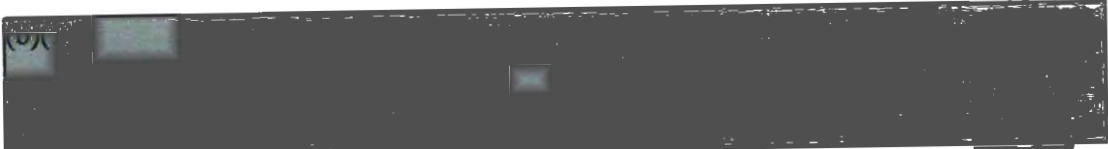
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11b. (U) Total Program Cost and Quantity (Cont'd):

15,450 missiles at Milestone IIIB, and (2) Milestone IIIB authorized the program to continue LRIP through FY92, adding 3,349 missiles to the LRIP quantities.

- 
- (U) BAHARAIN (BA-D-YBI) Case signed 13 November 1999  
\$25.8M PURPOSE: 26 AMRAAMs (Lot XIV), support, and integration.
- (U) BELGIUM (BE-D-YCD) Case signed 22 December 1995  
\$31.1M PURPOSE: 72 AMRAAMs (Lot XI, and spares.
- (U) CANADA (CN-D-YAE) Case signed 10 Jul 2003  
\$21.2M PURPOSE: 35 AMRAAMs (Lot XVII), and support.
- (U) DENMARK (DE-D-QBB) Case signed 22 October 2003  
\$2M PURPOSE: AMRAAM support and software updates.
- (U) FINLAND (FI-D-YAA) Missile procurement is FMS administered direct commercial sale. Case signed 4 November 1994  
\$106.3M PURPOSE: 312 AMRAAMs (Lots X, XI, XII, and XIII), and software updates.
- (U) GERMANY (GY-D-QAP) Case signed 12 November 2001  
\$1.3M PURPOSE: AMRAAM Software Upgrade Program of AIM-120B.
- (U) GERMANY (GY-D-QWV) Case signed 03 January 2003  
\$4.9M PURPOSE: AMRAAM Test Firing.
- (U) GREECE (GR-D-SBD) Case signed 26 September 1996  
\$57.9M PURPOSE: 140 AMRAAMs (Lots XI, and XII).
- (U) GREECE (GR-D-YDT) Case signed 5 December 2001  
\$37.3M PURPOSE: 100 AMRAAMs (Lot XV), and support.
- (U) ITALY (IT-D-YAC) Case signed 1 December 1997  
\$110.3M PURPOSE: 233 AMRAAMs (Lots XII, XIII, and XVI), support, and software updates.

- 
- (U) ISREAL (IS-D-YES) Case signed 1 July 2001  
\$25.3M PURPOSE: 48 AMRAAMs (Lot XV), support, and integration testing.

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AMRAAM (AIM-120), December 31, 2003

(b)(1)

- (U) JAPAN (JA-D-YCK) Case signed 24 March 2000  
\$8.7M PURPOSE: 21 AMRAAMS (Lot XIV), support, and software updates.
- (U) JAPAN (JA-D-YCL) Case signed 21 March 2001  
\$9.3M PURPOSE: 21 AMRAAMS (Lot XV), support, and software updates.
- (U) JAPAN (JA-D-YYZ) Case signed 30 January 2002  
\$10.7M PURPOSE: 21 AMRAAMS (Lot XVI), and support.
- (U) KOREA (KS-D-YGY) Case signed 27 December 1999  
\$66.0M PURPOSE: 159 AMRAAMS (Lot XIV), support, and software updates.
- (U) KOREA (KS-D-SIR) Case signed 12 Jun 2002  
\$80.8M PURPOSE: 157 AMRAAMS (Lot XVI), spares, and support.
- (U) NATO EF-2000 and Tornado Development, Production, and Logistics  
Management Agency (NETMA) (M1-D-YAA) Case signed 5 November 1991  
\$11.9M PURPOSE: 8 AMRAAMS (Lots VII, and XVII).
- (U) NORWAY (NO-D-QBI) Case signed 20 Dec 2000  
\$1.3M PURPOSE: AMRAAM support.
- (U) NORWAY (NO-D-YDA) Case signed 1 April 1996  
\$100.3M PURPOSE: 250 AMRAAMS (Lot XI), 228 MRLs, (Lot XI), and  
software updates.
- (U) OMAN (MU-D-YEI) Case signed 2 May 2002  
\$27.7M PURPOSE: 50 AMRAAMS (Lot XVI), spares, and support.
- (U) POLAND (PL-D-SAC) Case signed 18 April 2003  
\$21.1M PURPOSE: 50 AMRAAMS, and support.
- (U) PORTUGAL (PT-D-YAP) Case signed 27 June 2002  
\$8.7M PURPOSE: 12 AMRAAMS (Lot XVI), spares, and support.
- (U) SAUDI ARABIA (SR-D-YPY) Case signed 10 March 2002  
\$84.1M PURPOSE: 160 AMRAAMS (lot XVI), spares, and support.
- (U) SINGAPORE (SN-D-YAD) Case signed 27 March 2001  
\$32.2M PURPOSE: 50 AMRAAMS (Lot XV, and support.
- (U) SPAIN (SP-D-YAF) Case signed 5 March 1999  
\$43.6M PURPOSE: 100 AMRAAMS (Lot XIII), and support.
- (U) SPAIN (SP-D-YDI) Case signed 30 September 2002  
\$16.7M PURPOSE: 31 AMRAAMS (Lot XVI), program management support, and  
logistics support.
- (U) SWEDEN (SW-D-YCD) Missile procurement is FMS administered direct  
commercial sale. Case signed 1 September 1994

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AMRAAM (AIM-120), December 31, 2003

(b)(1)

\$44.2M PURPOSE: 110 AMRAAMs (Lots X, and XII), and support.

- (U) SWITZERLAND (SZ-D-NAV) Case signed 16 October 2000  
\$2.1M PURPOSE: Software updates.
- (U) TAIWAN (TW-D-SKA) Case signed 13 December 2000  
\$68.8M PURPOSE: 120 AMRAAMs (Lot XV), support, and software updates.
- (U) THAILAND (TH-D-YJK) case signed 28 June 2001  
\$2.5M PURPOSE: 4 AMRAAMs (Lot XV).
- (U) THAILAND (TH-D-YJL) Case signed 13 July 2001  
\$3.6M PURPOSE: 4 AMRAAMs (Lot XV), and support.
- (U) TURKEY (TK-D-GQP) Case signed 25 Dec 2003  
\$.3M PURPOSE: Managing and Tracking the AMRAAM missile and support systems.
- (U) TURKEY (TK-D-YDV) Case signed 24 November 1997  
\$51.0M PURPOSE: 138 AMRAAMs (Lot XII), support, and software updates.
- (U) TURKEY (TK-D-MNR) Case signed 11 September 2002  
\$1.0M PURPOSE: Repair/Return in support of AIM-120 AMRAAM.
- (U) UNITED ARAB EMIRATS (AE-D-SAA) Case signed 8 August 2000  
\$4.5M PURPOSE: 2 AMRAAMs (Lot XIV), support, software updates, and integration.
- (U) UNITED ARAB EMIRATES (AE-D-YAB) Case signed 20 August 2002  
\$52.0M PURPOSE: 100 AMRAAMs (Lot XVI), support equipment, and software.
- (U) UNITED KINGDOM (UK-D-QBV) Case signed 31 May 2002  
\$13.1M PURPOSE: Integration and testing of AMRAAM.
- (U) United Kingdom (UK-D-QBW) Case signed 31 May 2002  
\$0.6M PURPOSE: Integration and testing of AMRAAM.
- (U) JAPAN (JA-D-YZA) Case signed 20 March 2003  
\$8.7M PURPOSE: 16 AMRAAMs (Lot XVII), and support.
- (U) Inactive Foreign Military Sales (FMS) cases totaling \$626.2M.
- (U) DENMARK (DE-D-YAS) Case signed 8 Dec 1994  
\$23.6M PURPOSE: 150 AMRAAMs (Lots IX and X) and support
- (U) GERMANY (GY-D-YEK) Case signed 28 June 1995  
\$38.7M PURPOSE: 96 AMRAAMs (Lots IX, and X)

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- (U) GREECE (GR-D-YDR) Case signed 30 June 1995  
\$32.5M PURPOSE: 100 AMRAAMS (Lot X) and support.
- (U) ISREAL (IS-D-YEO) Case signed 6 February 1997  
\$49.4M PURPOSE: 125 AMRAAMS (Lots X, XI, XII, and XIII), support, and software updates.
- (U) JAPAN (JA-D-YCJ) Case signed 19 February 1999  
\$20.3M PURPOSE: 40 AMRAAMS (Lot XIII).
- (U) KOREA (KS-D-YGN) Case signed 30 December 1993  
\$81.1M PURPOSE: 190 AMRAAMS (Lot X).
- (U) KOREA (KS-D-YGQ) Missile procurement is FMS administered direct commercial sale. Case signed 13 March 1997  
\$9.2M PURPOSE: 100 AMRAAMS (Lot XII), and software updates.
- (U) KOREA (KS-D-YGP) Missile procurement is FMS administered direct commercial sales. Case signed 28 August 1995  
\$8.9M PURPOSE: 100 AMRAAMS (Lot XII).
- (U) NAMA (4-D-GAH) Case signed 17 March 2001  
\$0.1M PURPOSE: To provide technical support.
- (U) NETHERLANDS (NE-D-YME) Case Signed 29 September 1995  
\$77.0M PURPOSE: 200 AMRAAMS (Lot X, and XI) and support.
- (U) NORWAY (NO-D-YCY) Case signed 7 October 1992  
\$53.6M PURPOSE: 100 AMRAAMS (Lots VIII, and IX) and support.
- (U) NORWAY (NO-D-YCZ) Case signed 31 Aug 1994  
\$68.3M PURPOSE: 228 AMRAAMS (Lots IX, and X) and support.
- (U) SPAIN (SP-D-YDH) Case signed 11 July 1996  
\$12.6M PURPOSE: 32 AMRAAMS (Lot XI) and support.
- (U) SWITZERLAND (SZ-D-YBB) Missile procurement is FMS administered as direct commercial sale. Case signed 5 August 1994  
\$1.4M PURPOSE: Support.
- (U) TURKEY (TK-D-YDT) Case signed 25 October 1993  
\$17.1M PURPOSE: 60 AMRAAMS (Lots IX, and X)
- (U) TURKEY (TK-D-YDU) Case signed 1 December 1994  
\$22.7M PURPOSE: 80 AMRAAMS (Lots IX, and X)
- (U) UNITED KINGDOM (UK-D-YDR) Case signed 3 March 1992  
\$100.1M PURPOSE: 210 AMRAAMS (Lots VII, and VIII), support, and software updates.

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(U) UNITED KINGDOM (UK-D-NST) Case signed 11 April 1996  
\$9.6M PURPOSE: Integration and testing of AMRAAM.

d. (U) Nuclear Costs --  
None

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 1996 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1992 BY\$)	12302.9	10581.5	
(2) Quantity	13038	10999	
(3) Unit Cost	0.944	0.962	+1.91
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1992 BY\$)	10205.7	8290.4	
(2) Quantity	13038	10999	
(3) Unit Cost	0.783	0.754	-3.70

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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	1350.6	11761.8	-	13112.4
Previous Changes:				
Economic	-58.1	-349.9	-	-408.0
Quantity	-	-2931.0	-	-2931.0
Schedule	-7.3	+1780.0	-	+1772.7
Engineering	+544.4	+301.3	-	+845.7
Estimating	+163.5	-1853.1	-	-1689.6
Other	-	-	-	-
Support	-	+15.2	-	+15.2
Subtotal	+642.5	-3037.5	-	-2395.0
Current Changes:				
Economic	-0.6	-1.2	-	-1.8
Quantity	-	-19.4	-	-19.4
Schedule	-	+3.0	-	+3.0
Engineering	+37.3	-19.1	-	+18.2
Estimating	+8.4	+33.0	-	+41.4
Other	-	-	-	-
Support	-	+2.5	-	+2.5
Subtotal	+45.1	-1.2	-	+43.9
Total Changes	+687.6	-3038.7	-	-2351.1
Current Estimate	2038.2	8723.1	-	10761.3

(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	-	-1930.0	-	-1930.0
Schedule	-8.1	+791.9	-	+783.8
Engineering	+438.0	+221.6	-	+659.6
Estimating	+101.4	-1329.2	-	-1227.8
Other	-	-	-	-
Support	-	-20.5	-	-20.5
Subtotal	+531.3	-2266.2	-	-1734.9
Current Changes:				
Quantity	-	-10.8	-	-10.8
Schedule	-	-	-	-
Engineering	+27.5	-13.7	-	+13.8
Estimating	+6.6	+28.1	-	+34.7
Other	-	-	-	-
Support	-	+0.5	-	+0.5
Subtotal	+34.1	+4.1	-	+38.2
Total Changes	+565.4	-2262.1	-	-1696.7
Current Estimate	2291.1	8290.4	-	10581.5

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AMRAAM (AIM-120), December 31, 2003

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	-0.6
Additional year for Software Upgrade Program (SWUP). (Engineering)	+27.5	+37.3
Added costs for missile test personnel (Process change). (Estimating)	+4.3	+5.3
Adjustment in Navy internal manpower costs. (Estimating)	-1.0	-0.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Phase 3 Contract Cost Overrun. (Estimating)	+3.2	+3.8
RDT&E Subtotal	+34.1	+45.1
(2) <u>Procurement</u>		
Revised escalation indices and other economic adjustments. (Economic)	N/A	-1.2
Total Quantity Variance associated with decrease of 34 missiles (from 11,033 missiles to 10,999 missiles). (Quantity)	-10.8	-19.4
Stretchout of annual AF and Navy procurement buy profile because fewer missiles were procured in FY03 and FY04 due to higher unit cost (low FMS quantities). (Schedule)	0.0	+3.0
Change in Navy unique ancillary equipment requirement. (Engineering)	-1.6	-2.1
Decrease in Classified requirements. (Engineering)	-12.1	-17.0
Missile unit cost increase due to low FMS quantities. (Estimating)	+23.8	+27.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.3
Adjustment in internal Navy manpower costs. (Estimating)	+1.8	+2.9
Increase in cost for Classified effort. (Estimating)	+1.4	+1.8
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Increase in Initial Spares for Phase 4 missiles. (Support)	+4.2	+5.6
Reduced quantity of Telemetry units due to fewer Weapon System Evaluation Program (WSEP) flights. (Support)	-4.0	-3.4
Procurement Subtotal	+4.1	-1.2

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AMRAAM (AIM-120), December 31, 2003

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	
0.849	-0.037	+0.075	+0.161	+0.079	-0.150	--	+0.002	+0.130	0.978

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	+0.039	+0.162	+0.026	-0.165	--	+0.002	+0.032	0.793

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	MAR 1991	SEP 1991
Total Cost	N/A	11591.6	13112.4	10761.3
Total Quantity	N/A	24335	15450	10957
Prog Acq Unit Cost	N/A	0.5	0.8	1.0

(U) The Initial Operational Capability (IOC) reported above is for the Air Force; the Navy IOC was September 1993.

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

a. RDT&E --

(U) Raytheon P3I Phase 3:  
Raytheon Company, Tucson, AZ  
F08626-98-C-0027, CPFF  
Award: October 29, 1998  
Definitized: October 29, 1998

Initial Contract Price		
Target	Ceiling	Qty
\$150.5	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$237.7	N/A	0	\$237.7	\$237.7

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AMRAAM (AIM-120), December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-12.2	\$-1.9
Cumulative Variances To Date (12/24/03)	\$0.9	\$-0.7
Net Change	\$13.1	\$1.2

Explanation of Change:

(U) The favorable change in the cost and schedule variances are attributable to a contract rebaseline this year. The decision to rebaseline was based on cost growth and schedule delays due to late hardware deliveries, hardware/software integration challenges, lower yields in flight testing and flight test rate increases. The total adjustments now are approximately \$23.2M. Since rebaselining, contract performance has been excellent, as shown in the variances above. This is primarily due to the success of the last four flight test missions in 2003. One more flight test mission remains prior to contract completion in March 2004.

(U) Contract Comments:

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

(U) <u>Raytheon P3I Phase 4:</u>	<u>Initial Contract Price</u>		
Raytheon Company, Tucson, AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
FA8675-04-C-0001, CPAF	\$71.0	N/A	0
Award: December 9, 2003			
Definitized: December 9, 2003			

<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>
\$71.0	N/A	0	\$71.0	\$71.0

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

Explanation of Change:

(U) This is a new contract. No earned value management data is available.

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AMRAAM (AIM-120), December 31, 2003

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

b. Procurement --  
(U) Raytheon Lot XII - XIV:  
Raytheon Company, Tucson, AZ  
F08626-98-C-0018, FFP  
Award: April 13, 1998  
Definitized: April 13, 1998

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$187.5	N/A	618

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

Explanation of Change:

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

(U) Contract Comments:

The 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 for additional missiles.

(U) Raytheon Lot XV:  
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>
\$254.3	N/A	582	\$254.3	\$254.3

Explanation of Change:

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

(U) Contract Comments:

The 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 Lot XV options for additional missiles.

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AMRAAM (AIM-120), December 31, 2003

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

(U) <u>Raytheon Lot XVI:</u> 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:

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

(U) Contract Comments:

The 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 additional missiles.

(U) <u>Raytheon Lot XVII:</u> Raytheon Company, Tucson, AZ F08635-03-C-0031, FFP Award: March 25, 2003 Definitized: March 25, 2003	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$95.8	N/A	206

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$125.8	N/A	260	\$125.8	\$125.8

Explanation of Change:

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

(U) Contract Comments:

The change in current target price from initial target price is due to the addition of contract modifications, the addition of two (2) AMRAAM Instrumented Structural Test Vehicles (ISTVs), the addition of ten (10) Non-Development Item Airborne Instrumentation Units (NDI-AIUs), the addition of two (2) NDI-AIU Field Test Sets, and exercising Lot XVII options for additional missiles.

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AMRAAM (AIM-120), December 31, 2003

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

(U) Raytheon Lot XVIII: Raytheon Company, Tucson, AZ FA8675-04-C-0061, FFP Award: December 19, 2003 Definitized: December 19, 2003	Initial Contract Price <u>Target</u> <u>Ceiling</u> Qty
	\$111.6      N/A      253

Current Contract Price <u>Target</u> <u>Ceiling</u> Qty	Estimated Price At Completion <u>Contractor</u> <u>Program Manager</u>
\$111.6      N/A      253	\$111.6      \$125.8

Explanation of Change:

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

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY77-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-10)	<u>Total</u>
RDT&E	1757.8	41.2	42.4	196.8	2038.2
Procurement	7552.5	142.3	141.7	886.6	8723.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	9310.3	183.5	184.1	1083.4	10761.3

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

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AMRAAM (AIM-120), December 31, 2003

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

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 \$
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				6.4	7.7
2004				7.4	9.0
2005				7.4	9.1
2006				2.9	3.6
2007				5.2	6.6
2008				1.9	2.5
2009				1.1	1.5
Subtotal				304.2	256.4

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 \$
1977				10.3	4.8
1978				13.2	6.7
1979				29.5	16.1
1980				43.2	26.2
1981				34.1	22.9
1982				192.0	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

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AMRAAM (AIM-120), December 31, 2003

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 \$
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				32.9	39.3
2004				26.6	32.2
2005				27.1	33.3
2006				28.3	35.2
2007				28.4	36.1
2008				28.4	36.7
2009				28.3	37.3
2010				27.7	37.3
Subtotal				1986.9	1781.8

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
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	76	10.4	28.6	41.9	50.4
2004	42	12.3	15.2	31.0	37.8

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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 \$
2005	46	11.4	13.2	27.8	34.3
2006	101	24.3	38.1	66.3	83.4
2007	150	19.6	55.6	79.5	101.8
2008	140	11.1	51.0	66.9	87.3
2009	150	9.8	52.3	67.6	90.0
2010	122	25.0	42.5	78.9	107.1
Subtotal	2419	377.9	1000.2	1542.5	1754.2

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
2003	124	3.4	58.1	70.7	85.0
2004	201		73.6	85.8	104.5
2005	202		72.2	86.9	107.4
2006	202		70.3	83.5	104.9
2007	203		67.9	79.8	102.2
2008	197		66.7	79.4	103.6
2009	199		67.6	79.9	106.3
Subtotal	8580	1536.6	4881.7	6747.9	6968.9

(U) Summary does not include funding or quantities for SEEK EAGLE (store certification program) procurements of 12 AMRAAMs for \$4.7M in FY90, 24

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

AMRAAMs for \$9.5M 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) for \$0.6M in FY01.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	2419	377.9	1000.2	1846.7	2010.6
USAF	8580	1536.6	4881.7	8734.8	8750.7
Grand Total	10999	1914.5	5881.9	10581.5	10761.3

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: 77.0%

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

(U) Percent Total Program Expended: 84.1%

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

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AMRAAM (AIM-120), December 31, 2003

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

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 For All Missiles	Antecedent Average Annual Cost For All Missiles
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\$	696.0	N/A
TY\$	819.3	N/A

Report Creation Date: 3/23/2004 9:09:42 AM

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

AS OF DATE: December 31, 2003

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- (U) Designation and Nomenclature (Popular Name): MH-60R Multi-Mission Helicopter
- (U) DoD Component: Navy
- (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 William.Shannon@navy.mil
- (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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MH-60R, December 31, 2003

5. (U) References:

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 19, 1995.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 14, 2003.

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. Based on Program Office analysis, ASN(RDA) revised the acquisition strategy to new production, incorporated Airborne Low Frequency Sonar (ALFS) into the MH-60R program, increased spares funding, extended the program schedule, and increased the production aircraft quantities. A revised Acquisition Program Baseline (APB) was approved on March 14, 2002.

The first flight of a fully functional MH-60R test article took place on April 4, 2002. All test articles have been delivered to Patuxent River for testing. All LRIP I aircraft have been delivered to the Navy. 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

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

increases.

The APB, which revised cost due to the addition of Block I Upgrades in President's Budget FY04 and revised performance requirements in accordance with the MH-60R ORD dated May 6, 2003, was approved on October 14, 2003.

On September 3, 2003, the PMA recommended decertification from Operational Test (OT) based on observed poor performance of RADAR, ESM and acoustics subsystems. The key areas that contributed to the unsatisfactory performance were technical, training, ORD interpretation, and test methodology.

As a result of the decertification, an independent NAVAIR technical review of the program was conducted. The product of this review was a revised schedule that moved TECHEVAL start from Oct 03 to Oct 04, moved OPEVAL start from May 04 to May 05, and moved MS III from Mar 05 to Jan 06. Many of the deficiencies noted during Operational Test (OT) were known but not yet corrected. The additional time prior to the start of TECHEVAL will allow for verification that the deficiencies have been adequately corrected prior to continuing scored testing.

A Navy Program Decision Meeting (NPDM) with ASN(RDA) was held on December 1, 2003. A revised Acquisition Strategy (which included changing the FY05 procurement from Full Rate Production to Low Rate Initial Production (LRIP) III), planned revisions to Acquisition Program Baseline, and revised exit criteria were approved. Additionally, ASN(RDA) approved the execution of the LRIP II procurement. FY04 Advance Procurement (AP) for LRIP III aircraft and mission systems will be contracted for after MDA approval which is anticipated to occur in Spring 2004. Execution of the FY04 AP for the procurement of cockpits to support the LRIP III aircraft procurements was approved at the NPDM.

A Common Cockpit Multi-Year contract, covering both MH-60R and MH-60S procurements, was awarded December 29, 2003 to Lockheed Martin Systems Integration (LMSI). The contract value is \$423M with a savings of \$43M and an additional cost avoidance of \$30M associated with addressing obsolescence issues. The contract contains an option year which when executed will bring the total value to \$490M with \$63M of savings.

LRIP II contracts with LMSI and Sikorsky Aircraft Corporation (SAC) are to be definitized in Spring 2004. Pending ASN(RDA) approval, AP for LRIP III is planned to be on contract Spring 2004.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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:

Due to the restructure of the program, which was approved in the Acquisition Decision Memorandum (ADM) dated December 15, 2003, there is a breach in the TECHEVAL, OPEVAL, and MS III threshold dates. Many of the deficiencies noted during Operational Test (OT) were known but not yet corrected. The additional time prior to the start of TECHEVAL will allow for verification that the deficiencies have been adequately corrected prior to continuing scored testing. A revised APB is in the approval process.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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 2004 (Ch-1)
Complete	JUN 2000	APR 2004	FEB 2005 (Ch-1)
OPEVAL			
Start	SEP 2000	MAY 2004	MAY 2005 (Ch-1)
Complete	MAR 2001	NOV 2004	SEP 2006 (Ch-1)
Milestone III	OCT 2001	MAR 2005	JAN 2006 (Ch-1)
Airborne Low Frequency Sonar			

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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	DEC 2005

(U) ACRONYMS:

EMD - Engineering, Manufacturing and Development  
LRIP - Low Rate Initial Production  
OPEVAL - Operational Evaluation  
TECHEVAL - Technical Evaluation

b. Current Change Explanations --

(U) (Ch-1) Due to the restructure of the program, which was briefed to ASN(RDA) on December 1, 2003 the following milestone dates have changed:

	<u>From</u>	<u>To</u>
TECHEVAL Start	Oct 03	Oct 04
OPEVAL Start	May 04	May 05
MS III	Mar 05	Jan 06

IOC is maintained within the existing APB dates.

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10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Maximum Operating Sea State	5	5 / 5	TBD	5
Mission Duration (ASW) (hrs)	3.3	1.25 / 9 / 1.25 / 9	TBD	1.83
Mission Duration (ASUW) (hrs)	3.5	125 / 80	TBD	125
Multi-Mode Radar	[REDACTED]		TBD	[REDACTED]
Range to Detect a 10000 Sq Meter Target	[REDACTED]	N/A / N/A	TBD	[REDACTED]
Range to Detect a 0.5 Sq Meter Target	[REDACTED]	[REDACTED]	TBD	[REDACTED]
Using ISAR Classify a Surface Combatant at a percentage of the Target's Maximum Detectable Range	[REDACTED]	[REDACTED]	TBD	[REDACTED]
Electronic Support Measures	[REDACTED]		TBD	[REDACTED]
Detectable Frequency Bandwidth (GHz)	[REDACTED]	N/A / N/A	TBD	[REDACTED]
Ability to Detect a Threat Emitter X times Detection Range of the Threat Radar	[REDACTED]	N/A / N/A	TBD	[REDACTED]
Reliability and Maintainability				
MFHBCF (ASW) (hrs)	35.7	N/A / N/A	TBD	14.8
MFHBCF (ASUW) (hrs)	43.9	N/A / N/A	TBD	21.8
Acoustic System				
Sonobuoys: Maximum ACU with a 75% Probability of Detection for a Nuclear Subsurface Target (sqnm)	1000	N/A / N/A	TBD	300
Sonobuoys & ALFS: Maximum AOU with a 90% Probability of Detection for a Subsurface Target (sqnm)	[REDACTED]	N/A / N/A	TBD	[REDACTED]

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
<b>Airborne Low Frequency Sonar</b>					
Operating Frequency (Khz)	<5	N/A	/ N/A	TBD	<5
Maximum System Weight	550	N/A	/ N/A	TBD	550
Source Level (db)	[REDACTED]	N/A	/ N/A	TBD	[REDACTED]
Minimum Long Pulse Length (sec) (minimum duty cycle 6.7%)	[REDACTED]	N/A	/ N/A	TBD	[REDACTED]
Reeling Machine MCBCF (cycles)	1000	N/A	/ N/A	TBD	150
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 (sqnm) using AQS-22 ALFS only	N/A	N/A	/ N/A	TBD	500
Interoperability	N/A	All IERs/	Critical IERs	TBD	Critical IERs
Availability (%): Full Mission Capable	N/A	63%	/ 53%	TBD	63%
Availability (%): Mission Capable	N/A	82%	/ 70%	TBD	82%
ALFS: Probability of detection (Pd) with a 50 square nautical mile circular Area of Uncertainty (AOU)	N/A	90%	/ 75%	TBD	90%

(U) ACRONYMS:

ALFS = Airborne Low Frequency Sonar  
 AOU - Area of Uncertainty  
 ASUW - Anti-Surface Warfare

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

ASW - Anti-Submarine Warfare  
 Db - Decibel  
 GHZ - GigaHertz  
 HRS - Hours  
 ISAR - Inverse Synthetic Aperature Radar  
 KHZ - KiloHertz  
 MCBCF - Mean Cycles Between Critical Failure  
 MFHBCF - Mean Flight Hours Between Critical Failure  
 MTBF - Mean Time Between Failure  
 MTBMCF - Mean Time Between Mission Critical Failure  
 MTTR - Mean Time To Repair  
 SQ - Square  
 sqnm - Square nautical miles

b. Current Change Explanations -- None

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	508.4	1238.3	1236.2
Procurement	3512.1	6750.4	7074.8
Airframe/CFE	(2119.0)		(4170.8)
GFE	(435.7)		(932.4)
Nonrecurring flyaway	(150.6)		(509.7)
ECOs			(130.7)
Engines			(288.2)
Total Flyaway	(2705.3)		(6031.8)
Pubs	(40.0)		(47.0)
Weapon System	(5.6)		(23.9)
Field Activities	(165.5)		(219.2)
ILS/LSA/MES	(79.2)		(71.2)
Total Other Wpn Sys	(290.3)		(361.3)
Peculiar Support	(238.9)		(525.0)
Initial Spares	(277.6)		(156.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1993 Base-Year \$	4020.5	7988.7	8311.0
Escalation	1615.9	2078.0	2248.3
Development (RDT&E)	(40.3)	(130.7)	(131.1)
Procurement	(1575.6)	(1947.3)	(2117.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5636.4	10066.7	10559.3

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

b. (U) Quantity --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0	2	2
Procurement	188	241	252
Total	188	243	254

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

(U) The LRIP quantity is currently 15, 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 (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	7988.7	8311.0	
(2) Quantity	243	254	
(3) Unit Cost	32.875	32.720	-0.47
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1993 BY\$)	6750.4	7074.8	
(2) Quantity	241	252	
(3) Unit Cost	28.010	28.075	+0.23

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	548.7	5087.7	-	5636.4
Previous Changes:				
Economic	-28.4	-702.6	-	-731.0
Quantity	+153.0	-775.0	-	+928.0
Schedule	-	-110.4	-	+110.4
Engineering	-226.1	+490.6	-	+716.7
Estimating	-399.4	+2540.9	-	-2940.3
Other	-	-	-	-
Support	+70.2	+395.7	-	+465.9
Subtotal	+820.3	+3610.0	-	+4430.3
Current Changes:				
Economic	+0.6	+21.0	-	+21.6
Quantity	-	-213.2	-	+213.2
Schedule	-	+40.7	-	+40.7
Engineering	-	+290.0	-	+290.0
Estimating	-2.3	+70.0	-	-67.7
Other	-	-	-	-
Support	-	-140.6	-	-140.6
Subtotal	-1.7	+494.3	-	+492.6
Total Changes	+818.6	-4104.3	-	+4922.9
Current Estimate	1367.3	9192.0	-	10559.3

(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	-	-31.2	-	-31.2
Engineering	+191.2	+374.4	-	-565.6
Estimating	+345.0	+1994.8	-	+2339.8
Other	-	-	-	-
Support	+60.4	+344.6	-	-405.0
Subtotal	+729.9	+3238.3	-	+3968.2
Current Changes:				
Quantity	-	+148.3	-	-148.3
Schedule	-	+9.3	-	+9.3
Engineering	-	+216.8	-	-216.8
Estimating	-2.1	-58.4	-	+56.3
Other	-	-	-	-
Support	-	-108.4	-	-108.4
Subtotal	-2.1	+324.4	-	-322.3
Total Changes	-727.8	+3562.7	-	+4290.5
Current Estimate	1236.2	7074.8	-	8311.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD7&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+0.6
Adjustment for Current and Prior Inflation. (Estimating)	-0.7	-0.7
Engineering and Logistics Adjustments (Estimating)	-1.4	-1.6
RD7&E Subtotal	-2.1	-1.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+12.6
Economic adjustment for negative program change. (Economic)	N/A	+8.4
Total Quantity Variance associated with increase of 11 A/C, from 243 to 254.	+207.2	+297.8
Quantity increase of 11 A/C, from 243 to 254. (Quantity)	+148.3	+213.2
Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	-0.8	+3.0
Allocation to Engineering variance resulting from Quantity Change. (QR) (Engineering)	+9.4	+13.2
Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+50.3	+68.4
Movement of 2 A/C from FY05 and stretchout of annual procurement buy profile. (Schedule)	+10.1	+37.7
Incorporation of Tactical Common Data Link (TCDL) (Engineering)	+110.6	+144.2
Incorporation of Block I Upgrade (FY10-14) (Engineering)	+96.8	+132.6
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	-1.2
Engineering Adjustments (Estimating)	-4.4	-5.2
Logistics Adjustments (Estimating)	-11.7	-14.4
Additional components for Airborne Low Frequency Sonar (ALFS) for increase A/C Qty (Estimating)	+23.2	+20.0
Adjustment for Current and Prior Inflation. (Support)	+0.4	-0.4
Decrease in Initial Spares (Support)	-148.2	-197.6
Increase in Peculiar Support for Block I Upgrade (Support)	-9.0	+12.8
Decrease in Pubs Updates Support (Support)	-6.1	-8.1
Increase in Weapon System Support (Support)	+5.9	+8.1
Increase in Field Activities Support for stretchout of A/C buy profile (Support)	+35.2	+49.1

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Decrease in Integrated Logistics Support (ILS) (Support)	-4.6	-5.3
Procurement Subtotal	-324.4	-494.3

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
PAUC Changes										Cur Est
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
29.98	-2.79	-3.29	+0.595	+3.96	+11.84	--	+1.28	+11.59		41.57

b. (U) 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		
27.06	-2.70	-2.96	+0.600	+3.10	+10.36	--	-1.01	-9.41		36.48

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	JAN 2006
IOC	N/A	MAR 2001	N/A	DEC 2005
Total Cost	N/A	5636.4	N/A	10559.3
Total Quantity	N/A	188	N/A	254
Prog Acq Unit Cost	N/A	30.0	N/A	41.6

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

a. RDT&E --			Initial Contract Price		
(U) <u>Development (EMD II):</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Owego, NY					
N00019-93-C-0196, CPFF			\$154.1	N/A	2
Award: June 10, 1999					
Definitized: September 30, 2002					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$174.1	N/A	2	\$177.1	\$174.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.6	\$-1.2
Cumulative Variances To Date (12/19/03)	\$-3.7	\$-1.2
Net Change	\$-3.1	\$0.0

Explanation of Change:

(U) Cost variances deteriorated due to technical issues with Radar, Electronic Support Measures (ESM) and Acoustics Mission Planner, Operations Requirement Document (ORD) clarification, Test and Evaluation Master Plan (TEMP) detail, crew training, and operator workload which in turn delayed TECHEVAL and OPEVAL. Correction of technical issues has required staffing levels to be maintained at higher than planned levels leading to overruns in the associated WBS elements.

(U) Contract Comments:

The current target price includes non-recurring engineering to incorporate Engineering, Manufacturing and Development (EMD) II modifications, repair of repairables and award fee.

(U) <u>Production (LRIP 1):</u>			Initial Contract Price		
Lockheed Martin, Owego, NY			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-00-C-0249, CPFF					
Award: March 14, 2000			\$88.1	N/A	7
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>
\$103.7	N/A	5	\$111.7	\$115.1

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.4	\$-2.3
Cumulative Variances To Date (12/19/03)	\$-5.7	\$-1.3
Net Change	\$-3.3	\$1.0

Explanation of Change:

(U) Cost variances deteriorated due to Level of Effort (LOE) activities impacted by the delay in award of Lot 2/3 follow-on contracts. Budgets were set up based upon spreading costs across Lot's 1, 2, and 3. Base program management, performance management and base asset management costs were all negatively impacted by Lot 2/3 deferral. Base asset management also required additional effort for Minimum Avionics Configuration (MAC) kit and aircraft deliveries.

(U) Contract Comments:

The contract includes Mission Avionics for two test articles and the Low Rate Initial Production (LRIP) Lot 1 aircraft.

The current target price includes non-recurring engineering to incorporate LRIP modifications, repair of repairables, etc.

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> (FY06-16)	<u>Total</u>
RDT&E	1131.3	76.1	78.8	81.1	1367.3
Procurement	421.1	435.2	454.4	7881.3	9192.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1552.4	511.3	533.2	7962.4	10559.3

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

b. Annual Summary -- Multi-Mission Helicopter

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

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				10.9	10.1
1991				29.6	28.5
1992				53.5	53.0
1993				71.6	72.6
1994				68.4	70.6
1995				66.5	70.0
1996				60.9	65.2
1997				50.9	55.2
1998				78.0	85.3
1999				188.9	209.0
2000				98.1	110.1
2001				68.6	78.1
2002				116.3	133.6
2003				77.4	90.0
2004				64.6	76.1
2005				65.9	78.8
2006				39.7	48.2
2007				15.3	18.9
2008				11.1	14.0
2009					
Subtotal	2			1236.2	1367.3

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		9.2		12.6	14.6
2003		27.2		100.0	117.2
2004	6	60.1	181.5	366.1	435.2
2005	8	18.6	222.5	376.4	454.4
2006	15	26.2	363.9	560.4	688.3
2007	21	23.5	478.0	653.1	817.3
2008	31	38.7	669.3	894.4	1141.5
2009	31	54.2	655.2	897.3	1168.1
2010	31	41.6	650.0	711.0	944.1
2011	31	43.5	644.5	706.9	957.4
2012	31	37.7	639.8	668.6	924.0
2013	25	43.3	507.0	533.4	751.6

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

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 \$
2014	17	22.5	357.0	327.3	470.5
2015				7.1	10.4
2016				5.4	8.1
Subtotal	252	509.7	5522.1	7074.8	9192.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	254	509.7	5522.1	8311.0	10559.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	5	5

(U) Percent Total Program Quantities Delivered: 2.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1341

(U) Percent Total Program Expended: 12.7%

(U) All LRIP I aircraft have been delivered.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The January 2003 estimate was based on squadron total O&S costs rather than those of the entire inventory. This estimate is based on an annual per aircraft cost of \$2.91M for 252 aircraft operating 30 years (FY02 through FY31).

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Multi-Mission Helicopter Avg Annual Cost 13 A/C Per Squadron	SH-60B/F Avg Annual Cost 13 A/C Per Squadron
Mission Pay & Allowances	11.6	11.6
Unit Level Consumption	11.3	12.1

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

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Multi-Mission Helicopter Avg Annual Cost 13 A/C Per Squadron	SH-60B/F Avg Annual Cost 13 A/C Per Squadron
Intermediate Maintenance	1.6	1.6
Depot Maintenance	2.1	3.7
Contractor Support	0.2	0.2
Sustaining Support	8.2	8.9
Indirect Costs	2.9	2.9
Total	37.9	41.0

Total O&S Cost	Multi-Mission Helicopter	SH-60B/F
BYS (In Millions)	21998.8	23812.7
TYS (In Millions)	39853.1	43139.1

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PROGRAM: DD(X) Destroyer

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): DD(X) Destroyer
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
PEO Ships (PMS 500) CAPT C. H. Goddard  
1333 Isaac Hull Ave. S.E. Stop 2202 Assigned: June 22, 2001  
Washington, DC 20376-2202 DSN 326-2641; COMM (202) 781-2532  
Goddardch@Navsea.Navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0603513N Project 32465, 32467, 32468, 32469, 32470,  
32471, 34019  
(U) PE 0604300N Project 32463, 32464, 32465, 32466, 32735,  
34009, 34010  
(U) PE 0604755N Project 32735

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5. (U) References:

SAR Baseline (Planning Estimate):

(U) Defense Acquisition Executive (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) From January - April 2003, the Design Agent (DA), Northrop Grumman Ship Systems, conducted major subcontractor Integrated Baseline Reviews (IBRs) to support the Program IBR. This included Raytheon, Northrop Grumman Newport News and United Defense Limited Partnership. The program IBR, to set the Performance Measurement Baseline, was successfully conducted on April 30, 2003.

A CNO-level decision meeting took place on June 5, 2003 to select key performance parameters for DD(X). Consequently, the DD(X) design includes 80 Advanced Vertical Launch System (AVLS) cells, 2 Vertical Load Advanced Gun Systems (AGS) with a total magazine capacity of 600 rounds and a displacement of approximately 14,000 tons. The DD(X) ORD was updated incorporating changes as a result of the June 5, 2003 meeting, and was approved by the JROC in February 2004.

The DD(X) DA successfully conducted a Systems Requirements Review (SRR) in July. This is a first for Navy shipbuilding as the review encompassed requirements at a total ship level including integrated warfare and ship systems as well as the Sailor.

On July 30, 2003, the Navy announced its plans to proceed with the S-Band versus L-Band Volume Search Radar. The shift to S-Band allows merging of advanced volume search radar efforts and provides synergy with CG(X) radar development. There is no change to the Dual Band Radar concept or DD(X) teaming arrangements. The plan meets critical milestones in support of lead ship award in FY2005 and delivery in FY2011.

From October - December 2003, the DD(X) Program participated in engineering and requirements reviews with the (DA) in preparation for the Preliminary Design

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

Review (PDR). The DD(X) Program is now conducting segment level PDRs (January - March 2004) in preparation for the program level PDR in March 2004.

The Program Office participated in a Working Integrated Product Team (WIPT) meeting with Navy and OSD staff on November 13, 2003 in preparation for a DAB Review in February 2004. Three working level WIPTs for Cost, Test and Evaluation, and Acquisition Strategy have been established to support the review. The Cost and T&E WIPTs conducted kickoff meetings in November 2003.

An Overarching Integrated Product Team (OIPT) was conducted on February 9, 2004, in anticipation of the February 18, 2004 DAB Review. A paper DAB Review took place on February 18, 2004 to approve the Phase IV DD(X) Acquisition Strategy. The DD(X) Acquisition Strategy Report (ASR) was signed on February 24, 2004.

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 --

	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
Milestone B	JUL 2003	MAR 2005	MAR 2005
Lead Ship Award	OCT 2003	MAR 2005	MAR 2005
First Ship Delivery	AUG 2007	JUL 2011	JUL 2011
Operational Evaluation (OPEVAL)	N/A	JUL 2012	JUL 2012
Initial Operational Capability	AUG 2008	JAN 2013	JAN 2013
Milestone C	AUG 2011	MAR 2014	MAR 2014

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Land Attack:				
A minimum of two separate gun systems with a total of 155 mm artillery battery equivalency (Six MK 198 Towed Howitzers)			TBD	
NSFS Gun range (nm)			TBD	
Gun system accuracy (m CEP)			TBD	
Ship C4ISR architecture accommodates Joint Interoperability for the following types of information and data:				
Strategic (National sensor downlink of equivalents)			TBD	
Theater (UAV and JSTARS Direct Down Link or equivalents)			TBD	
Force Coordination (BGIXS or equivalent)			TBD	

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

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1 Force Control (JTIDS and AFATIDS or equivalents)	(b)(1)	(b)(1)	TBD	(b)(1)
7 Weapons Control (CEC or equivalent)			TBD	
11 Signature Reduction: Radar Cross Section (dBsm median)			TBD	
0-360 degrees azimuth				
0-10 degrees elevation				
2-4 and 8-18Ghz RCS smoothly distributed over length of ship				
Minimize wake contribution				
11 Infrared Contrast Radiance for non-stack areas (sr=steradians) ( $\mu W/cm^2/sr$ )			TBD	
{3-5 $\mu m$ band}/ {8-12 $\mu m$ band}				
0-10 degrees elevation. Minimize wake contribution				
2 Contrast Radiant Intensity for stack and plume (W/sr) {3-5 $\mu m$ band}/ {8-12 $\mu m$ band}	(b)(1)	(b)(1)	TBD	(b)(1)
0-10 degrees elevation				
11 Magnetic (nanoTeslas)			TBD	
11 Acoustic =< 15kts			TBD	
11 Sustained speed (kts)			TBD	
2 Endurance (nm radius at 20 kts)	256	256 / 128	TBD	256
Vertical launch cell capacity (#)				
Magazine capacity per tube system				
	750	750 / 600	TBD	750

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

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Manning: Number of ship's company personnel (helo det included)	95	95 / 150	TBD	95
Logistics and Readiness:				
Operational	0.95	0.95 / 0.90	TBD	.95
Availability (Ao) for mission critical systems				

(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.

b. Current Change Explanations -- None

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

a. (U) Cost --	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1754.0	9313.5	9073.4
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	0.0	N/A	0.0
Total FY 1996 Base-Year \$	1754.0	9313.5	9073.4
Escalation	335.0	1496.2	1240.3
Development (RDT&E)	(335.0)	(1496.2)	(1240.3)
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 \$	2089.0	10809.7	10313.7
b. (U) Quantity --			
Development (RDT&E)	0	0	1
Procurement	N/A	N/A	0
Total	0	0	1

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

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

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2089.0	-	-	2089.0
Previous Changes:				
Economic	-305.9	-	-	-305.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+5471.3	-	-	+5471.3
Estimating	+3124.6	-	-	+3124.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8290.0	-	-	+8290.0
Current Changes:				
Economic	-6.9	-	-	-6.9
Quantity	+2549.0	-	-	+2549.0
Schedule	-	-	-	-
Engineering	-2549.0	-	-	-2549.0
Estimating	-58.4	-	-	-58.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-65.3	-	-	-65.3
Total Changes	+8224.7	-	-	+8224.7
Current Estimate	10313.7	-	-	10313.7

(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	+2649.4	-	-	+2649.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7370.3	-	-	+7370.3
Current Changes:				
Quantity	+2119.6	-	-	+2119.6
Schedule	-	-	-	-
Engineering	-2119.6	-	-	-2119.6
Estimating	-50.9	-	-	-50.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-50.9	-	-	-50.9
Total Changes	+7319.4	-	-	+7319.4
Current Estimate	9073.4	-	-	9073.4

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

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-8.4
Economic adjustment for negative program change. (Economic)	N/A	+1.5
Miscellaneous Program Adjustments (SBIR, BTR, and various adjustments) (Estimating)	-50.9	-58.4
Correction of prior SAR to re-categorize addition of first ship funding from Engineering to Quantity.		
(Engineering)	-2119.6	-2549.0
(Quantity)	+2119.6	+2549.0
RDT&E Subtotal	-50.9	-65.3

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	10313.7
Total Quantity	0	N/A	N/A	1
Prog Acq Unit Cost	0.0	N/A	N/A	10313.7

(U) Program Acq Unit Cost is calculated based on one DD(X) ship funded with RDT&E divided by total DD(X) funds.

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

a. RDT&E --	Initial Contract Price		
(U) DD(X) Phase III Dev:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Ship Sys, Pascagoula MS	\$2879.3	N/A	0
N0002402C2302, CPAF			
Award: April 29, 2002			
Definitized: April 29, 2002			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2855.8	N/A	0	\$2855.8	\$2855.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/25/03)	\$-2.2	\$1.4
Net Change	\$-2.2	\$1.4

Explanation of Change:

(U) This is the initial submission of CPR data in the SAR.

(U) Contract Comments:

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. Subsequently specific computer aided design milestones were added back to the Phase III contract. 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 Volume Search Radar (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.

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DD(X) Destroyer, December 31, 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 (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	2497.2	1059.1	1450.6	5306.8	10313.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2497.2	1059.1	1450.6	5306.8	10313.7

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				496.5	532.5
2002				453.1	490.4
2003				817.9	895.4
2004				954.7	1059.1
2005				1289.3	1450.6
2006				1517.1	1734.5
2007				1149.2	1337.7
2008				774.4	918.9
2009				501.8	614.1
2010				284.3	351.0
2011				198.5	250.0
2012				77.9	100.0
Subtotal	1			9073.4	10313.7

	<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	1			9073.4	10313.7

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2125

(U) Percent Total Program Expended: 20.6%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone B programs.

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DoD-3 JSF

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

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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:

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

PE 0204146N

PE 0207142F

In addition to the above DoD funding lines, eight other countries are partners with the US and providing funding in the System Development and Demonstration (SDD) Phase: United Kingdom (Level I); Italy and the Netherlands (Level II); and Turkey, Canada, Australia, Denmark, and Norway (Level III). All but Turkey and Australia were also partners in the prior phase. Associated financial contributions are reflected in Section 16. JSF is DoD's largest cooperative development program.

**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 March 17, 2004.

**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:**

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 (FY) 1995 legislation merged the Defense Advanced 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

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

Netherlands, Canada, and Italy also became partners in the Concept Demonstration Phase (CDP), 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, 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. The UK became a cooperative partner for SDD in 2001.

A Milestone B Defense Acquisition Board (DAB) review was held on October 24, 2001. On October 25, 2001 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 26 October 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. In 2002 the other CDP partners joined the SDD cooperative partnership, as did Turkey and Australia.

Significant technical milestones completed in the past year (year 2 of SDD) include the following: Air System Preliminary Design Review; Propulsion Critical Design Reviews (CDRs) for Pratt and Whitney and General Electric; and Pratt and Whitney's First Engine to Test. Propulsion, vehicle systems, mission systems and integrated testing development are on schedule and performing well. Additional time is needed to mature the airframe design to address projected performance issues that emerged during the past year. Consequently, the FY 2005 President's Budget request reflects extension of the SDD schedule, additional SDD funding, and a one-year delay (to FY 2007) for the start of Low Rate Initial Production (LRIP). The Department is finalizing the details of a program replan to include upfront focus on ensuring STOVL viability for the warfighters, aggressive pursuit of trade studies to improve performance by reducing weight, aggressive pursuit of propulsion enhancements to improve performance, and recognition that FY 2007 is the optimum time to begin JSF LRIP. The objective is to ensure all variants can comply with the performance requirements to the greatest extent possible. Additionally, the Department has chartered an independent review team to assess the program's overall status and risks and make recommendations.

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

The schedule delay and associated cost increases contributed to a Nunn-McCurdy Unit Cost breach to the prior Acquisition Program Baseline (APB). Pursuant to Section 2433, Title 10, United States Code, the Secretary of the Navy notification to Congress is in process. Details of the major cost growth drivers are provided in Section 12. The Under Secretary of Defense for Acquisition, Technology and Logistics [USD (AT&L)] approved a revised APB on March 17, 2004.

Israel became a Security Cooperative Partner in 2003 for case specific scope outside the cooperative partnership. A similar agreement with Singapore is in progress.

**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	Yes
Average Procurement Unit Cost	Yes

c. Explanation of Breach:

The F-35 JSF Program breached the Program Acquisition Unit Cost (PAUC) by 19.4% and Average Procurement Unit Cost (APUC) by 18.7%. The JSF PAUC and APUC increases were primarily due to: a revised estimate for completion of the General Electric (GE) F136 engine development, including additional components and tests to enhance interchangeability with the Pratt and Whitney F135 engine; SDD schedule extension for additional design maturation and known and unknown risks (including anti-tamper); procurement labor and overhead rate increases; procurement configuration update and refined support requirement definitions; a one-year production delay, revised LRIP buy profile, and associated increases due to changes in learning curve assumptions, labor rates, and supplier confidence cost assumptions; and the result of delaying the multi-year procurement from FY 2012 to 2014. Pursuant to Section 2433, Title 10, United States Code, the Secretary of the Navy notification to Congress is in process. Additional information regarding the increased cost is contained in Section 12

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**8c. Threshold Breaches (Cont'd):**

of this report. The Under Secretary of Defense for Acquisition, Technology and Logistics (USD AT&L) approved a revised APB on March 17, 2004.

**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	OCT 2005	OCT 2005 (Ch-1)
CDR (STOVL&Common)	OCT 2004	MAY 2006	MAY 2006 (Ch-1)
CDR (CV&Common)	JUL 2005	JAN 2007	JAN 2007 (Ch-1)
DAE (IPR 1)	APR 2005	JAN 2006	JAN 2006 (Ch-1)
1st Flt CTOL	NOV 2005	JUL 2006	JUL 2006 (Ch-1)
1st Flt STOVL	APR 2006	MAY 2007	MAY 2007 (Ch-1)
1st Flt CV	JAN 2007	AUG 2008	AUG 2008 (Ch-1)
DAE (IPR 2)	APR 2006	JAN 2007	JAN 2007 (Ch-1)
1st Operational Aircraft Delivered	JUN 2008	JUN 2009	JUN 2009 (Ch-1)
USMC IOC	APR 2010	MAR 2012	MAR 2012 (Ch-1)
USAF IOC	JUN 2011	MAR 2013	MAR 2013 (Ch-1)
Completed IOT&E	MAR 2012	OCT 2013	OCT 2013 (Ch-1)
USN IOC	APR 2012	MAR 2013	MAR 2013 (Ch-1)
DAB Milestone C	APR 2012	OCT 2013	OCT 2013 (Ch-1)

**Acronym and Abbreviation List:**

CTOL - Conventional Takeoff and Landing  
 STOVL - Short Takeoff and Vertical Landing  
 CV - Aircraft Carrier  
 DAE - Defense Acquisition Executive  
 EMD - Engineering, Manufacturing and Development  
 IOT&E - Initial Operational Testing and Evaluation  
 IPR - Interim Progress Review  
 USMC - United States Marine Corps  
 USN - United States Navy  
 USAF - United States Air Force

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1): Reflects extension of SDD schedule to allow additional airframe design maturation to improve projected performance, delayed start of Low Rate Initial Production, and IOC impact of revised annual procurement quantity profiles.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
STOVL Mission Performance	Execute 550 ft. STO with 2 JDAM (inter- nal), 2 AIM-120 (inter- nal), fuel to fly 450nm	Execute / Execute 550 ft. / 550 ft. STO with/ STO with 2 JDAM / 4 JDAM (inter- / (2 ext- nal), 2 / ernal & AIM-120 / 2 inter- (inter- / nal), 2 fuel / AIM-120 to fly / (inter- 450nm / nal), / fuel / to fly / 550nm /	TBD	Execute (Ch-1) 550 ft. STO with 2 JDAM (inter- nal), 2 AIM-120 (inter- nal), fuel to fly 450nm	
Combat Radius NM - CTOL Variant	590	590 / 690	TBD	639	(Ch-2)
Combat Radius NM - STOVL Variant	450	450 / 550	TBD	452	(Ch-3)
Combat Radius NM - CV Variant	600	600 / 730	TBD	759	(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 &	Suffic- / Suffic- ient bay/ ient bay volume / volume to load,/ to load, carry & / carry &	TBD	Suffi- cient bay volume to load,	

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10a. Performance Characteristics (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
	employ	employ / employ		carry &
	object-	object- / thresh-		employ
	ive	ive / old		objec-
	Annex A	Annex A / Annex A		tive
	weapons	weapons / weapons		Annex A
Internal Weapons	Suffic-	Suffic- / Suffic-	TBD	weapons
Carriage - CV	ient bay	ient bay/		Suffi-
Variant	volume	volume / volume		cient
	to load,	to load,/ to load,		bay
	carry &	carry & / carry &		volume
	employ	employ / employ		to load,
	object-	object- / thresh-		carry &
	ive	ive / old		employ
	Annex A	Annex A / Annex A		objec-
	weapons	weapons / weapons		tive
				Annex A
				weapons
Radio Frequency (RF)	See	See / See	TBD	Classi-
Signature	Classi-	Classi- / Classi-		fied
	fied	fied / fied		
	Extract	Extract / Extract		
Logistic Footprint -	Less	Less / Less	TBD	Less (Ch-5)
CTOL Variant	than or	than or / than or		than or
	equal to	equal to/ equal to		equal to
	8 C-17	8 C-17 / 6 C-17		6.4 C-17
	equiva-	equiva- / equiva-		equiva-
	lent	lent / lent		lent
	loads	loads / loads		loads
		/		
Logistic Footprint -	Less	Less / Less	TBD	Less (Ch-6)
CV Variant	than or	than or / than or		than or
	equal to	equal to/ equal to		equal to
	46,000	46,000 / 34,000		15,413
	cu ft,	cu ft, / cu ft,		cu ft,
	243	243 / 183		131
	Short	Short / Short		Short
	Tons	Tons / Tons		Tons
Logistic Footprint -	Less	Less / Less	TBD	Less (Ch-7)
STOVL Variant	than or	than or / than or		than
	equal to	equal to/ equal to		or
	8 C-17	8 C-17 / 4 C-17		equal to
	equiva-	equiva- / equiva-		4.6 C-17
	lent	lent / lent		equi-
	loads	loads / loads		valent
				loads cu
				ft, 131
				Short

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate Tons
Sortie Generation	3/day	3/day / 4/day	TBD	3.7/day
Rate - CTOL	initial	initial / initial		initial
Variant	surge;	surge; / surge;		surge;
	2/day	2/day / 3/day		2/day
	sus-	sus- / sus-		sus-
	tained	tained / tained		tained
	surge;	surge; / surge;		surge;
	1/day	1/day / 2/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	3/day	3/day / 4/day	TBD	4.3/day (Ch-8)
Rate - CV Variant	initial	initial / initial		initial
	surge;	surge; / surge;		surge;
	2/day	2/day / 3/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	4/day	4/day / 6/day	TBD	6.4/day (Ch-9)
Rate - STOVL	initial	initial / initial		initial
Variant	surge;	surge; / surge;		surge;
	3/day	3/day / 4/day		3/day
	sus-	sus- / sus-		sus-
	tained	tained / tained		tained
	surge;	surge; / surge;		surge;
	1/day	1/day / 2/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

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10a. Performance Characteristics (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u> <u>/ IERs</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u> <u>IERs</u>
Mission Reliability	95% for CV & STOVL & 93% for CTOL at ASD's listed in Table 13.	95% for / 98% for CV & / all STOVL & / variants 93% for / at ASD's CTOL at / listed ASD's / in listed / Table 13 in Table/ 13. /	TBD	98.6% (Ch-10) for CV, 99.0% for STOVL & 98.5% CTOL at ASDs listed in Table
CV Recovery Performance, Approach Speed	Max approach speed (Vpa)at Required Carrier Landing Weight (RCLW) of less than 145 kts w/ 15 kts WOD at RCLW	Max / Max approach/ approach speed / speed (Vpa)at / (Vpa)at Required/ Required Carrier / Carrier Landing / Landing Weight / Weight (RCLW) / (RCLW) of less / of less than 145/ than 140 kts w/ / kts 15 kts / WOD at / RCLW /	TBD	Max (Ch-11) approach speed (Vpa) at Required Carrier Landing Weight (RCLW) of less than 144.3 kts w/ 15 kts WOD at RCLW

Acronym and Abbreviation List:

ASD - Average Sortie Duration  
CTOL - Conventional Takeoff and Landing  
STOVL - Short Takeoff and Vertical Landing  
CV - Aircraft Carrier  
IER - Information Exchange Requirement  
JDAM - Joint Direct Attack Munitions  
NM - Nautical Miles  
RCLW - Required Carrier Landing Weight  
TBD - To be determined  
Vpa - Maximum Approach Speed  
WOD - Wind Over the Deck

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

The Current Estimate reflects the government assessment based on Lockheed Martin's planned 240-2.2 configuration and December 2003 Bottom-Up Weight #4 projections for Initial Operational Capability (IOC). IOC weight projections include anticipated weight savings, identified potential weight increases, and a 3% growth factor based on legacy aircraft experience. The weight projections were reviewed and risk-weighted by a team of subject matter experts. As of 5 February 2004, projected weights exceed IOC targets (in pounds) as follows: CTOL +1479, STOVL +2350, and CV +1372.

Recognizing the currently projected STOVL weight overage of 2350 pounds, the Current Estimate for STOVL Mission Performance (i.e., execute 550' Short Take-off with stated weapons and fuel load) reflects a realization of improved performance through the following: (1) maximize weight reduction from design improvements (2) optimize installed thrust efficiencies; (3) minimize realization of known weight growth threats (4) minimize weight growth from Critical Design Review to IOC (i.e., lower than historical average); and (5) optimize Concept of Operations and techniques.

Some non-KPP threshold requirements will not be met for all variants. Program acquisition leadership will continue to work with the Service warfighters and the prime contractor to optimize the performance of the JSF aircraft and gain margin in critical areas.

**b. Current Change Explanations --**

The Current Estimate changed from the December 2002 SAR as follows due to design maturation:

(Ch-1) STOVL mission performance changed from 550 ft STO with stated internal weapons and fuel to fly 472nm to 550 ft STO with stated internal weapons and fuel to fly 450 nm

(Ch-2) Combat Radius NM- CTOL Variant changed from 679 to 639

(Ch-3) Combat Radius NM- STOVL Variant changed from 472 to 452

(Ch-4) Combat Radius NM- CV Variant changed from 771 to 759

(Ch-5) Logistic Footprint CTOL Variant changed from less than or equal to 5.6 C-17 equivalent loads to 6.4 C-17 equivalent loads

(Ch-6) Logistic Footprint CV Variant changed from less than or equal to 18,473 cu ft, 131 short tons to 15,413 cu ft, 131 short tons

(Ch-7) Logistic Footprint STOVL Variant changed from less than or equal to 3.4 C-17 equivalent loads to 4.6 C-17 equivalent loads cu ft, 131 short tons

(Ch-8) Sortie Generation Rate- CV Variant changed from 4.4/day to 4.3/day initial surge

(Ch-9) Sortie Generation Rate- STOVL Variant changed from 7.2/day to 6.4/day

(Ch-10) Mission Reliability changed from 98.4% for CV to 98.6%, 99.1% for STOVL to 99.0%, 98.3% for CTOL to 98.5%

(Ch-11) CV Recovery Performance, Approach Speed changed from Max Approach speed (Vpa) at required Carrier Landing Weight (RCLW) of less than 139 kts to 144.3 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	42100.0	42032.8
Procurement	143300.0	149500.0	149403.6
Recurring Flyaway	(116093.6)		(117887.5)
Non-Recurring Flyaway	(5121.9)		(6696.0)
Total Flyaway	(121215.5)		(124583.5)
Other Wpn Sys Costs	(6935.5)		(5492.4)
Peculiar Support	(8468.0)		(7524.0)
Initial Spares	(6681.0)		(11803.7)
Construction (MILCON)	1500.0	1500.0	196.5
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	177100.0	193100.0	191632.9
Escalation	55900.0	53600.0	53201.4
Development (RDT&E)	(2100.0)	(2700.0)	(2745.5)
Procurement	(53300.0)	(50400.0)	(50431.6)
Construction (MILCON)	(500.0)	(500.0)	(24.3)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	233000.0	246700.0	244834.3

Future cost updates will reflect Department leadership decisions on program replan refinements.

Since the Services have not yet fully established JSF basing plans, the Milestone B and approved APB MILCON estimates reflect a top-level parametric estimate, not discrete estimates for specific sites. The Current Estimate reflects specific MILCON requirements identified in the FY 2005 President's Budget Future Years Defense Program (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	2443	2443
Total	2866	2457	2457

Procurement Quantities:

1763- Air Force (Conventional Takeoff and Landing (CTOL) variant)  
 680- Department of Navy (Aircraft Carrier (CV) and Short Takeoff and Vertical Landing (STOVL) variants)  
 2443- Total DoD

The October 2001 Milestone B procurement baseline for the Department of Navy (DoN) reflected 609 STOVL variants for United States Marine Corps (USMC) and 480 CV variants for United States Navy (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. The annual and total quantity mix (and definitive related procurement estimates), of STOVL and

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

CV variants in FY 2007 and beyond remain to be determined pending further assessment by the Services. Procurement estimates will continue to be refined in future budget cycles.

JSF procurement cost reflects DoD cost only, but assumes the benefits of 150 UK aircraft anticipated but not formalized in a Memorandum of Understanding (MOU) for procurement.

The Low-Rate Initial Production (LRIP) aircraft quantity of 465 approved at Milestone B exceeded 10% of planned total production. This was necessary to meet Service Initial Operational Capability (IOC) requirements, prevent a break in production, and to ramp up to full rate production. The Defense Acquisition Executive (DAE) reaffirmed the LRIP quantity in the Milestone B Acquisition Decision Memorandum dated October 26, 2001. The LRIP quantity will be revised based on Department decisions on program replan options currently under review.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (OCT 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	177100.0	191632.9	
(2) Quantity	2866	2457	
(3) Unit Cost	61.793	77.995	+26.22
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	143300.0	149403.6	
(2) Quantity	2852	2443	
(3) Unit Cost	50.245	61.156	+21.72

	UCR Baseline (OCT 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
c. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	233000.0	244834.3	
(2) Unit Cost	81.298	99.648	+22.57
d. Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	196600.0	199835.2	
(2) Unit Cost	68.934	81.799	+18.66

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**12e. Unit Cost Summary (Cont'd):**

e. Changes from Previous SAR (DEC 2002)	Dollars/Qty	Percent
(1) PAUC (BY\$)	12.250	+18.63
(2) APUC (BY\$)	9.600	+18.62
(3) PAUC Quantity	0	0.00
(4) PAUC (TY\$)	18.350	+22.57
(5) APUC (TYS)	15.410	+23.21

f. Initial SAR Information

Initial SAR Date (DEC 2001):

(1) Program Acquisition Cost (BY\$)	177530.6
(2) Program Acquisition Cost (TYS)	226458.3

Pursuant to Section 2432, Title 10, United States Code (USC), procurement costs were not reported in the initial December 1996 Selected Acquisition Report (SAR), because the program was pre-Milestone B. The unit costs were first reported in the December 2001 SAR following Milestone B approval in October 2001.

g. Unit Cost PAUC Changes --

The increase to the PAUC reported above includes programmatic increases. The percent changes in the PAUC reported above includes the following programmatic increases:

- Reduction of Department of Navy total CV/STOVL planned procurement quantity from 1089 aircraft to 680 aircraft in accordance with the TACAIR Integration Plan;
- Added RDT&E scope for design, development, verification, and test of the JSF partner configuration in accordance with SDD cooperative agreements signed after Milestone B and after award of the SDD contracts;
- Added procurement scope due to the Services' decision to procure the Electro-Optical Tracking System (EOTS) for each JSF aircraft instead one-third of production aircraft as planned at Milestone B.

The Nunn McCurdy determination of 19.4% is based on the following increases:

- Revised RDT&E estimate for completion of General Electric (GE) F136 engine development including additional components and test to enhance interchangeability with the Pratt and Whitney F135 engine;
- SDD schedule extension for additional design maturation and known and unknown risks (including anti-tamper);
- Procurement labor and overhead rate increases;
- Procurement configuration update and refined support requirements definitions;
- 1 year production delay, revised LRIP buy profile, and associated increases due to learning curves, rate, and supplier confidence cost factors;
- Multi-Year Procurement (MYP) delayed from FY 2012 to FY 2014.

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

Unit Cost APUC Changes --

The Nunn McCurdy breach determination of 18.7% is based on the following increases:

- Procurement labor and overhead rate increases;
- Procurement configuration update and refined support requirement definitions;
- 1 year production delay, revised LRIP buy profile, and associated increases due to learning curves, rate, and supplier confidence cost factors;
- Multi-Year Procurement (MYP) delayed from FY 2012 to FY 2014.

**h. Impact of Perf or Sched Changes --**

- Delay of SDD first flights
- Delay of Low Rate Initial Production start by one year
- Delay of IOCs
- Revised procurement profiles
- Revised schedule milestones are included in the new APB and reflected in Section 9.

**i. Program Management & Control --**

Program Manager - Major General John Hudson  
Deputy Program Manager - Rear Admiral Steven Enewold

**j. Cost Control Actions --**

For the FY 2005 President's Budget, JSF procurement funding was realigned to offset RDT&E shortfalls. The Department is finalizing the details of a program replan, and has chartered an independent review team to assess the program's overall status/risks and to make recommendations. A Defense Acquisition Board (DAB) review is planned for late Spring 2004. Subsequent to that review, the Lockheed Martin SDD contract will be modified to reflect the replan schedule and the associated Performance Measurement Baseline. The replan includes aggressive pursuit of trade studies to improve air system performance, and cost will be a factor in the trades. A revised APB was approved by the Under Secretary of Defense, Acquisition Technology and Logistics (USD AT&L) on March 17, 2004 with updated cost objectives and thresholds.

**k. Contract Information (In Millions of Then-Year Dollars) --**

- (1) Contractor(s): General Electric
- (2) Contract Title: GE F136 Phase IIIb
- (3) Contract Number: N00019-96-C-0176
- (4) Actual Cost of Work Performed (ACWP) to date: 234.5
- (5) Percent contract completed (BCWP/target cost): 58.40

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

(6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$6.2/	+6.50	\$-3.9/	-3.60
Current Values	\$1.4/	+0.50	\$-5.5/	-2.40
Change from the Baseline Report	\$1.4/	+0.50	\$-5.5/	-2.40
Change from the Previous SAR	\$-4.8/	-6.00	\$-1.6/	+1.20

Explanation of Variances --

The change in the positive cost variance is primarily due to additional design costs for the fan, tooling costs in transmissions and additional design work in Bearings and Mechanical systems.

The change in the negative schedule variance is due to high value hardware items being slightly behind schedule, telemetry unit delays in manufacturing and a slow start to the instrumentation rework program in the Fan IPT. The items that are behind schedule are not on the critical path and therefore do no impact the First Engine Test milestone.

Impact of Variances on Contract --

None

Impact of Variances on Unit Costs --

None

- (1) Contractor(s): Pratt and Whitney
- (2) Contract Title: Propulsion JSF F135 SDD
- (3) Contract Number: N00019-02-C-3003
- (4) Actual Cost of Work Performed (ACWP) to date: 1372.1
- (5) Percent contract completed (BCWP/target cost): 33.90
- (6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$13.0/	+2.50	\$-9.0/	-1.70
Current Values	\$-7.1/	-0.60	\$-2.3/	-0.20
Change from the Baseline Report	\$-7.1/	-0.60	\$-2.3/	-0.20
Change from the Previous SAR	\$-20.1/	-3.10	\$6.7/	+1.50

Explanation of Variances --

The change in cost variance has deteriorated slightly due to rig testing and Engine Assembly difficulties associated with late hardware and instrumentation

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

complexity.

The change in schedule variance improved with early delivery of the First Engine To Test (FETT).

Impact of Variances on Contract --  
None

Impact of Variances on Unit Costs --  
None

- (1) Contractor(s): Lockheed Martin
- (2) Contract Title: JSF Air System SDD
- (3) Contract Number: N00019-02-C-3002
- (4) Actual Cost of Work Performed (ACWP) to date: 3149.5
- (5) Percent contract completed (BCWP/target cost): 19.60
- (6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$25.5/	+2.30	\$-40.7/	-3.60
Current Values	\$-68.3/	-2.20	\$-227.0/	-6.90
Change from the Baseline Report	\$-68.3/	-2.20	\$-227.0/	-6.90
Change from the Previous SAR	\$-93.8/	-4.50	\$-186.3/	-3.30

**Explanation of Variances --**

The cost variance is primarily due to Airframe efforts associated with the completed Blue Ribbon Action Team (BRAT) and Bottoms-up-weight (BUW)#1-4 activities. These efforts generated cost with no associated performance. Cost performance will continue to degrade as attempts to recover schedule are initiated.

The schedule variance is primarily due to delays in Airframe Build-to-Package (BTP) Design Maturation tasks and Tooling. Tooling continues behind schedule in the Center Fuselage, resulting in a delay in completion. Program replan alternatives are under review as discussed in previous sections of the report.

**Impact of Variances on Contract --**

Subsequent to a future Defense Acquisition Board review, the Lockheed Martin contract will be modified to reflect the replan schedule and the associated Performance Measurement Baseline.

**Impact of Variances on Unit Costs --**

The revised APB reflects updated unit costs. The FY 2005 Presidents Budget

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

submission includes sufficient funds to support required contract funding.

1. General Comments -- None.

**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	-334.3	-7618.3	-	-7952.6
Quantity	-	-25434.9	-	-25434.9
Schedule	+39.2	+2623.7	-	+2662.9
Engineering	+2427.8	-	+252.8	+2680.6
Estimating	+754.8	-300.9	-	+453.9
Other	-	-	-	-
Support	-	-3673.5	-	-3673.5
Subtotal	+2887.5	-34403.9	+252.8	-31263.6
Current Changes:				
Economic	-4.6	+2456.3	+2.3	+2454.0
Quantity	-	-	-	-
Schedule	+7495.4	+5540.4	-	+13035.8
Engineering	-	+2553.1	-	+2553.1
Estimating	+0.0	+19278.2	-34.3	+19243.9
Other	-	-	-	-
Support	-	+7811.1	-	+7811.1
Subtotal	+7490.8	+37639.1	-32.0	+45097.9
Total Changes	+10378.3	+3235.2	+220.8	+13834.3
Adjustments	-	-	-2000.0	-2000.0
Current Estimate	44778.3	199835.2	220.8	244834.3

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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	-	-16249.1	-	-16249.1
Schedule	-	-	-	-
Engineering	+2231.0	-	+227.3	+2458.3
Estimating	+837.1	+1492.7	-	+2329.8
Other	-	-	-	-
Support	-	-2595.1	-	-2595.1
Subtotal	+3068.1	-17351.5	+227.3	-14056.1
Current Changes:				
Quantity	-	-	-	-
Schedule	+6664.2	+1359.5	-	+8023.7
Engineering	-	+1911.8	-	+1911.8
Estimating	+0.5	+14853.4	-30.8	+14823.1
Other	-	-	-	-
Support	-	+5330.4	-	+5330.4
Subtotal	+6664.7	+23455.1	-30.8	+30089.0
Total Changes	+9732.8	+6103.6	+196.5	+16032.9
Adjustments	-	-	-1500.0	-1500.0
Current Estimate	42032.8	149403.6	196.5	191632.9

The JSF Program is built around developing and fielding a family of highly common aircraft variants. Therefore, a reduction in quantity or change in schedule of any variant impacts the unit costs of all variants. The quantity and schedule variances above, and the resultant changes in support costs, are the direct result of delay in procurement start from FY 2006 to FY 2007 and revised annual procurement profiles.

**b. Current Change Explanations --**

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-4.7
Economic adjustment for negative program change. (Economic)	N/A	+0.1
SDD schedule extension for additional design maturation and known and unknown risks (including anti-tamper) (Schedule)	+6664.2	+7495.4
Adjustment for Current and Prior Inflation. (Estimating)	+2.7	+2.7
Model Refinements to the cost estimating refinements (Estimating)	-2.2	-2.7
RDT&E Subtotal	+6664.7	+7490.8

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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>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+2456.3
Delay in procurement start from FY 2006 to FY 2007 and revised annual quantity profiles (Schedule)	+1359.5	+5540.4
Increased quantity procurement of Electro Optical Tracking System(EOTS) (Engineering)	+831.0	+1083.8
Multi-Year Procurement delayed from 2012 to 2014 due to production start delay and revised annual procurement profiles (Estimating)	+739.4	+904.7
Design maturation to reflect government assessment based on Lockheed Martin 240-2.2 configuration and December 2003 Bottom-Up Weight #4 (Engineering)	+1080.8	+1469.3
Revised Contractor Direct Labor and Overhead Rates (Estimating)	+10525.5	+13669.2
Learning curve impact of revised SDD and production schedules on prime contractors and subs and vendors (Estimating)	+3358.0	+4374.0
Increase in standard hardware and general equipment costs. (Estimating)	+230.5	+330.3
Increase due to aircraft configuration update, methodology changes, and refined definitions of support requirements (Support)	+5330.4	+7811.1
Procurement Subtotal	+23455.1	+37639.1
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	+3.3
Economic adjustment for negative program change. (Economic)	N/A	-1.0
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
Refinements to USAF planning for initial operational sites (Estimating)	-30.6	-34.1
MILCON Subtotal	-30.8	-32.0

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
81.30	-2.24	+2.37	+6.39	+2.13	+8.02	--	+1.68	+18.35	99.65

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	-2.11	+1.13	+3.34	+1.05	+7.77	--	+1.69	+12.87	81.80

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	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	OCT 2013
IOC	TBD	APR 2010	N/A	MAR 2012
Total Cost	24800.0	233000.0	N/A	244834.3
Total Quantity	0	2866	0	2457
Prog Acq Unit Cost	0.0	81.3	N/A	99.7

**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  
Target Ceiling Qty  
\$454.4 N/A 0

Estimated Price At Completion  
Contractor Program Manager  
\$453.4 \$453.4

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$6.2	\$-3.9
Cumulative Variances To Date (12/31/03)	<u>\$1.4</u>	<u>\$-5.5</u>
Net Change	\$-4.8	\$-1.6

Explanation of Change:

The net change in the positive cost variance is primarily due to additional design costs for the fan, tooling costs in transmissions and additional design work in Bearings and Mechanical systems.

The net change in the negative schedule variance is due to high value hardware items being slightly behind schedule, telemetry unit delays in manufacturing and a slow start to the instrumentation rework program in the Fan IPT. The items that are behind schedule are not on the critical path and therefore do no impact the First Engine Test milestone.

Contract Comments:

The F136 contract price increased from \$425M to \$454M due to additional scope to the contract supporting augmentor and controls risk reduction efforts.

<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	\$4827.8	N/A	33		
N00019-02-C-3003, 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>
\$4827.8	N/A	33	\$4827.8	\$4827.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$13.0	\$-9.0
Cumulative Variances To Date (12/31/03)	<u>\$-7.1</u>	<u>\$-2.3</u>
Net Change	\$-20.1	\$6.7

Explanation of Change:

The net unfavorable change in cost variance has deteriorated slightly due to rig testing and Engine Assembly difficulties associated with late hardware and instrumentation complexity.

The net favorable change in schedule variance improved with early delivery of the First Engine To Test (FETT).

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15. Contract Information (Cont'd):

JSF Air System SDD:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Lockheed Martin, Fort Worth, TX				
N00019-02-C-3002, CPAF	\$18981.9	N/A	14	
Award: October 26, 2001				
Definitized: October 26, 2001				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$19673.4	N/A	14	\$19673.4	\$23673.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$25.5	\$-40.7
Cumulative Variances To Date (12/31/03)	\$-68.3	\$-227.0
Net Change	\$-93.8	\$-186.3

Explanation of Change:

The net unfavorable change in cost variance is primarily due to Airframe efforts associated with the completed Blue Ribbon Action Team (BRAT) and Bottoms-up-weight (BUW)#1-4 activities. These efforts generated cost with no associated performance. Cost performance will continue to degrade as attempts to recover schedule are initiated.

The net unfavorable change in schedule variance is primarily due to delays in Airframe Build-to-Package (BTP) Design Maturation tasks and Tooling. Tooling continues behind schedule in the Center Fuselage, resulting in a delay in completion. Program replan alternatives are under review as discussed in previous sections of the report.

Contract Comments:

"Current Contract Price" increase from the "Initial Contract Price" reflects several contract modifications. The recently awarded modification for development of a partner version accounts for 87% of the increase.

"Program Manager's Estimate at Completion" reflects SDD schedule extension and known risks. Estimate will be refined based on Department leadership decisions on program replan options currently under review.

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

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

<u>Appropriation</u>	<u>Prior Years (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-27)</u>	<u>Total</u>
RDT&E	9679.5	4773.5	5328.2	24997.1	44778.3
Procurement	-	-	-	199835.2	199835.2
MILCON	-	44.5	10.9	165.4	220.8
O&M	-	-	-	-	-
Total	9679.5	4818.0	5339.1	224997.7	244834.3

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				71.8	68.2
1998				21.8	20.9
Subtotal				124.4	118.0

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				32.6	29.5
1995				106.6	98.3
1996				85.7	80.4
1997				256.3	243.3
1998				468.1	448.2
1999				486.4	471.3
2000				242.4	238.4
2001				342.2	341.2
2002				718.2	722.9
2003				1631.4	1661.5
2004				2091.8	2159.2
2005				2163.0	2264.5
2006				2343.8	2493.8
2007				2106.3	2281.8
2008				1888.8	2086.4
2009				1433.8	1615.6
2010				1109.7	1275.6
2011				676.0	792.8

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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				346.1	414.1
2013				197.4	240.9
Subtotal	7			18726.6	19959.7

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				90.9	83.8
1996				86.7	81.3
1997				265.0	251.6
1998				464.0	444.3
1999				470.7	456.1
2000				253.3	249.1
2001				342.2	341.2
2002				715.4	720.1
2003				1583.6	1612.8
2004				2027.2	2092.5
2005				2203.9	2307.4
2006				2340.1	2489.8
2007				2033.9	2203.4
2008				1857.6	2051.9
2009				1496.9	1686.7
2010				1144.5	1315.6
2011				710.2	832.8
2012				379.5	454.0
2013				198.4	242.1
Subtotal	7			18664.0	19916.5

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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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				74.8	71.0
1998				80.6	77.2
1999				56.4	54.7
2000				35.1	34.5
2001				2.5	2.5
2002				304.4	306.4
2003				418.2	425.9
2004				505.5	521.8
2005				722.4	756.3
2006				755.1	803.4
2007				651.7	706.0
2008				439.3	485.2
2009				151.2	170.4
2010				162.0	186.2
2011				141.3	165.7
2012				2.4	2.9
Subtotal				4517.8	4784.1

"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					
2006				57.2	61.6
2007	2	40.6	299.9	647.9	711.3
2008	16	184.7	1892.3	2559.6	2865.8
2009	40	178.5	3575.8	4495.6	5134.1
2010	31	184.4	2427.1	3202.1	3730.0
2011	34	186.8	2391.9	3080.1	3659.7
2012	39	144.4	2481.0	3235.6	3921.3
2013	47	180.6	2802.5	3605.0	4456.4
2014	55	158.2	2965.7	3623.8	4569.2
2015	55	154.6	2847.4	3643.1	4685.5
2016	55	151.6	2761.1	3535.0	4637.4
2017	55	149.2	2692.8	3452.6	4619.8
2018	55	150.1	2638.4	3384.9	4619.8
2019	57	150.3	2676.0	3429.9	4774.9

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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	57	148.7	2618.7	3337.7	4739.5
2021	46	120.3	2107.6	2685.2	3889.1
2022	36	95.7	1649.7	2045.4	3021.7
Subtotal	680	2378.7	38827.9	50020.7	64097.1

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					
2006				160.9	173.4
2007	6	113.5	810.3	1061.4	1165.3
2008	8	84.6	828.4	1101.2	1233.0
2009	18	67.9	1465.5	1962.6	2241.4
2010	31	162.0	2186.9	2977.4	3468.3
2011	58	276.0	3587.3	4660.3	5537.2
2012	92	274.0	5064.5	6374.2	7725.1
2013	96	301.3	4935.1	6190.2	7652.1
2014	110	245.9	5119.7	6100.8	7692.5
2015	110	239.8	4932.4	6160.0	7922.4
2016	110	235.0	4792.8	5988.8	7856.3
2017	110	231.1	4683.9	5860.9	7842.3
2018	110	233.7	4593.9	5743.5	7838.9
2019	110	224.5	4505.1	5633.6	7842.7
2020	110	222.0	4413.5	5523.6	7843.3
2021	110	221.5	4378.9	5482.6	7940.8
2022	110	222.6	4369.1	5475.5	8089.2
2023	110	227.6	4436.4	5556.9	8373.6
2024	110	226.4	4405.8	5518.2	8481.6
2025	110	225.2	4354.4	5451.9	8547.3
2026	110	224.1	4227.7	5160.7	8252.6
2027	24	58.6	968.0	1237.7	2018.8
Subtotal	1763	4317.3	79059.6	99382.9	135738.1

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				23.2	24.4
2005					

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**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 \$
2006					
2007					
2008					
2009					
Subtotal				23.2	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				19.1	20.1
2005				10.2	10.9
2006					
2007					
2008				75.1	85.4
2009				68.9	80.0
Subtotal				173.3	196.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				124.4	118.0
Navy	687	2378.7	38827.9	68770.5	84081.2
USAF	1770	4317.3	79059.6	118220.2	155851.0
Other Funding				4517.8	4784.1
Grand Total	2457	6696.0	117887.5	191632.9	244834.3

**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): \$ 8935.5

Percent Total Program Expended: 3.6%

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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" (\$ in Millions) below reflects the O&S costs for all three variants based on an estimated 8000 hour service life and predicted attrition and usage rates. 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 (\$)	F-16C/D Cost per Flying Hour (\$)
Mission Pay & Allowances	3289.0	5233.0
Unit Level Consumption	3624.0	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	9474.0	12036.0

Total O&S Cost	JSF	F-16C/D
BYS (In Millions)	134821.0	N/A
TYS (In Millions)	343981.0	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: C-17A

AS OF DATE: December 31, 2003

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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 Project 663282  
PE 0604231F  
PE 0604609F Project 663263 (Shared)

PROCUREMENT:

APPN 3010 ICN C017AD (Air Force)

MILCON:

PE 0401130F

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## **5. References:**

SAR Baseline (Production Estimate):

Program Management Directive 0020(22), dated May 10, 1989. Amended FY 1991 President's Budget.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated March 22, 2004.

## **6. Mission and Description:**

The C-17 is a multi-engine, turboprop, wide-body, strategic airlift aircraft which improves the overall capability of the United States Air Force to rapidly project, reinforce, and sustain combat forces worldwide. The aircraft augments the C-5 and C-141 in intertheater deployment and the C-130 with intra-theater operations. The C-17 is capable of carrying outsized cargo over inter-theater 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-person 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 following significant accomplishments have occurred since the December 2002 SAR:

**C-17 AIRCRAFT DELIVERIES:** During calendar year 2003, a total of sixteen (16) aircraft were delivered, at an average of 165 days ahead of contract schedule. One hundred twelve (112) aircraft have been delivered to the USAF to date.

**C-17 FOLLOW-ON BUY:** The SPO and Boeing modified the buy profile of the \$9.8 billion follow-on contract to reflect the FY 2004 President's Budget; the delivery schedule of sixty (60) aircraft will remain the same. The contractor will continue to build at a rate of fifteen (15) aircraft per year. The associated engine contract was awarded in May 2003 and the first delivery for

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

the follow-on contract will occur in June 2004.

**C-17 LONG-TERM SUSTAINMENT:** The C-17 System Program Director presented the Long-Term Sustainment decision brief to the Secretary of the Air Force on September 22, 2003. Dr. Roche approved the basic strategy but requested that The Boeing Company demonstrate commitment to the partnering strategy by investing in the depot sustainment infrastructure for the C-17. In November 2003, SECAF approved a revised partnership strategy whereby Boeing will invest \$62M in sustainment infrastructure between FY04 and FY08 and approved the program name "Globemaster III Sustainment Partnership (GSP)." However, he delayed the GSP contract award due to continuing DoD investigations into Air Force/Boeing government activities. A letter contract that contains GSP terms and conditions was issued on October 1, 2003 and will remain in place until the GSP contract is awarded (estimated completion date of September 2004).

**OPERATION ENDURING FREEDOM/OPERATION IRAQI FREEDOM (OEF/OIF):** 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. From the time period extending January 1, 2003 through December 31, 2003, C-17s have flown 18,949 sorties, contributing to an OEF/OIF total of 37,528. During this same time period the C-17 has deployed 94,104 passengers and transported 128,630 short tons of cargo in support of OEF/OIF. The C-17 has also flown with a mission capability rate of 85.7 percent.

**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 the Chief of Staff of the Air Force on December 13, 2002. This accelerated program has provided the User eight (8) C-17 aircraft with a partial LAIRCM capability (termed "LAIRCM Lite") as of December 2003. There will be twelve (12) aircraft with full capability by June 2004.

**PALLETIZED SEATING SYSTEM (PSS):** Combat Mission Needs Statement (C-MNS) for Palletized Seating System was signed by CSAF on June 27, 2002; Contract Award was on July 3, 2002. Flight Test assessments were completed on September 19, 2002. On September 26, 2002, a production contract was awarded for the required thirty-four (34) systems and Contractor Logistics Support. Egress testing was completed on February 20, 2003 and Airworthiness Certification was issued on March 13, 2003. All thirty-four (34) systems were delivered between January 23, 2003 and March 10, 2003 to Charleston AFB and McChord AFB. Within twenty-four hours of delivery, these systems were deployed in support of OEF and OIF-most notably used to transport the Secretary of Defense, Private Jessica Lynch, and OIF prisoners of war.

**MOBILITY 2000 (M2K):** M2K provides an Aircraft Communications Addressing and Reporting System (ACARS) capability for data link communications between the aircraft and the Air Mobility Command (AMC) Tanker Airlift Control Center (TACC). Upgrades to the C-17 Mission Computer and Aircrew Data Transfer Device (ADTD) software provide AMC Airline Operational Control (AOC). Additionally, a wide-carriage printer is installed in the cockpit to enable printing of M2K

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

messages. M2K was fielded on P-107 in August 2003 with partial functionality due to two deficiencies (issues with some known computer flight plan uplinks and delays in message traffic) encountered during flight test. Full M2K functionality is expected to be delivered on P-121 in June 2004.

**MAIN LANDING GEAR (MLG) DURABILITY ISSUES:** As a result of several field incidents on the MLG posts, the C-17 SPO released a fleet wide inspection Time Compliance Technical Order (TCO) of trunnion collars and gear posts at the lower lug connection, using an "Ultrasonic" Non-Destructive Inspection (NDI) technique. This inspection was completed in September 2003. Ninety (90) aircraft (4 landing gear per aircraft) and fifty-seven (57) spares were inspected with thirty-seven (37) posts removed based on positive indications on the post lugs. This is consistent with initial assumptions that a 9% positive indication rate on post lugs could be expected. In addition, seventeen (17) posts have been removed and replaced due to positive indications on the post shelf or integral jacking lug. Several manufacturing process enhancements have been incorporated into production and repair to address MLG post lug and shelf deficiencies. Incorporation of a post lug redesign will start with P-119 in May 2004.

**C-17 LANDING GEAR VENDOR ISSUE:** Investigation of a Boeing 747 axle failure upon landing in February 2003 revealed a Goodrich supplier, All Tools, failed to follow procedures for proper processing, reworking, inspecting and reporting of non-conformances on this and other components across multiple aircraft platforms. Boeing took action to remove and replace all known non-conforming C-17 parts from their inventory and on production aircraft. Initial engineering review of the affected parts led to the removal of two (2) main landing gear door torque tubes on a fielded C-17. In December 2003 additional All Tool non-conformances were discovered related to C-17 MLG parts which had been sent to unauthorized sub-tier suppliers. Engineering review of the non-conformances indicated no immediate safety concerns and a waiver has been issued for each production aircraft beginning with P-112 on all landing gear parts produced by All Tools. Boeing, Defense Contract Management Agency and System Program Office (SPO) audits are underway on the Boeing supplier base and management system to determine if there are other unauthorized sub-tier suppliers or unauthorized/unacceptable processes that have been used. The present recovery plan is to remove and replace suspect non-conforming parts, pending engineering disposition, at the next scheduled depot induction for each affected aircraft. Currently, no additional field action is warranted until the audits are complete on or about the end of May 2004.

**FUEL VENTING:** Several inadvertent fuel venting occurrences led to an investigation where water and water related contamination found in the fuel tank were determined to be the root causes. Operator and maintenance risk mitigation procedures have been issued. Production incorporation of a fuel system redesign to address these issues began with P-100, which delivered March 18, 2003. Retrofit of P-1 through P-99 began in September 2003. As of December 31, 2003, thirteen (13) aircraft have been completed.

**ON BOARD INERT GAS GENERATING SYSTEM (OBIGGS):** Efforts to initiate a

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

two-pronged approach to resolve OBIGGS reliability issues have continued. The reliability upgrade initiative (OBIGGS 1.1) to enhance the reliability of four high-failure components of the current OBIGGS was placed on contract February 14, 2003. Production effectivity of OBIGGS 1.1 is production aircraft P-118 (DD250 scheduled for April 2004). Development of a complete OBIGGS redesign (OBIGGS II) was placed on contract March 28, 2003. Production effectivity of OBIGGS II is production aircraft P-138 (DD250 scheduled for July 2005).

FORMATION FLYING/STATION KEEPING EQUIPMENT (SKE): Field issues on Station Keeping Equipment performance resulted in restriction of C-17 formation flights to Visual Meteorological Conditions (VMC) conditions only. After an intensive investigation and HQ AMC approval, the SPO is implementing a stop-gap Traffic Collision Avoidance System (TCAS) Overlay program and a long-term, alternate technology Military Airborne Collision Avoidance System (Mil-ACAS) program. The TCAS Overlay program will lift the VMC formation-flying restriction in August 2004 and will provide an interim Strategic Brigade Airdrop (SBA) capability of fifty-three (53) aircraft across the drop zone in forty-three (43) minutes in November 2004. The Mil-ACAS program will begin fielding in July 2006 and will provide the required SBA capability (53 aircraft across the drop zone in 30 minutes) in August 2007.

GLOBAL AIR TRAFFIC MANAGEMENT (GATM) Certification: The C-17 will meet GATM requirements through certification via the Operational Safety, Suitability, and Effectiveness (OSS&E) process. This is consistent with final guidance/direction issued by the Air Force on September 23, 2002. The SPO is using a three-phased approach: Phase I (completed July 2002) identified software criticality levels for appropriate Line Replaceable Units (LRUs); Phase II (completed July 2003) identified specific software development tasks recommended to meet GATM certification requirements; Phase III will implement the required tasks. A way forward plan has been defined and the pre-contract award activity is on-going. The current plan is for Phase III contract award in 3rd Qtr 2004.

FAN THRUST REVERSER (FTR) MAINTENANCE: Premature wear on the N/EAT (Nacelle/Engine Affordability Team) FTR sliders and inserts has driven significant field level maintenance actions. Enhanced FTR alignment/rigging procedures were released to the field and the Boeing Aerospace Support Center (BASC) that have significantly improved the slider and insert wear rates. Of the FTRs completed, only 0.30% have required any slider/insert rework during subsequent Home Station Checks (HSCs). Due to the significant improvement in wear rates, the N/EAT FTR HSC inspection frequency is being expanded from its original 240-day interval to a 360-day interval. Because of these activities, the FTR slider and insert maintenance situation is now considered stabilized.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Source Selection Decision	AUG 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
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	NOV 2003

ACRONYMS:

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

A/C	Aircraft
DAB	Defense Acquisition Board
DSARC	Defence Systems Acquisition Review Council
DT&E	Development Test and Evaluation
FOC	Full Operational Capability
FSED	Full Scale Engineering Development
IOC	Initial Operational Capability
IOT&E	Initial Operational Test & Evaluation
ORE	Operational Readiness Evaluation
RM&AE	Reliability Maintainability and Availability Evaluation

b. Current Change Explanations --  
None.

**10. Performance Characteristics:**

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Maintenance Manhours Per Flying Hour (Air Vehicle)	14.6	N/A / N/A	4.8	8.3	(Ch-1)
Mean Time Between Maintenance Inherent (hrs) (MTBMT)	1.69	N/A / N/A	4.85	3.5	(Ch-1)
Mean Time Between Maintenance Corrective (hrs) (MTBMC)	.83	N/A / N/A	2.74	2.0	(Ch-1)
Mean Time Between Removal (hrs) (MTBR)	5.37	N/A / N/A	8.4	8.5	(Ch-1)
Mean Manhours to Repair (hrs)	4.51	N/A / N/A	7.5	9.1	(Ch-1)
Maximum Take-off Gross Weight (lbs) (TOGW)	580000	N/A / N/A	585,000	585,000	
Maximum Payload (lbs)					
Non-ER	17220	N/A / N/A	167,400	167,400	
With-ER	N/A	N/A	164,900	164,900	
Payload at Range (lbs @ 2400 nm)	167006	N/A / N/A	152,790	152,790	
Payload at Range (lbs @ 2400 nm)	167006	N/A / N/A	152,790	152,790	
Range Unrefueled (nm)	2372	N/A / N/A	2,700	2,700	
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	

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Cruise Speed (Mach) (450 KTAS)	.77	N/A / N/A	.74	.74
Backup Capability (% grade)	2	2 / 1.5	3.8	3.8
Mission Completion Success Probability (%)	94	N/A / N/A	93	93
Payload Range at 3200 nm (lbs)	N/A	N/A / N/A		
Non-ER	N/A	130,000 / 110,000	130,000	130,000
With-ER	N/A	N/A	127,000	127,000
Turning Capability (ft for 180 degree turn)	N/A	96 / 90	96	96
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

ACRONYMS:

CDS	Container Delivery System
ER	Extended Range
KTAS	Knots True Air Speed
NM	Nautical Miles

b. Current Change Explanations --

(Ch-1) The Demonstrated Performance column now represents a moving three month average based on G081 maintenance records. The current data represents the three-month average for the months of September, October and November, 2003. These values may vary from period to period due to variations in flying hours and operational requirements. Prior to December 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 AFOTEC organizations.

The Current Estimate column now represents cumulative values based on G081 maintenance records that reflect 615,000 fleet flying hours. As a cumulative value, only minor variations may be experienced. Prior to December 2001, values in this column represent estimates expected at

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

100,000 fleet flying hours. That milestone was exceeded in August 1998.

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	6463.2	8382.0	8459.9
Procurement	34419.2	46456.6	48328.0
Airframe	(22158.8)		(32355.5)
Engines	(5478.3)		(3338.0)
Avionics	(1168.8)		(1182.0)
ECO			(0.0)
Product Improvement			(589.9)
Non-Recurring			(1214.2)
Total Flyaway	(28805.9)		(38679.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(2267.0)		(8822.7)
Initial Spares	(3346.3)		(825.7)
Construction (MILCON)	368.5	726.2	798.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	41250.9	55564.8	57585.9
Escalation	561.0	3128.6	2576.6
Development (RDT&E)	(-1122.3)	(-809.9)	(-824.8)
Procurement	(1673.7)	(3867.9)	(3333.8)
Construction (MILCON)	(9.6)	(70.6)	(67.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	41811.9	58693.4	60162.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	210	180	180
Total	210	180	180

**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.

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

The United Kingdom Ministry of Defense signed a Letter of Offer and Acceptance (LOA) on June 28, 2000, totaling \$206.6M over eight years 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 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	55564.8	57585.9	
(2) Quantity	180	180	
(3) Unit Cost	308.693	319.922	+3.64
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	46456.6	48328.0	
(2) Quantity	180	180	
(3) Unit Cost	258.092	268.489	+4.03

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**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5340.9	36092.9	378.1	41811.9
Previous Changes:				
Economic	-128.5	-1541.1	-24.9	-1694.5
Quantity	-	-3725.7	-	-3725.7
Schedule	-42.2	+4269.5	+10.1	+4237.4
Engineering	+168.2	+166.5	-	+334.7
Estimating	+2067.7	+10792.5	+502.3	+13362.5
Other	+170.0	+242.0	-	+412.0
Support	-21.8	+5624.9	-	+5603.1
Subtotal	+2213.4	+15828.6	+487.5	+18529.5
Current Changes:				
Economic	+174.2	-62.5	-0.4	+111.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+47.8	-	+47.8
Estimating	-93.4	+36.4	+0.4	-56.6
Other	-	-	-	-
Support	-	-281.4	-	-281.4
Subtotal	+80.8	-259.7	-	-178.9
Total Changes	+2294.2	+15568.9	+487.5	+18350.6
Current Estimate	7635.1	51661.8	865.6	60162.5

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	-32.7	+1016.1	-	+983.4
Engineering	+158.0	+157.1	-	+315.1
Estimating	+1860.5	+10888.1	+429.0	+13177.6
Other	+171.6	+239.4	-	+411.0
Support	-28.1	+4382.0	-	+4353.9
Subtotal	+2129.3	+14170.7	+429.0	+16729.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+56.8	-	+56.8
Estimating	-132.6	+28.2	+0.5	-103.9
Other	-	-	-	-
Support	-	-346.9	-	-346.9
Subtotal	-132.6	-261.9	+0.5	-394.0
Total Changes	+1996.7	+13908.8	+429.5	+16335.0
Current Estimate	8459.9	48328.0	798.0	57585.9

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+174.2
Adjustment for Current and Prior Inflation. (Estimating)	-197.6	-168.8
Congressional Adds: Test Data Archive (Estimating)	+1.3	+1.4
Correction of Misallocation of Funds (Estimating)	+68.7	+80.0
Congressional Reduction (Estimating)	-1.4	-1.6
Transfer From Other Programs (Estimating)	+2.1	+2.5
Accounting Correction (Estimating)	-5.7	-6.9
RDT&E Subtotal	-132.6	+80.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-62.5
Revised Estimate for Airframe/Avionics (Engineering)	+98.4	+95.3
Revised Estimate for Engines (Engineering)	-41.6	-47.5
Adjustment for Current and Prior Inflation. (Estimating)	+7.7	+8.7
Transfer to Other Programs (Estimating)	-256.8	-301.8
Congressional Adjustments to Air Force Investment Appropriations (Estimating)	-25.6	-28.7
Accounting Corrections (Estimating)	+302.9	+358.2
Adjustment for Current and Prior Inflation. (Support)	+4.9	+5.6
Decrease in Initial Spares (Support)	-15.1	-16.2
Decrease in Peculiar Support due to Correction in Prior SAR (Support)	-336.7	-270.8
Procurement Subtotal	-261.9	-259.7
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Adjustment for Out Year Inflation (Estimating)	+0.4	+0.3
MILCON Subtotal	+0.5	0.0

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
199.10	-8.80	+12.50	+23.54	+2.12	+73.92	+2.29	+29.56	+135.13	334.24

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
171.87	-8.91	+7.95	+23.72	+1.19	+60.16	+1.34	+29.69	+115.14	287.01

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	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	60162.5
Total Quantity	210	N/A	210	180
Prog Acq Unit Cost	189.3	N/A	199.1	334.2

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

a. RDT&E --

Prod. Enhancement:

Boeing Airlift & Tankers, Long Beach, CA

F33657-95-D-2026, CPAF

Award: July 9, 1995

Definitized: July 9, 1995

Initial Contract Price  
Target Ceiling Qty

\$123.4 N/A 0

Current Contract Price

Target Ceiling Qty  
\$400.4 N/A 0

Estimated Price At Completion  
Contractor Program Manager  
\$413.5 \$416.4

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-14.9	\$-0.2
Cumulative Variances To Date (11/27/03)	<u>\$-14.9</u>	<u>\$0.0</u>
Net Change	\$0.0	\$0.2

Explanation of Change:

This contract is approximately 95% complete, and this is the last time it will be reported in the SAR. The cumulative cost variance has remained unchanged from the previously reported value. The \$200K favorable schedule variance is due to completing previously scheduled activities required for delivery order closeout.

Contract Comments:

Current Contract Price changed from the previous SAR due to the deobligation of funds on Affordability Projects.

This contract is a delivery order contract as such when new delivery orders are added the contract value increases. The initial value was based on the first delivery order definitized and thus does not equal the current price.

	<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, CPAF	\$1.5	N/A	0
Award: January 30, 2001			
Definitized: January 30, 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>
\$76.3	N/A	0	\$90.3	\$98.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.1	\$-0.6
Cumulative Variances To Date (11/27/03)	<u>\$-4.2</u>	<u>\$-1.7</u>
Net Change	\$-1.1	\$-1.1

Explanation of Change:

The net \$1.1M unfavorable cost change was primarily due to issues with the Mobility 2000 (M2K), Airline Operational Control (AOC), and printer project. The M2K project required additional effort for Mission Computer/Core Integrated Processor (CIP) software design. The \$1.1M unfavorable schedule variance is attributed to M2K, Stabilizer Strut Redesign, and Secure Enroute Communications Package - Improved (SECOMP-I) projects. M2K had a 2 month delay to Test Readiness Review and the completion of formal testing. Also contributing to the negative variance was a delay to the Stabilizer Strut Critical Design Review (CDR) as a result of delays in the closure of a subcontractor CDR. The SECOMP-I

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

project, which was being executed under an undefinitized contract action (UCA), also contributes to the negative schedule variance. This contract was definitized on December 18, 2003, and the new control account baselines will be laid in by February 2004.

**Contract Comments:**

This contract is a delivery order contract as such when new delivery orders are added the contract value increases. The initial value was based on the first delivery order definitized and thus does not equal the current price.

Current Contract Price changed from the previous SAR due to additional funding for the following Performance Improvement projects: Stabilizer Strut redesign, SECOMP-I, Liquid Oxygen (LOX) Bottle Protection and Large Aircraft Infrared Countermeasures System (LAIRCM) acceleration definitizations. Additional funding was also provided for cost growth on the M2K project.

<b>b. Procurement --</b>			<b>Initial Contract Price</b>		
<b><u>Performance Improvement:</u></b>			<b><u>Target</u></b>	<b><u>Ceiling</u></b>	<b><u>Qty</u></b>
Boeing Airlift & Tankers, Long Beach, CA					
F33657-95-D-2026, CPAF			\$71.3	N/A	0
Award: July 9, 1995					
Definitized: July 9, 1995					
<b>Current Contract Price</b>			<b>Estimated Price At Completion</b>		
<b><u>Target</u></b>	<b><u>Ceiling</u></b>	<b><u>Qty</u></b>	<b><u>Contractor</u></b>	<b><u>Program Manager</u></b>	
\$570.4	N/A	0	\$557.3	\$586.0	
<b>Previous Cumulative Variances</b>			<b><u>Cost Variance</u></b>	<b><u>Schedule Variance</u></b>	
Cumulative Variances To Date (11/27/03)			\$-16.1	\$-9.7	
Net Change			\$-19.7	\$-5.8	
			\$-3.6	\$3.9	

**Explanation of Change:**

The \$3.6M unfavorable net cost variance change was primarily due to four projects: additional engineering effort in support of retrofit drawings and test activities on the Communication Open Systems Architecture (COSA) avionics project; additional manpower necessary to complete software development on the High Frequency Data Link (HFDL) effort; additional effort associated with technical issues impacting the Station Keeping Equipment Follow-On (SKE-FO) development effort and additional efforts necessary to meet the contract requirements for software documentation updates on Terrain Awareness Warning System (TAWS). The favorable net

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15. Contract Information (Cont'd):

change in the schedule variance was primarily driven by a rebaselining of the SKE-FO project after issuance of a stop work directive. Also contributing to the favorable variance was the performance of the COSA subcontractor, Telephonics, who completed several milestones for previously scheduled efforts.

Contract Comments:

Current Contract Price changed from the previous SAR due to additional funding for the following Performance Improvement projects: added scope on COSA, additional reliability analysis for SKE-FO and HFDL Functional Hazardous Assessment. Additional funding was also provided for cost growth on the following projects: Global Air Traffic Management (GATM)98, TAWS, and SKE-FO.

This contract is a delivery order contract as such when new delivery orders are added the contract value increases. The initial value was based on the first delivery order definitized and thus does not equal the current price.

<u>Aircraft MYP (FY97-03):</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing Airlift & Tankers, Long Beach, CA			
F33657-96-C-2059, FFP	\$14209.4	N/A	80
Award: May 31, 1996			
Definitized: May 31, 1996			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$16614.2	N/A	80	\$16614.2	\$16614.2

Explanation of Change:

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.

This contract is approximately 95% complete, and this is the last time it will be reported in the SAR.

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

<u>Aircraft MYPII (FY02-08):</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing Airlift & Tankers, Long Beach CA			
F33657-02-C-2001, FFP	\$9762.0	N/A	60
Award: August 15, 2002			
Definitized: August 15, 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>
\$9762.0	N/A	60	\$9762.0	\$9762.0

Explanation of Change:

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).

**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	6670.3	183.9	199.7	581.2	7635.1
Procurement	35298.8	3286.3	3938.2	9138.5	51661.8
MILCON	483.8	70.0	61.8	250.0	865.6
O&M	-	-	-	-	-
Total	42452.9	3540.2	4199.7	9969.7	60162.5

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

b. Annual Summary -- C-17

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 \$
1981				54.1	33.4
1982					
1983				86.4	59.6
1984				37.4	26.8
1985				163.3	121.0
1986				461.7	350.4
1987				787.8	625.5
1988				1351.4	1101.4
1989				1098.7	938.3
1990				1026.0	903.9
1991				818.7	748.3
1992				269.0	252.9
1993				171.0	164.3
1994				228.8	223.5
1995				185.1	184.2
1996				71.1	72.0
1997				64.6	66.3
1998				98.1	101.3
1999				114.4	119.4
2000				144.6	153.3
2001				151.3	162.7
2002				97.7	106.0
2003				142.0	155.8
2004				165.5	183.9
2005				177.2	199.7
2006				123.2	141.1
2007				142.6	166.1
2008				101.0	120.0
2009				127.2	154.0
Subtotal				8459.9	7635.1

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		32.2	26.5
1988	2	90.9	769.8	811.9	701.7
1989	4	82.6	1073.6	1341.7	1197.4
1990	4	77.2	1240.3	1642.3	1512.0
1991		80.3		182.8	174.6

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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 \$
1992	4	43.3	1553.1	1751.6	1703.3
1993	6	19.5	1944.0	1966.4	1939.4
1994	6	155.7	1916.7	2086.6	2090.7
1995	6	380.9	1763.1	2294.3	2333.7
1996	8	7.6	2095.5	2402.4	2475.3
1997	8	5.9	1711.0	2033.4	2115.8
1998	9		1961.9	2124.8	2225.3
1999	13		2489.9	2802.8	2968.2
2000	15		2639.1	3164.6	3398.2
2001	12	46.2	2109.4	2731.9	2958.8
2002	15	3.1	2768.6	3282.2	3590.7
2003	15		2926.3	3514.6	3887.2
2004	11		2057.5	2931.6	3286.3
2005	14		2347.7	3460.6	3938.2
2006	15		2360.4	3319.0	3840.1
2007	13	84.8	1721.2	2963.0	3493.4
2008		104.0	11.1	770.6	926.3
2009			5.2	716.7	878.7
Subtotal	180	1214.2	37465.4	48328.0	51661.8

Note:

FY2008 and FY2009 recurring flyaway dollars (\$11.1M & \$5.2M, respectively) are displayed with no quantities tied to them. This funding reflects Pollution Prevention projects & Producibility Enhancement/Performance Improvement (PE/PI) System Engineering/Project Management (SE/PM). Pollution Prevention projects are required to eliminate/reduce the use of hazmats on the C-17.

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

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**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 \$
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	73.1
2004				62.2	70.0
2005				54.0	61.8
2006				79.4	92.4
2007				125.5	148.8
2008				6.1	7.4
2009				1.1	1.4
Subtotal				798.0	865.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	180	1214.2	37465.4	57585.9	60162.5

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	112	112

Percent Total Program Quantities Delivered: 62.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 37275.5

Percent Total Program Expended: 62.0%

**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, 2003). 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 FY04 Base Year dollars and reindexed to FY96 Base Year dollars.

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

The O&S costs were based on a total of 180 aircraft, 171 Primary Authorized Aircraft (PAA) and nine (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 outsize 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.

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

Cost Element	C-17 C-17 Average Annual Cost Per Squadron	Avg Annual Cost for Antecedent System
Mission Pay & Allowances	28.0	0.0
Unit Level Consumption	38.2	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	77.6	0.0
Sustaining Support	4.7	0.0
Indirect Costs	7.9	0.0
Total	156.4	0.0

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

Total O&S Cost	C-17	Avg Annual Cost for
BY\$ (In Millions)	70394.6	N/A
TY\$ (In Millions)	118839.6	N/A

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

**PROGRAM:** SBIRS High

**AS OF DATE:** December 31, 2003

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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/IS  
185 Discoverer Blvd.  
Suite 2512  
El Segundo, CA 90245-4695

Col Randall S. Weidenheimer  
Assigned: February 3, 2004  
DSN 833-1807; COMM (310) 363-1807  
randall.weidenheimer@losangeles.af.  
mil

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

RDT&amp;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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**FOR OPEN PUBLICATION**  
**AS AMENDED**

MAR 25 2004 5

**SECURITY REVIEW  
DEPARTMENT OF DEFENSE**

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Declassify on: October 1, 2007

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive 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 and Mission Control Station Backup, overseas Relay Ground Stations, Multi-Mission Mobile Processor, and associated communication links. The High Component consists of five satellites (four operational and one spare) in GEO, two hosted sensors in HEO (platforms provided by another organization), and associated ground elements.

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

(U) Office of the Secretary of Defense (OSD) Program Review: The Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) conducted a review of the SBIRS program on December 12, 2003. The review focused on program schedule, space and ground segment status, cost performance and contract management. Directed follow on actions include: a current assessment of program cost, schedule, and status of space and ground segments; evaluation of Electromagnetic Interference (EMI) testing procedures; evaluation of Signal Processing Assembly (SPA) software architecture; and an operational assessment of program alternatives. The results of these actions will be presented at the USD(AT&L) program review in April 2004.

SBIRS President's Meeting: The Under Secretary of the Air Force (USecAF) chaired SBIRS quarterly president's meetings on November 21, 2003, and February 27, 2004. The purpose of these meetings is to assess program status against plan, to ensure communication among SBIRS High stakeholders and to provide a forum for issue resolution at the senior level. Most recent discussions centered on closure of Highly Elliptical Orbit (HEO) 1 payload delivery, the Geosynchronous Earth Orbit (GEO) SPA software re-plan and the detailed success criteria for satisfactory mission success incentives on the SBIRS High development contract.

Highly Elliptical Orbit Delivery: The EMI testing conducted during December 2003 exhibited significantly more EMI exceedances than the test results in

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

March 2003. Investigation revealed that new EMI measurement equipment was improperly configured. A fundamental design issue with the first HEO payload resulted in unacceptable EMI levels. The SBIRS team has been analyzing and resolving these out-of-specification conditions. Currently, the SBIRS program is working toward a July 2004 delivery for HEO 1 and a November 2004 delivery for HEO 2. The contractor is transferring successfully demonstrated HEO 2 EMI fixes to HEO 1 in preparation for the July 2004 delivery. In the event the remaining HEO 1 EMI exceedances cannot be resolved, the government has a backup plan. This backup plan would not change HEO 2 Delivery but would deliver HEO 1 in June 2005.

Highly Elliptical Orbit Message Certification: The Combined Task Force executed a formal readiness rehearsal in October 2003. This rehearsal and a crew training event in November 2003 exercised scripts, procedures and payload command sequences, as well as initial interfaces with the Satellite Payload On-orbit Test Station. SBIRS Ground to Host system test was completed and met all objectives. The ground segment completed work on the final release for the HEO Early Orbit Test software block. The team continues integration of late changes and deficiency corrections to support the payload.

Geosynchronous Earth Orbit: The integration of the first scanning sensor (focal plane and optical telescope), radiometric testing and staring sensor integration is complete. Completion of integration and radiometric testing of both sensors represents the retirement of a significant program technical risk. GEO satellites 1 and 2 core structures are currently at the Lockheed Martin Mississippi Space and Technology Center at the John C. Stennis Space Center for integration of the propulsion subsystem and fuel tanks. Communication subsystem testing has also begun on GEO 1. The SBIRS team is focusing on a comprehensive and successful SPA Preliminary Design Review planned for April 2004.

SBIRS Baseline Update (BLU) 2003 Status: In November 2003, the SBIRS High program office conducted the BLU-2003 review, a system level assessment of the program's maturity and execution to the acquisition baseline. The review included discussions of risk management, mission assurance-mission success, product assurance, system safety, system design and performance, and transition activities, as well as an update to the operational components of SBIRS High.

Test and Evaluation Master Plan (TEMP): The System Program Director signed the revised TEMP on October 31, 2003, and submitted the document for SBIRS test community coordination. After resolution of comments from Air Force Space Command Director of Requirements and Air Force Operational Test and Evaluation Center, the plan will be forwarded to the OSD for review and approval.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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 current SAR reflects three schedule breaches: Highly Elliptical Orbit (HEO) Sensor 1 Delivery, HEO Sensor 2 Delivery and HEO Message Certification. A Program Deviation Report was submitted and a revised APB will be approved following HEO Sensor 1 delivery.

Highly Elliptical Orbit Sensor 1 Delivery: The HEO Sensor 1 February 2003 delivery date was not achieved due to a series of design deficiencies, technical issues identified during final performance testing, Electromagnetic Interference (EMI) specification exceedances and management deficiencies.

Highly Elliptical Orbit Sensor 2 Delivery: Schedule impacts of the HEO 1 campaign and implementation of EMI corrective actions have delayed the integration, test and delivery of HEO 2. When delivered, the payload will exhibit significant reductions in EMI emission levels.

Highly Elliptical Orbit Message Certification: This schedule event is affected by the late delivery of the HEO 1 sensor payload and launch delays. Delivery of this effectivity requires both on-orbit and ground processing assets. Formal readiness rehearsal, crew training and initial interfaces with the Satellite Payload On-orbit Test Station were completed in October and November 2003. The Ground to Host test met all objectives. The team is integrating late changes and deficiency corrections to support the payload.

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9. (U) Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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	JUL 2004 (Ch-1)
Ground Segment Increment 2 Certification	JAN 2002	N/A	N/A
HEO Sensor 2 Delivery	SEP 2003	JAN 2004	NOV 2004 (Ch-2)
SBIRS IOC	DEC 2003	N/A	N/A
HEO Message Certification	N/A	NOV 2004	MAR 2006 (Ch-3)
GEO Satellite 1 Delivery	N/A	SEP 2006	SEP 2006
GEO Satellite 2 Delivery	N/A	SEP 2007	SEP 2007
GEO Message Certification	N/A	SEP 2007	SEP 2007
MCS Increment 2 Certification	N/A	OCT 2009	OCT 2009

(U) Note: IOC is currently being determined by Air Force Space Command.

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 Sensor 1 Delivery changed from February 2004 to July 2004.

(Ch-2): HEO Sensor 2 Delivery changed from June 2004 to November 2004.

(CH-3): HEO Message Certification changed from September 2005 to March 2006.

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SBIRS High, December 31, 2003

10. (U) Performance Characteristics:

a. Performance --

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

(b)(1)



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SBIRS High, December 31, 2003

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

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

(b)(1)



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SBIRS High, December 31, 2003

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

Development	Approved Program (APB)	Demon- strated	Current
-------------	---------------------------	-------------------	---------

(b)(1)



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SBIRS High, December 31, 2003

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

Development	Approved Program (APB)	Demon- strated	Current
-------------	---------------------------	-------------------	---------

(b)(1)



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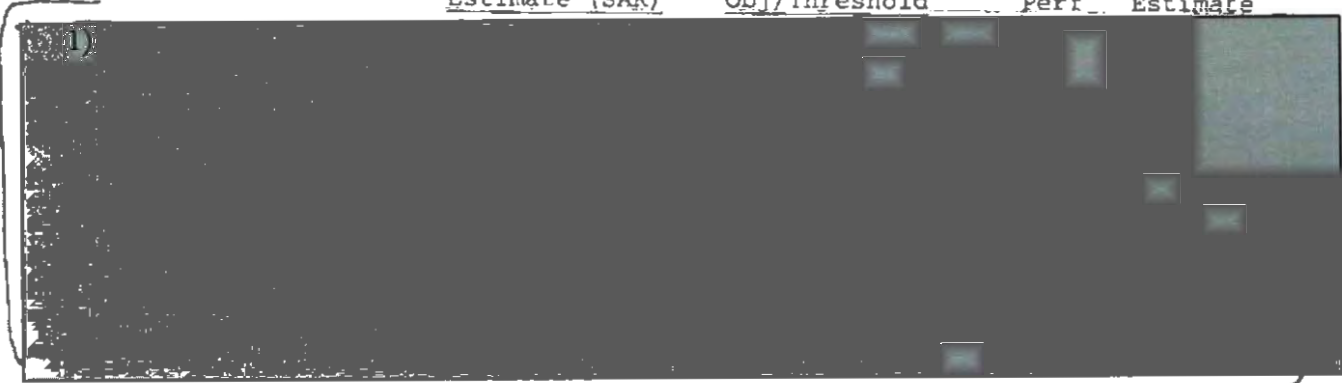
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SBIRS High, December 31, 2003

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

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



(U) ACRONYMS:

AIRCRF - Aircraft  
CFLOS - Cloud-free Line of Sight  
COMM - Communication  
FA - Focused Area  
LAT - Latitude  
MRC - Major Regional Conflict  
MSL - Missile  
MTR - Major Threat Region  
N - North  
NLT - Not Later Than  
Pc - Probability of Collection  
Pw - Probability of Warning  
RV - Re-entry Vehicle  
S - South  
TBD - To Be Determined

b. Current Change Explanations --

(U) None.

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SBIRS High, December 31, 2003

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	3016.6	5426.4	5664.2
Procurement	496.7	1261.5	1217.5
Flyaway	(496.7)		(1132.4)
Other Weapon Systems			(85.1)
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	635.4
Total FY 1995 Base-Year \$	3679.5	7338.2	7569.3
Escalation	467.8	1082.7	1061.9
Development (RDT&E)	(369.9)	(724.9)	(705.6)
Procurement	(87.8)	(235.9)	(233.8)
Construction (MILCON)	(2.5)	(5.1)	(4.8)
Acquisition O&M	(7.6)	(116.8)	(117.7)
Total Then Year \$	4147.3	8420.9	8631.2
b. (U) Quantity --			
Development (RDT&E)	3	2	2
Procurement	2	3	3
Total	5	5	5

(U) Unit of measure for SBIRS is Geosynchronous Earth Orbit satellites.

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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SBIRS High, December 31, 2003

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	7338.2	7569.3	
(2) Quantity	5	5	
(3) Unit Cost	1467.640	1513.860	+3.15
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	1261.5	1217.5	
(2) Quantity	3	3	
(3) Unit Cost	420.500	405.833	-3.49

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	3386.5	584.5	28.5	147.8	4147.3
Previous Changes:					
Economic	-167.9	-49.9	-1.6	-16.9	-236.3
Quantity	-152.7	+180.1	-	-	+27.4
Schedule	+494.5	-73.6	-	-	+420.9
Engineering	+837.7	-	+7.8	-15.6	+829.9
Estimating	+1982.3	+713.0	+22.3	+599.9	+3317.5
Other	-	-	-	-	-
Support	-	+99.6	-	-	+99.6
Subtotal	+2993.9	+869.2	+28.5	+567.4	+4459.0
Current Changes:					
Economic	-3.9	-12.1	-	-0.5	-16.5
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-6.7	+8.3	-	+38.4	+40.0
Other	-	-	-	-	-
Support	-	+1.4	-	-	+1.4
Subtotal	-10.6	-2.4	-	+37.9	+24.9
Total Changes	+2983.3	+866.8	+28.5	+605.3	+4483.9
Current Estimate	6369.8	1451.3	57.0	753.1	8631.2

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SBIRS High, December 31, 2003

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	+708.4	-	+6.8	-13.5	+701.7
Estimating	+1657.0	+588.3	+19.4	+476.7	+2741.4
Other	-	-	-	-	-
Support	-	+83.9	-	-	+83.9
Subtotal	+2653.6	+712.7	+26.2	+463.2	+3855.7
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-6.0	+6.9	-	+32.0	+32.9
Other	-	-	-	-	-
Support	-	+1.2	-	-	+1.2
Subtotal	-6.0	+8.1	-	+32.0	+34.1
Total Changes	+2647.6	+720.8	+26.2	+495.2	+3889.8
Current Estimate	5664.2	1217.5	52.2	635.4	7569.3

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year    Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-3.9
Estimate revised due to General Congressional reduction (Estimating)	-6.0	-6.7
RDT&E Subtotal	-6.0	-10.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-12.1
Adjustment for Current and Prior Inflation (Estimating)	+6.9	+8.4
Revised Estimate (Estimating)	0.0	-0.1
Adjustment for Current and Prior Inflation. (Support)	+1.8	+2.0
Estimate Revised for Mission Control Station Backup (Support)	-0.6	-0.6
Procurement Subtotal	+8.1	-2.4
(3) <u>O&amp;M</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Communications Network Requirement Increase Between Host and SBIRS Network (Estimating)	+7.9	+9.6

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SBIRS High, December 31, 2003

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Addition of Mission Control Station Post Expansion (Estimating)	+3.6	+4.0
Revised Estimate of Mission Control Station Backup Contract Logistics Support (Estimating)	+16.8	+20.5
Addition of SBIRS Communication Package (Estimating)	+3.7	+4.3
O&M Subtotal	+32.0	+37.9

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	
829.46	-50.56	+5.48	+84.18	+165.98	+671.50	--	+20.20	+896.78	1726.24

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
292.25	-20.67	-37.38	-24.53	--	+240.43	--	+33.67	+191.52	483.77

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	OCT 1996	N/A	OCT 1996
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	DEC 2003	N/A	N/A
Total Cost	2670.3	4147.3	N/A	8783.1
Total Quantity	N/A	5	N/A	5
Prog Acq Unit Cost	N/A	829.5	N/A	1756.6

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SBIRS High, December 31, 2003

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

a. RDT&E --		Initial Contract Price	
(U) SBIRS High EMD Mod:		<u>Target</u>	<u>Ceiling</u>
Lockheed Martin Space Sys, Sunnyvale CA			<u>Qty</u>
F04701-95-C-0017, CPAF		\$1590.1	\$1590.1
Award: November 8, 1996			2
Definitized: November 8, 1996			

Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$4599.9	N/A	\$4641.4	\$4757.2

	<u>Qty</u>	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	2	\$-43.5	\$-38.7
Cumulative Variances To Date (11/30/03)		\$-74.9	\$-31.6
Net Change		\$-31.4	\$7.1

Explanation of Change:

(U) Performance against the Performance Measurement Baseline reflects an unfavorable cumulative Cost Variance (CV) of \$74.9M, compared to an unfavorable \$43.5M reported in the previous SAR. The net change of \$31.4M is mainly experienced in the space segment. The ground and Systems Engineering, Integration, and Test (SEIT) segments experienced unfavorable CVs of \$3.4M and \$1.8M, respectively.

The unfavorable Schedule Variance (SV) has been reduced to \$31.6M, compared to \$38.7M reported in the previous SAR. The net improvement of \$7.1M is mainly due to schedule recovery in Ground, Spacecraft and SEIT. The Payload effort experienced an unfavorable SV of \$2.6M in the same period.

(U) Contract Comments:

The current Engineering and Manufacturing Development Contract Target Price is \$4,599.9M, compared to \$4,418.8M reported in the December 2002 SAR. The increase results largely from realigning factory support work that was inappropriately included in out-year Contractor Logistics Support unexercised options. Other additions include work scope associated with Geosynchronous Earth Orbit spacecraft battery change, Mission Control Station Backup preparations, Highly Elliptical Orbit Sensor 1 risk mitigation efforts, support of Missile Defense Agency activities, and initial compliance with the National Industrial Security Program Operating Manual.

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SBIRS High, December 31, 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 (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-10)</u>	<u>Total</u>
RDT&E	3560.5	610.2	508.4	1690.7	6369.8
Procurement	-	94.7	-	1356.6	1451.3
MILCON	57.0	-	-	-	57.0
O&M	111.5	61.0	64.5	516.1	753.1
Total	3729.0	765.9	572.9	3563.4	8631.2

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				473.8	524.5
2003				692.9	775.4
2004				538.6	610.2
2005				442.5	508.4
2006				319.7	373.4
2007				261.4	310.6
2008				315.1	381.6
2009				277.3	342.7
2010				224.1	282.4
Subtotal	2			5664.2	6369.8

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				231.2	272.4
2007	3		1132.4	876.1	1050.5
2008					
2009					
2010				25.1	31.9

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SBIRS High, December 31, 2003

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		1132.4	1132.4	1354.8

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				83.6	94.7
2005					
2006				0.6	0.7
2007				0.9	1.1
Subtotal				85.1	96.5

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				29.2	32.7
2004				53.8	61.0
2005				56.2	64.5
2006				60.2	70.2

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SBIRS High, December 31, 2003

**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				71.2	84.6
2008				74.2	89.8
2009				115.2	142.3
2010				102.5	129.2
Subtotal				635.4	753.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5		1132.4	7569.3	8631.2

**17. (U) Delivery/Expenditure Information:**

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3621.3

(U) Percent Total Program Expended: 42.0%

**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.

Comparable Operating and Support cost estimates for the legacy system, Defense Support Program, are not available.

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SBIRS High, December 31, 2003

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 for SBIRS High System	Defense Support Prog
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)	Defense Support Prog
BY\$ (In Millions)	2917.0	N/A
TY\$ (In Millions)	3985.0	N/A

Report Creation Date: 3/26/2004 1:34:57 PM

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N-31 V-22

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 2003

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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 CRAIG OLSON  
AIR ASW ASSAULT AND SPECIAL MISSION Assigned: August 4, 2003  
47123 BUSE ROAD UNIT IPT SUITE 151 DSN 757-5161; COMM (301) 757-5161  
PATUXENT RIVER, MD 20670-1547 CRAIG.S.OLSON@NAVY.MIL

4. Program Elements/Procurement Line Items:

RD&E:

PE 0401318F Project 4103  
PE 0604262N Project H1425  
PE 1160404BB Project SF200

PROCUREMENT:

APPN 1506 ICN 016400 (Navy)  
APPN 3010 ICN 1160404 (Air Force)  
APPN 0300 ICN 1160404BB (DoD)

MILCON:

PE 1120493BB  
PE 1120547BB  
PE M62470

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04-c-0685

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V-22 (OSPREY), December 31, 2003

## **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 Program is charged by the Department of the Navy with 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); 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 Takeoff and Landing (VSTOL) aircraft able to rapidly self-deploy to any location in the world.

## **7. Executive Summary:**

An Acquisition Decision Memorandum (ADM) was signed on February 10, 1995 authorizing an integrated MV-22/CV-22 program with the Navy as the lead service. A Milestone (MS) III decision was scheduled for December 2000 to authorize full rate production. Following the December 2000 mishap, suspension of flight operations, and delay in the MS III decision, SECDEF chartered a "Panel to Review the V-22 Program" in its entirety. The final report was issued in April 2001, and the program was restructured in accordance with the report's recommendations. The restructured program contained a Block Upgrade approach with Block A containing changes providing a "safe and operational" configuration for fleet Return To Flight (RTF) operations, training, and OPEVAL Phase II. Block B starting with the FY04 procurement provides "suitability and mission effectiveness" upgrades for fleet deployments. Block C will contain "mission enhancements" that the Services identify during POM06.

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 to remain at the minimum sustaining production rate pending a review of the technical progress in flight testing. Change 7 to the V-22 Upgrades Acquisition Program Baseline (APB) reflecting this guidance was approved by USD(AT&L) on May 6, 2002.

A Defense Acquisition Board (DAB) was held in May 2003 that validated the technical performance of the flight test program with regard to USD(AT&L)'s concerns upon the V-22 Program's return to flight in May 2002. Specifically, these areas were high rate of descent testing, low speed maneuvering testing, line clearance inspections, and shipboard suitability. The subsequent ADM

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V-22 (OSPREY), December 31, 2003

7. Executive Summary (Cont'd):

expressed confidence in the test results and directed a July 2003 DAB to consider increasing production above minimum sustaining rate. Following that DAB, an August 2003 ADM directed an adjusted production rate to mitigate the risk of increasing production from 11 aircraft in FY05 to 20 in FY06 (program of record). The ADM directed a reduction in FY06 production quantity from 20 to 17 and a production increase of approximately 50% per year, for a total of 192 aircraft through FY09. It also directed that savings from these production adjustments remain within the program for reinvestment in interoperability and capability improvements and for cost reduction initiatives (CRIs), and directed the program office to plan for a Multi-Year Procurement (MYP) as soon as practical.

There are currently nine V-22 aircraft in the test program (seven MV; two CV; four are EMD aircraft, four are LRIP (Pre-Block A), and one is a Block A aircraft). As of January 22, 2004, 1,131 flight test hours have been completed since the May 2002 RTF. Flight test plans have been established for FY02 through FY04 that address all testing required prior to flight operations for training, shipboard operations and OPEVAL Phase II scheduled to commence in the second quarter of FY05. This event-driven plan supports a MS III decision in the first quarter of FY06.

The first Block A aircraft was delivered to NAS Patuxent River for testing in August 2003, the next two were delivered to VMX-22 during the first quarter of FY04.

Modification has begun on an OSD-directed Additional Test Aircraft (ATA), an MV-22 that will be modified to a CV-22. Funding for this aircraft was approved in the FY03 Omnibus Reprogramming and FY04 appropriation. The wing is undergoing modification in Amarillo; the fuselage is undergoing modification in Philadelphia.

The proposed APB which changes the scope of the Operational Test-IIF (OT) test period is currently being routed through Air Force and USSOCOM activities for signature approval.

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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:

MV Initial Operational Capability (IOC) changes from October 2005 to December 2006 and the Government Support Date (GSD) changes from January 2009 to December 2010. The MV-22 IOC and GSD Program Manager's (PMs) estimates were changed to reflect a revised definition of MV-22 IOC contained in Change 4 to the Joint Operational Requirements Document (JORD). The revised IOC definition calls for 12 Block B aircraft and a complete set of logistic resources required for organizational and intermediate level maintenance for the aircraft and its systems. Change 4 to the JORD requires IOC during FY07. The JORD is in review and should be approved in the April/May 2004 timeframe.

OT-IIF has been rescheduled to May - June 2004 to accommodate scope changes and to allow testing to be performed by VMX-22. These changes have been approved by the V-22 Test Program Working Group (TPWG). A revised APB is currently being routed through the chain-of-command to reflect the changes to OT-IIF.

## 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

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9a. Schedule (Cont'd):

Note: Milestone 0 through USA IOC (First Operational Company Equipped) reflects the FSD program which was terminated in April 1989.

b. Current Change Explanations --

The following changes reflect the Program Manager's current estimate:

(Ch-1) LRIP 7 First Delivery change from November 2004 to December 2004 reflects rebalancing the delivery schedule in CY04 to deliver 18 aircraft vice 17 aircraft. The additional aircraft is the CV-22 ATA scheduled for delivery in November 2004.

(Ch-2) LRIP Lot 8 award was delayed from March 2003 to May 2003 to ensure incorporation of the Block B configuration was accurately incorporated and that Clinger-Cohen Act certification was addressed.

(Ch-3) MV IOC changes from October 2005 to December 2006 and the GSD changes from January 2009 to December 2010. The MV-22 IOC and GSD PM estimates were changed to reflect a revised definition of MV-22 IOC contained in Change 4 to the JORD. The revised IOC definition calls for 12 Block B aircraft and a complete set of logistic resources required for organizational and intermediate level maintenance for the aircraft and its systems. Change 4 to the JORD requires IOC during FY07.

(Ch-4) MV-22 OT-IIF - Start/Completion dates change from September 2003/November 2003 to May 2004/June 2004. OT-IIF has been rescheduled to accommodate VMX's increased scope of testing. Scope has increased from one aircraft to three aircraft and in flight hours have increased from 60 hours to 115 hours. Change from a "quick look" at Block A changes to an assessment of all program COIs, in order to identify risk to OPEVAL (OT-IIG). Stronger emphasis on effectiveness parameters. Additionally, VMX-22 is now the test agency, and change in date was required to allow them proper readiness prior to test.

(Ch-5) MV-22 OPEVAL Phase II Start date changes from November 2004 to January 2005. This change is necessary to accommodate additional aircraft requested by VMX-22 for OPEVAL II. TEMP Revision C called for 6 aircraft in OPEVAL II with 4 at the start. TEMP Revision D (to be signed in April 2004) is being changed to require 8 aircraft in OPEVAL with 6 at the start. This will provide a more thorough test of the V-22, especially in the shipboard environment. Total hours have not changed, so with the additional aircraft the end date for OPEVAL II remains May 2005.

(Ch-6) CV-22 Flight Test Completion date changes from December 2005 to April 2006; CV-22 IOT&E Start/Completion date changes from January 2006/June 2006 to June 2006/November 2006. The dates reported in the December 2002 SAR were prior to the definitization of the Way Forward Contract which added scope to the original contract to correct the previously capped flight test program and minor scope changes to enhance mission suitability. This contract change added an estimated 6 months to

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9b. Schedule (Cont'd):

the original test schedule. This coupled with performance to date (unplanned common V-22 part replacement, late return to flight, extra hydraulic line clearance inspections, all unique to the EMD test aircraft) leads the PM to assess a high risk to the CV IOT&E dates in the APB schedule threshold and a high potential for schedule breach. The PM will re-evaluate the situation in March 2004, and if required, submit a PDR and process a revised APB.

10. Performance Characteristics:

a. Performance --

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

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
MV-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 / 240 /	258	264
Mission Radius (NM)				
Land Trooplift	N/A	/ N/A	243X1	239*** (Ch-1)
Land External	N/A	110X1 / 50X1	50X1*	56.9*** (Ch-1)
Sea Trooplift	N/A	/ N/A	80X2	81.8*** (Ch-1)
Sea External	N/A	/ N/A	50X1	123.7*** (Ch-1)
Amphibious	N/A	200X1 / 200X1	205X1nm **	267.7*** (Ch-1)
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/ / 2100 w/l no / aerial refuel / refuel	2113 w/l aerial refuel	2357*** (Ch-1) w/l aerial refuel
Shipboard Compatible	N/A	/ N/A	yes	yes
V/STOL Capable	N/A	/ N/A	yes	yes
Survivability (mm API @901vel)	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
CV-22				
Interoperability	N/A	Satisfy / Satisfy all top / all top level / level IERS / IERS desg in / desg as JORD / critical	TBD	Satisfy all top level IERS desg in JORD

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate Ch 3, Table C
		Ch3,	/ in JORD Table C / Ch3, / Table C		
Cruise Speed (kts)	N/A	270	/ 230	TBD	233
Mission Radius (nm)	N/A	750	/ 500	TBD	525
Payload - Troops	N/A	24	/ 18	TBD	18
Aerial Refuel Capable	N/A		/ N/A	TBD	yes
Self-Deployment (nm)	N/A	2100 w/o/ aerial	2100 w/1 / aerial	TBD	2159 w/1 aerial
Shipboard Compatible	N/A		/ N/A	TBD	refuel yes
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)	N/A	Locate L2 W/IN	/ Locate / LZ W/IN	TBD	Locate L2 W/IN
Operational Enviroment DECM	N/A	1 Rotor	/ 2X Rotor		2X Rotor
		SIRFC w/RF	/ SIRFC / w/RWR,	TBD	SIRFC w/RF,
		Jamming	/ MW, CMDS		Jamming
MMR (TF/TA)	N/A	DIRCM	/		DIRCM
Reliability		100 FT	/ 300 FT	TBD	100 FT
MFHBF (LOG)	N/A	>=1.2	/ >=0.9	TBD	>=1.0
MFHBA	N/A	15 Hrs	/ 15 Hrs	TBD	16 Hrs
Weapon System (%)	N/A		/ N/A	TBD	77
MTBF	N/A	N/A	/ N/A	N/A	N/A

All radius/range estimated performance are for the Block A MV-22 configuration and the Block 10B CV-22 configuration. Performance impacts of follow-on Block configurations will be assessed as design and incorporation of Block upgrades processes.

\*50NM Land External demonstrated value adjusted for Block A configuration without gun provision.

\*\*205NM demonstrated value adjusted for addition of aft sponson fuel tank.

\*\*\*PM's Current Estimate changes are based on the latest Block A design

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

from the Current Estimate that are not considered fully configured.

Quantities: Excludes 10 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 Strategic Pause and the subsequent program restructure. MS III is currently scheduled for the first quarter of FY06.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAY 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1986 BY\$)	29504.7	31012.2	
(2) Quantity	458	458	
(3) Unit Cost	64.421	67.712	+5.11
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1986 BY\$)	22447.6	23793.5	
(2) Quantity	456	456	
(3) Unit Cost	49.227	52.179	+6.00

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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	-167.7	-6864.9	-6.0	-7038.6
Quantity	+103.0	+11715.9	-	+11818.9
Schedule	+28.2	-2762.8	+7.8	-2726.8
Engineering	+849.1	+1503.4	-	+2352.5
Estimating	+5783.1	+7315.3	-119.8	+12978.6
Other	-	-	-	-
Support	-	+1215.8	-	+1215.8
Subtotal	+6595.7	+12122.7	-118.0	+18600.4
Current Changes:				
Economic	-21.1	+117.3	-0.6	+95.6
Quantity	-	-	-	-
Schedule	-	+36.3	-	+36.3
Engineering	+1.5	-304.1	-	-302.6
Estimating	+23.9	+440.2	+0.6	+464.7
Other	-	-	-	-
Support	-	-532.0	-	-532.0
Subtotal	+4.3	-242.3	-	-238.0
Total Changes	+6600.0	+11880.4	-118.0	+18362.4
Current Estimate	9225.2	38744.6	54.9	48024.7

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	+565.5	+909.3	-	+1474.8
Estimating	+4092.4	+4282.0	-101.5	+8272.9
Other	-	-	-	-
Support	-	-747.7	-	-747.7
Subtotal	+4724.8	+3536.9	-101.5	+8160.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+0.2	-170.5	-	-170.3
Estimating	+15.1	+263.1	+0.2	+278.4
Other	-	-	-	-
Support	-	-329.1	-	-329.1
Subtotal	+15.3	-236.5	+0.2	-221.0
Total Changes	+4740.1	+3300.4	-101.3	+7939.2
Current Estimate	7183.8	23793.5	34.9	31012.2

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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	-21.1
Realignment of Funds from Navy to SOCOM for Completion of Additional Test Aircraft Modification - Navy (Engineering)	-22.9	-34.0
Addition of Block 20 Interoperability Requirements (JTRS, Link 16) - Air Force (Engineering)	+23.1	+35.5
Adjustment for Current and Prior Inflation - Navy/Air Force/USSOCOM (Estimating)	+9.5	+14.2
Revised Estimates for Modification of Additional Test Aircraft (CV) - USSOCOM (Estimating)	+32.1	+47.3
Revised Estimate for Incorporation of Block 10 Requirements (CV) - USSOCOM (Estimating)	+13.4	+21.1
Revised Estimate for Incorporation of CV-22 Block 0 Requirements - Navy (Estimating)	-37.3	-54.9
Revised Estimate for Incorporation of Block 10 Requirements - Air Force (Estimating)	-2.6	-3.8
RDT&E Subtotal	+15.3	+4.3
(2) <u>Procurement</u>		
Revised Escalation Indices - Navy/Air Force/USSOCOM (Economic)	N/A	+117.3
Stretchout of Annual Procurement Buy Profile to Move Aircraft from FY06 to FY15 - Navy (Schedule)	0.0	+24.2
Stretchout of Annual Procurement Buy Profile to Move Aircraft from FY06 to FY15 - Air Force (Schedule)	0.0	+12.1
Addition of Parts Obsolescence Requirement - USSOCOM (Engineering)	+21.4	+36.1
Deletion of Block C Requirements - Navy (Engineering)	-277.8	-474.8
Increase in Cost Reduction Initiatives (CRI) Investments - Navy (Engineering)	+62.2	+95.6
Addition of Scope for Block B Requirements - Air Force (Engineering)	+44.5	+74.5
Deletion of Block C Requirements - Air Force (Engineering)	-36.2	-61.3
Addition of Parts Obsolescence Requirements - Air Force (Engineering)	+15.4	+25.8
Adjustment for Current and Prior Inflation - Navy/Air Force/USSOCOM (Estimating)	+2.8	+4.3

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Estimating Update to Airframe CFE - USSOCOM (Estimating)	-91.4	-151.9
Estimating Update to CFE Mission Electronics - USSOCOM (Estimating)	-144.0	-239.7
Estimating Update to GFE Electronics - USSOCOM (Estimating)	+121.6	+204.1
Estimating Update for Recurring Flyaway ECO - USSOCOM (Estimating)	-5.1	-7.2
Block A Estimating Methodology Change - Navy (Estimating)	-58.6	-99.4
Estimating Update to CRI Savings - Navy (Estimating)	+71.0	+112.3
Adjustment to Learning Curves for Labor and Labor Rates to Reflect Actuals - Navy (Estimating)	+69.5	+127.7
Adjustment to Learning Curves for Material to Reflect Actuals - Navy (Estimating)	+131.6	+202.9
Estimating Update for Advance Procurement for Incorporation of FY12 - FY15 MYP - Navy (Estimating)	+8.8	+11.4
Estimating Updates to GFE (Engines & Electronics) - Navy (Estimating)	+63.0	+110.0
ECO Percentage Update and ECO Changes Based on Airframe/CFE - Navy (Estimating)	-199.7	-317.9
Estimating Update to Non-Recurring Flyaway Items (Non-recurring, Ancillary) - Navy (Estimating)	+19.6	+33.9
Revised Estimate for Resolution Matrix - Navy (Estimating)	+20.8	+31.6
Block B Estimating Methodology Change - Navy (Estimating)	+333.1	+559.4
Adjustment to Learning Curves for Material to Reflect Actuals - Air Force (Estimating)	-4.9	-8.2
Estimating Update for CFE Mission Electronics - Air Force (Estimating)	-40.5	-67.8
ECO Percentage Update and ECO Changes Based on Recurring Flyaway ECO - Air Force (Estimating)	-19.7	-32.6
Block A Estimating Methodology Change - Air Force (Estimating)	-7.8	-13.5
Estimating Update for Advance Procurement for Incorporation of FY12 - FY15 MYP - Air Force (Estimating)	-27.4	-48.4
Adjustment for Current and Prior Inflation - Navy/Air Force/USSOCOM (Support)	+1.6	+1.9

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease in Initial Spares - USSOCOM (Support)	-60.0	-114.7
Decrease in Peculiar Support - USSOCOM (Support)	-37.8	-59.6
Revised Estimate for Other Weapon Systems Cost Elements - USSOCOM (Support)	-116.4	-198.7
Decrease in Initial Spares Includes Realignment of Engine Procurements to Navy Working Capital Fund and Reduction of Sparing Profile - Navy (Support)	-248.0	-394.8
Decrease in Peculiar Support - Navy (Support)	-33.7	-55.8
Revised Estimate for Other Weapon Systems Cost Elements - Navy (Support)	+17.2	+25.3
Increase in Initial Spares - Air Force (Support)	+63.7	+111.8
Decrease in Peculiar Support - Air Force (Support)	-73.8	-108.6
Increase in Other Weapon Systems Cost - Air Force (Support)	+178.5	+290.4
Correction to align Flyaway and Support (Estimating)	+20.4	+29.2
(Support)	-20.4	-29.2
Procurement Subtotal	-236.5	-242.3
(3) MILCON		
Offset for Escalation - Navy/USSOCOM (Estimating)	-0.1	+0.3
Adjustment for Current and Prior Inflation - Navy/USSOCOM (Estimating)	+0.3	+0.3
Revised Escalation Indices - Navy/USSOCOM (Economic)	N/A	-0.6
MILCON Subtotal	+0.2	0.0

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
32.49	-15.16	+58.08	-5.87	+4.48	+29.35	--	+1.49	+72.37	104.86

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	-14.80	+55.18	-5.98	+2.63	+17.01	--	+1.50	+55.54	84.97

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	DEC 2006
Total Cost	24467.0	29662.3	N/A	48024.7
Total Quantity	609	913	N/A	458
Prog Acq Unit Cost	40.2	32.5	N/A	104.9

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  
\$4098.8 N/A 4

Estimated Price At Completion  
Contractor Program Manager  
\$4755.8 \$4755.8

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.3	\$-10.3
Cumulative Variances To Date (10/30/03)	\$8.0	\$-11.3
Net Change	\$10.3	\$-1.0

Explanation of Change:

Since implementation of the Overtarget Baseline (OTB), the Net Cost Variance has been favorably affected by transfer of material no longer required on the EMD contract. Net Schedule Variance was primarily affected by delays in flight test.

Contract Comments:

Changes from Initial Contract Price and Current Contract Price is attributed to the addition of CV requirements, the addition of Block A and Block B modification, and the extension of flight test.

b. Procurement -- V-22 Engine:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Rolls Royce, Indianapolis, IN N00019-95-C-0209, FFP Award: October 11, 1996 Definitized: May 8, 1998	\$19.5	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>
\$301.5	N/A	176	\$301.5	\$301.5

Explanation of Change:

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 eight (8) option years for procurements through FY06. The contract CLIN's provide for award of engines for installation into V-22 aircraft, spares, and logistics support. The change between Initial Contract Price and Current Contract Price is attributable to the increase in the purchase quantity as options were exercised.

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V-22 (OSPREY), December 31, 2003

15. Contract Information (Cont'd):

<u>FY99 LRIP 3 AIRFRAME:</u>			Initial Contract Price		
Bell-Boeing JPO, Patuxent River MD	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-96-C-0054, CPIF	\$555.5	N/A	7		
Award: March 27, 1998					
Definitized: March 27, 1998					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$585.7	N/A	7	\$596.2	\$596.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-17.0	\$-3.1
Cumulative Variances To Date (05/30/03)	\$-20.3	\$-2.2
Net Change	\$-3.3	\$0.9

Explanation of Change:

Aircraft deliveries beyond aircraft 24 are suspended until Block A upgrade is completed. The aircraft have been placed in storage pending modification. CPR reporting was suspended following the May 2003 CPR submitted in June 2003. Reporting will resume in 2005 when aircraft are taken out of storage for modification. Net changes in Cost Variance is due to increased material cost and rate changes. Schedule Variance is due to early receipt of material.

<u>FY00 LRIP 4 AIRFRAME:</u>			Initial Contract Price		
Bell-Boeing JPO, Patuxent River MD	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-99-C-1090, FPI	\$687.0	N/A	10		
Award: March 31, 1999					
Definitized: December 20, 1999					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$799.9	\$799.9	11	\$804.7	\$799.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-61.4	\$-15.1
Cumulative Variances To Date (09/30/03)	\$-42.4	\$-6.3
Net Change	\$19.0	\$8.8

Explanation of Change:

Cumulative Cost Variance had been negatively impacted by increased cost of composite parts and rate increases. Cumulative Schedule Variance was negatively impacted by parts shortages. Ten of the eleven aircraft to be delivered under LRIP Lot 4 were fabricated and assembled up to a point

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V-22 (OSPREY), December 31, 2003

15. Contract Information (Cont'd):

where they would be ready for modification to Block A at a future time. Material that had been originally purchased and received for these aircraft but subsequently identified as not required for the pending Block A modification and completion of the aircraft were legitimately transferred to other efforts where the material could be used. Work that had been originally scheduled for completion of the Lot 4 aircraft and that was contributing to the negative Cost Variance was removed from the schedule pending rescheduling of the Block A modification. Consequence of these two primary drivers was a Net reduction in Cost and Schedule Variance over the year.

Contract Comments:

Aircraft 34 was delivered in a Block A configuration. The remaining 10 aircraft were fabricated through wing/fuselage mate and placed in preservation and storage status pending further modification. CPR reporting was suspended after receipt of the September 2003 report and will resume when the aircraft are brought out of storage for further modification starting late 2004.

Change from Initial Contract Price to Current Contract Price is primarily due to the addition of the 11th aircraft to the contract.

			Initial Contract Price		
			Target	Ceiling	Qty
FY01/FY02 LRIP 5/6 Airfm:					
Bell-Boeing JPO, Patuxent River MD					
N00019-93-C-0183, FPIF/CPIF/CFFF			\$1205.0	\$1267.5	20
Award: June 20, 2000					
Definitized: August 1, 2002					

			Estimated Price At Completion	
			Contractor	Program Manager
Current Contract Price				
Target	Ceiling	Qty		
\$1714.0	\$1873.7	20	\$1720.5	\$1720.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-16.0	\$2.7
Cumulative Variances To Date (10/31/03)	\$-11.2	\$-54.6
Net Change	\$4.8	\$-57.3

Explanation of Change:

Cumulative Cost Variance has been negatively impacted by increased material costs. Schedule Variance is driven by parts shortages.

Contract Comments:

Primary difference between Initial Contract Price and Current Contract Price is due to Amarillo labor, and addition of CV unique components and rate tooling.

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V-22 (OSPREY), December 31, 2003

15. Contract Information (Cont'd):

<u>FY03 LRIP 7 Airframe:</u>			<u>Initial Contract Price</u>		
Bell-Boeing JPO, Patuxent River MD	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-03-C-3017, (AAC)	\$349.8	N/A	11		
Award: January 2, 2003					
Definitized: March 31, 2004					

<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>
\$673.0	\$673.0	11	\$672.5	\$673.0

<u>Previous Cumulative Variances</u>	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$0.0	\$0.0
<u>Cumulative Variances To Date (10/31/03)</u>	<u>\$-5.3</u>	<u>\$-5.1</u>
<u>Net Change</u>	<u>\$-5.3</u>	<u>\$-5.1</u>

Explanation of Change:

Variances are based on two months of performance data. Cost Variance being affected by material cost and Schedule Variance being affected by adjustments being made to the newly established baseline.

Contract Comments:

Baseline budgets and correspondingly performance variances are based on the contractor's proposal. Initial Contract Price was based on the termination liability amount where as the Current Contract Price is based on the Contractor's proposal.

<u>FY04 LRIP 8 Airframe:</u>			<u>Initial Contract Price</u>		
Bell-Boeing JPO, Patuxent River MD	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-03-C-6517, (AAC)	\$54.4	N/A	11		
Award: May 15, 2003					
Definitized: June 30, 2004					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$54.4	N/A	11	\$54.4	\$54.4

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V-22 (OSPREY), December 31, 2003

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (10/31/03)	\$-8.3	\$0.0
Net Change	\$-8.3	\$0.0

Explanation of Change:

Cost Variance is representative of actuals expended for advance procurement prior to definitization of contract and establishment of a baseline.

Contract Comments:

Contractor proposal is due in February 2004 with definitization projected for June 2004.

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	8011.8	546.2	395.7	271.5	9225.2
Procurement	6616.1	1272.3	1522.8	29333.4	38744.6
MILCON	19.9	2.3	2.6	30.1	54.9
O&M	-	-	-	-	-
Total	14647.8	1820.8	1921.1	29635.0	48024.7

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					
1996					
1997					
1998					
1999					
2000				23.6	33.5
2001				28.0	40.2

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V-22 (OSPREY), December 31, 2003

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 \$
2002				71.8	104.1
2003				22.1	32.5
2004				52.8	78.6
2005				49.8	75.1
2006				18.8	28.8
2007					
Subtotal				296.8	430.5

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				374.3	404.8
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	217.9
2002				270.0	391.6
2003				264.0	387.4
2004				270.6	402.5
2005				201.6	304.2
2006				73.9	113.3
2007				27.3	42.6
Subtotal				6638.6	8438.6

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

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V-22 (OSPREY), December 31, 2003

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

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				100.4	145.6
2003				5.2	7.7
2004				43.8	65.1
2005				10.9	16.4
2006				36.9	56.6
2007				10.0	15.6
2008				4.5	7.1
2009				4.6	7.5
Subtotal	2			248.4	356.1

Note: The FY02 Appropriations Act provided funding for two CV Production Representative Test Vehicles.

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				1.4	2.0
2001				4.7	6.8
2002				11.5	16.8
2003				29.3	43.4
2004			28.1	76.4	114.6
2005		2.0	35.5	82.8	126.1

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V-22 (OSPREY), December 31, 2003

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 \$
2006		2.0	22.6	78.9	122.3
2007		2.0	22.7	102.8	162.4
2008		2.0	52.7	124.2	200.1
2009		2.0	60.9	97.7	160.5
2010		2.0	49.4	86.6	145.2
2011		1.9	54.1	83.8	143.3
2012		1.9	55.3	74.6	130.1
2013		2.0	54.7	89.1	158.4
2014		1.9	54.4	74.1	134.4
2015		1.9	38.4	43.8	81.1
Subtotal		21.6	528.8	1064.5	1751.5

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				30.0	41.1
1997	5	40.4	387.1	514.1	709.4
1998	7	15.7	426.6	507.7	708.7
1999	7	16.5	402.1	483.4	683.5
2000	11	20.5	528.0	689.7	987.4
2001	9	62.0	477.4	698.3	1010.2
2002	9	35.4	432.2	607.0	886.8
2003	11	75.4	543.5	722.1	1068.3
2004	9	29.7	443.6	614.6	922.1
2005	8	69.1	397.3	680.4	1036.7
2006	15	87.2	689.4	1028.0	1593.7
2007	29	12.4	1234.8	1447.7	2286.9
2008	30	40.0	1184.9	1449.0	2334.3

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V-22 (OSPREY), December 31, 2003

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 \$
2009	33	39.1	1268.2	1449.1	2381.1
2010	37	17.7	1393.0	1482.5	2484.9
2011	40	1.9	1493.7	1479.9	2530.1
2012	40	2.1	1483.5	1591.4	2775.1
2013	40	2.1	1479.2	1609.6	2863.0
2014	40	2.2	1485.7	1548.1	2808.5
2015	28	6.7	1101.0	1022.3	1891.7
Subtotal	408	576.1	16851.2	19851.6	32234.9

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				28.6	40.9
2001		10.6	10.1	38.2	55.3
2002					
2003				66.3	98.1
2004	2		95.3	157.0	235.6
2005	3		157.9	236.3	360.0
2006	2	5.9	99.3	163.8	253.9
2007	2	11.4	90.4	181.3	286.4
2008	5	11.4	189.9	320.9	517.0
2009	6	19.7	217.8	318.8	523.8
2010	5	1.4	177.6	269.0	450.8
2011	5	1.4	175.3	255.9	437.5
2012	5	1.4	173.8	254.7	444.2
2013	5	1.4	177.1	215.6	383.4
2014	5	1.4	177.9	228.3	414.1
2015	3	1.4	113.4	127.1	235.2
Subtotal	48	67.4	1849.2	2877.4	4758.2

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, 2003

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				6.8	10.2
2003				1.4	2.1
2004					
2005				0.6	0.9
2006				0.9	1.4
2007				11.8	19.6
Subtotal				21.8	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				0.7	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				13.1	20.2

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V-22 (OSPREY), December 31, 2003

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD		21.6	528.8	1383.1	2216.7
Navy	408	576.1	16851.2	26503.3	40693.7
USAF	50	67.4	1849.2	3125.8	5114.3
Grand Total	458	665.1	19229.2	31012.2	48024.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	17	17

Percent Total Program Quantities Delivered: 3.7%

b. Total Expenditures To Date (In Millions of Dollars): \$ 12406.5

Percent Total Program Expended: 25.8%

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(1squad)	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
JP-5 Cost per Gallon (FY04)	\$0.93	\$0.93	\$0.93
JP-5 Cost per Barrel (42 gal)	\$39.06	\$39.06	\$39.06
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\$)	\$53.5M	\$50.5M	\$62.7M
Airframe Unit Weight (AUW) lbs	33140 lbs	33140	35555

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V-22 (OSPREY), December 31, 2003

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

Weight Empty lbs. Blk A/Blk 10	33531 lbs	33531 lbs	35922 lbs
Total Operating Years	39(FY03-FY41)	31(FY13-FY43)	38(FY04-FY41)

Date of estimate: January 2004

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	N/A
Mission Pay & Allowances	601.6	N/A
Unit Level Consumption	938.9	N/A
Intermediate Maintenance	259.6	N/A
Depot Maintenance	230.0	N/A
Contractor Support	143.4	N/A
Sustaining Support	238.2	N/A
Indirect Costs	346.1	N/A
Total	2757.8	N/A

Total O&S Cost	V-22 OSPREY	N/A
BY\$ (In Millions)	27335.6	N/A
TYS (In Millions)	62288.2	N/A

Report Creation Date: 03/22/2004 10:24:00 AM

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N-18 LHD 1

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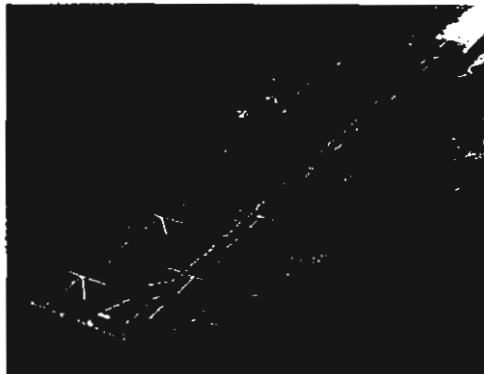
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: LHD - 1

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): LHD 1 Amphibious Assault Ship

2. DoD Component: Navy

3. 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 20376-2101	hooperRW@navsea.navy.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603564N (Shared) (SUNK) Project 0408, 9389

PE 0604567N (Shared) (SUNK) Project 01803, S0857

PROCUREMENT:

APPN 1611 ICN 3035 (Navy)

5. References:

SAR Baseline (Development Estimate):

SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated August 15, 1985.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated July 24, 2000.

CLEAR  
AS AMENDED  
AS AMENDED

04-6/200  
MAY 2004

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04-C-0695

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LHD - 1, December 31, 2003

## **6. Mission and Description:**

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. Executive Summary:**

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 and construction started in May 2003.

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LHD - 1, December 31, 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 --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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

IOC - Reflects date the lead ship was ready for operational deployment.

b. Current Change Explanations -- None

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9b. Schedule (Cont'd):

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Troops	1873	1873 / 1873	1894	1894	
Vehicle Square (ft^2)	22900	22900 / 22900	22900	22900	
Cargo Cube (ft^3)	109000	109000 / 109000	109000	109000	
LCAC	3	3 / 3	3	3	
Length (ft)	840	844 / 844	844	844	
Beam (ft)	106	106 / 106	106	106	
Draft (full load) (ft/inches)	26'	26'8" / 26'8"	26'8"	26'8"	
Displacement (full load)	39400	40533 / 40533	40533	40533	
Offload Capability (tons/hr)	300	300 / 300	300	300	
Propulsion	Steam	Steam / Steam	Steam	Gas Turbine (LHD 8 only)	
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)	9500	9500 / 9500	9500	9500	(Ch-1)
Armament:					
Close in Weapon System	3	3 / 3	3	3	
Self Defense Missile System	2	2 / 2	2	2	

b. Current Change Explanations --

(Ch-1) In Sep 2003 security classification was downgraded from ~~Confidential~~ to unclassified in revised Security Classification Guide - OPNAVINST S5513.3B, enclosure 101.5 (LHD 1 Class Amphibious Assault Ship).

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 reflect the full load weight estimate at the completion of the contract design.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	39.9	42.3	43.1
Procurement	2891.9	7463.7	7296.2
Sailaway	(2872.5)		(7274.0)
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	0.0	0.0	0.0
Total FY 1982 Base-Year \$	2931.8	7506.0	7339.3
Escalation	1519.2	2746.6	2590.8
Development (RDT&E)	(3.7)	(5.4)	(6.0)
Procurement	(1515.5)	(2741.2)	(2584.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4451.0	10252.6	9930.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	3	8	8
Total	3	8	8

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (JUL 2000 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1982 BY\$)	7506.0	7339.3	
(2) Quantity	8	8	
(3) Unit Cost	938.250	917.413	-2.22
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1982 BY\$)	7463.7	7296.2	
(2) Quantity	8	8	
(3) Unit Cost	932.962	912.025	-2.24

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13. Cost Variance Analysis:

a. 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	-1221.0	-	-1221.4
Quantity	-	+6952.9	-	+6952.9
Schedule	+4.5	-907.0	-	-902.5
Engineering	-	+94.8	-	+94.8
Estimating	-	+509.2	-	+509.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.1	+5428.9	-	+5433.0
Current Changes:				
Economic	-	+21.1	-	+21.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.4	+23.6	-	+25.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.4	+44.7	-	+46.1
Total Changes	+5.5	+5473.6	-	+5479.1
Current Estimate	49.1	9881.0	-	9930.1

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	-	+61.8	-	+61.8
Estimating	-1.0	+193.8	-	+192.8
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.4	+4391.3	-	+4393.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.8	+13.0	-	+13.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.8	+13.0	-	+13.8
Total Changes	+3.2	+4404.3	-	+4407.5
Current Estimate	43.1	7296.2	-	7339.3

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&amp;E</u>		
	Congressional Add for LHD 8 Propulsion and Auxiliary Systems Performance-Based Logistics Support Plan in FY04 (Estimating)	+0.8	+1.4
	RDT&E Subtotal	+0.8	+1.4
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+21.1
	Adjustment for Current and Prior Inflation. (Estimating)	-7.8	-13.1
	Adjustments in FY04 for Outsourcing and Management Efficiencies (Estimating)	-1.6	-2.8
	Warfare Center rate adjustments (FY05-FY06) (Estimating)	-0.5	-0.8
	Increase to fund contractor rate adjustments and increased escalation in FY06 (Estimating)	+28.2	+48.9
	Actual outfitting and post delivery cost on completed portion of program (Estimating)	-1.9	-2.9
	Revised LHD 8 outfitting estimate (Estimating)	+1.4	+2.3
	Reduction based on revised Shipbuilding estimate (Estimating)	-4.8	-8.0
	Procurement Subtotal	+13.0	+44.7

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	Changes								PAUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
1483.67	-150.04	-58.17	-112.81	+11.85	+66.77	--	--	-242.40	1241.26

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
1469.13	-149.99	-49.09	-113.38	+11.85	+66.60	--	--	-234.01	1235.12

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

c. <u>Schedule, Cost, and Quantity History</u>				
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	JUN 1983	N/A	JUN 1983
IOC	N/A	MAY 1990	N/A	NOV 1990
Total Cost	N/A	4451.0	N/A	9930.1
Total Quantity	N/A	3	N/A	8
Prog Acq Unit Cost	N/A	1483.7	N/A	1241.3

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

a. Procurement --		Initial Contract Price		
LHD 8 Design&Procurement:		Target	Ceiling	Qty
Northrup Grumman Ship Sys, Pascagoula MS				
N00024-00-C-2217, FPI		\$1359.5	\$1512.9	1
Award: April 19, 2002				
Definitized: April 19, 2002				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$1370.2	\$1524.8	1	\$1411.2	\$1432.7
Previous Cumulative Variances		Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/28/03)		\$-5.7	\$-27.1	
Net Change		\$-16.5	\$-17.0	
		\$-10.8	\$10.1	

Explanation of Change:

Cost Variance: The net unfavorable change in cost is primarily attributed to Indirect Costs, General and Administrative (G&A) for higher costs of pensions and medical insurance, Material Acquisition Planning (MAP) due to a lower material base than projected and Labor Overhead associated with higher rates at NGSS.

Schedule Variance: The net favorable change in schedule is a result of improved performance with previously behind Progress Billings.

The PM's Estimated Price at Completion takes the variances into consideration.

Contract Comments:

Increase in the current target price is due to contract modifications required to address specification deficiencies and obsolescence.

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15. Contract Information (Cont'd):

Note: Contract is Fixed Price Incentive, however, reported contract values include Firm Fixed Price Items.

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

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

<u>Appropriation</u>	<u>Prior Years (FY81-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RD&E	47.7	1.4	-	-	49.1
Procurement	9090.2	352.2	246.1	192.5	9881.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	9137.9	353.6	246.1	192.5	9930.1

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
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002					
2003					
2004				0.8	1.4

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

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

Fiscal Year	Qty	Sailaway FY 1982 Dollars Nonrec	Sailaway FY 1982 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal				43.1	49.1

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	1110.8	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		602.1	578.7	740.4
1990				35.2	46.4
1991	1		907.4	872.0	1180.0
1992				20.5	28.4
1993				240.7	337.5
1994	1		842.9	643.6	924.1
1995				43.7	63.4
1996	1		948.2	864.6	1268.9
1997				8.3	12.3
1998				9.3	14.0
1999				41.3	62.9
2000				233.7	361.4
2001				302.4	474.3
2002	1		1318.2	167.3	266.3
2003				144.0	238.0
2004				209.9	352.2
2005				144.4	246.1
2006				75.3	130.5
2007				18.1	32.0
2008				1.8	3.2
2009				14.6	26.8
Subtotal	8	150.0	7124.0	7296.2	9881.0

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	8	150.0	7124.0	7339.3	9930.1

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**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	8	7

Percent Total Program Quantities Delivered: 87.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 7927.7

Percent Total Program Expended: 79.8%

**18. Operating and Support Costs:**

a. 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 (\$58.4M) and for LHD 8 (\$55.7). Service life for calculating total O&S is assumed as 40 years for ships of the LHD 1 Class. All costs are in FY82 constant dollars. (Cost estimate dated December 2003.)

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 are based on projected delivery dates to the Fleet of replacement Big Deck Amphibious Assault Ships (starting with LHD 8), given the requirement to support twelve Amphibious Ready Groups (ARGs).

b. 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	22.3
Unit Level Consumption	9.7	8.9
Intermediate Maintenance	0.7	0.7
Depot Maintenance	15.7	17.4
Contractor Support	0.0	0.0
Sustaining Support	4.2	5.7
Indirect Costs	2.5	2.2
Total	58.1	57.2

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

Total O&S Cost	LHD	LHA 1
BY\$ (In Millions)	18592.9	11167.8
TY\$ (In Millions)	50574.3	18379.3

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)  
PROGRAM: ATIRCM/CMWS

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): Advanced Threat Infrared Countermeasure/Common Missile Warning System (ATIRCM/CMWS)

2. (U) DoD Component: Army

Joint Participants:  
 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 645-0598; COMM 256-955-0598
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 20430000 (DoD)
- (U) APPN 2031 ICN AA0722 (Army)
- (U) APPN 2031 ICN AA0980 (Army)
- (U) APPN 2031 ICN AZ3507 (Army)

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SECURITY REVIEW  
 DEPARTMENT OF DEFENSE

~~Classified by: [redacted] for ATIRCM/CMWS dated May 15, 03  
 Downgrade instructions:  
 Declassify on: X-3~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated March 29, 1996.

Approved Program / Production Estimate (PdR):

(U) AAE Approved Acquisition Program Baseline (APB) dated November 25, 2003.

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 CMWS also functions 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 IR survivability system for Future Force Army Aircraft.

The A-Kit is the modification hardware, wiring harness, cable, etc., necessary to install and interface the ATIRCM/CMWS Mission Kit to each platform. The A-Kit ensures the Mission Kit is functionally and physically operational with the host platform.

The Mission Kit consists of the ATIRCM/CMWS which performs the missile detection, false alarm rejection, and missile declaration functions of the system. The Electronic Control Unit (ECU) of the CMWS sends a missile alert signal to on-board avionics and other Aircraft Survivability Equipment (ASE) such as expendable flare dispensers. Threat missiles detected by the CMWS are handed over to the ATIRCM.

7. (U) Executive Summary:

(U) An Army Systems Acquisition Review Council (ASARC) resulted in a Milestone C Low Rate Initial Production (LRIP) decision in November 2003.

The Army Cost Position (ACP) was approved November 07, 2003. The Operational Requirements Document (ORD) was approved November 17, 2003. The Acquisition Strategy was approved November 21, 2003. The Acquisition Program Baseline

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

(APB) was approved November 25, 2003. The Army Acquisition Executive (AAE) signed the Acquisition Decision Memorandum (ADM) on November 26, 2003, giving permission to enter into LRIP for 59 systems.

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) SEP 1991	Approved Program; PdE SEP 1991	Current Estimate SEP 1991
(U) 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 (Ch-1)
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	JAN 2005	JAN 2005 (Ch-1)
Complete	JAN 2000	MAR 2005	MAR 2005 (Ch-1)
LRIP Decision	N/A	N/A	N/A (Ch-1)

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

	Development Estimate (SAR)	Approved Program; PdE	Current Estimate	
Lot I LRIP Contract Award	N/A	N/A	N/A	(Ch-1)
Milestone III	FEB 2000	N/A	N/A	(Ch-1)
Lot II Production Contract Award	APR 2000	N/A	N/A	(Ch-1)
First Production Delivery	APR 2001	N/A	N/A	(Ch-1)
First Unit Equipped without Obstacle Avoidance System	NOV 2001	N/A	N/A	(Ch-1)
Initial Operational Capability	(b)(1)			(Ch-1)
Organic Support Available	FEB 2005	N/A	N/A	(Ch-1)
Depot Level Maintenance Support Established	FEB 2005	N/A	N/A	(Ch-1)
Limited Production Urgent (LPU) CMWS	N/A	FEB 2002	FEB 2002	(Ch-1)
LPU CMWS Contract Award	N/A	MAR 2002	MAR 2002	(Ch-1)
Milestone C (LRIP) ATIRCM	N/A	NOV 2003	NOV 2003	(Ch-1)
User Test Complete CMWS	N/A	NOV 2003	NOV 2003	(Ch-1)
LRIP Contract Award ATIRCM	N/A	MAR 2004	MAR 2004	(Ch-1)
First Unit Equipped CMWS	N/A	MAR 2004	MAR 2004	(Ch-1)
Full Rate Production ATIRCM	N/A	AUG 2005	AUG 2005	(Ch-1)
First Unit Equipped ATIRCM	N/A	AUG 2005	AUG 2005	(Ch-1)

(U) Acronyms:

DEMVAL - Demonstration and Validation  
 EMD - Engineering, Manufacturing and Development  
 LRIP - Low Rate Initial Production  
 MS - Milestone

Notes:

1. LPU contract awarded for a quantity of 37 CMWS. LRIP decision approved for a quantity of 59.
2. MS III - now LRIP MS C for ATIRCM, approved November 2003.

b. Current Change Explanations --

(U) (Ch-1) The PM's current estimate has been revised to reflect the November 25, 2003, approved Acquisition Program Baseline which supported the Milestone C decision of November 26, 2003. The milestones no longer applicable have been deleted from the revised APB.

MILESTONE:	FROM:	TO:
Operational Testing		
Start	JAN 2004	JAN 2005
Completion	AUG 2004	MAR 2005
Milestone III	MAY 2003	N/A
Initial Operational Capability	JUN 2005	JUN 2006
Lot II Prod Contract Award	FEB 2004	N/A
First Production Delivery	DEC 2002	N/A
First Unit Equipped W/O	JAN 2003	N/A

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

Obstacle Avoidance System		
Organic Support Available	SEP 2019	N/A
Depot Level Maintenance	SEP 2019	N/A
LRIP Decision	FEB 2002	N/A
Lot 1 LRIP Contract Award	MAR 2002	N/A
Limited Procurement Urgent CMWS	N/A	FEB 2002
LPU CMWS Contract Award	N/A	MAR 2002
First Unit Equipped CMWS	N/A	MAR 2004
Full Rate Production ATIRCM	N/A	AUG 2005
User Test Complete CMWS	N/A	NOV 2003
First Unit Equipped ATIRCM	N/A	AUG 2005
LRIP Contract Award ATIRCM	N/A	MAR 2004

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program; PdE Obi/Threshold	Demon- strated Perf	Current Estimate	
SIIRCM min prob (in the aggregate for each type aircraft of the host aircraft successfully countering the tier one mals (Mistral desired) as listed in CMWS attachment to the SIIRCM ORD (%))	(b)(1)				(Ch-1)
ATIRCM/CMWS False Alarm Rate (per flight hour)					(Ch-1)
ATIRCM/CMWS Jamming Capability System Weight (lb)	125	N/A	/ N/A	145.3	N/A (Ch-1)
CMWS Missile Warning Sensor Weight (lbs)	3.5	N/A	/ N/A	2.78	N/A (Ch-1)
CMWS Processor Weight (lbs)	22	N/A	/ N/A	16	N/A (Ch-1)
CMWS Missile Warning Sensor Size (Length and diameter) (in)	4.25/ 4.75	N/A	/ N/A	4.25x5.3	N/A (Ch-1)
CMWS Processor Size (in)	11x9.8x 5.5	N/A	/ N/A	9.1x10.7 x5.5	N/A (Ch-1)
CMWS False Alarm Rate (per flight hour)	(b)(1)				(Ch-1)
CMWS No. of Simultaneous Missiles Declared and No. in Same Quadrant					(Ch-1)

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

	Development Estimate (SAR)	Approved Program; PdE Obj/Threshold	Demon- strated Perf	Current Estimate	
CMWS % Declaration of aggregate valid tier one msls w/i 3 sec or 1/2 time of flight time to intercept	(b)(1)				(Ch-1)
CMWS Mission Reliability	99.0	N/A / N/A	TBD	N/A	(Ch-1)
Successfully counter tier 1 msls	(b)(1)				(Ch-2)
Defeat multiple threats	(b)(1)				(Ch-2)
IR Expendable - successfully counter tier 1 threats	(b)(1)				(Ch-2)
Interoperability - Communicate via common data bus	N/A	1553 / 1553	TBD	Complete	(Ch-2)
Reliability - Mean Time Between Mission Affecting Failures	N/A	300 hrs / 150 hrs	TBD	150 hrs	(Ch-2)
ATIRCM false alarm rate (per 4 opn hrs)	(b)(1)				(Ch-2)
ATIRCM weight (lbs)					
AH-64D	N/A	125 / 210	TBD	194	(Ch-2)
UH-60	N/A	125 / 220	TBD	197.4	(Ch-2)
MH-60K	N/A	125 / 245	TBD	206	(Ch-2)
CH-47D	N/A	125 / 500	TBD	310.4	(Ch-2)
MH-47E/G	N/A	125 / 540	TBD	324.1	(Ch-2)
CMWS/ICMD false alarm rate (per 2 opn hrs)	(b)(1)				(Ch-2)

(U) Acronyms:

CMWS - Common Missile Warning System  
 ICMD - Improved Countermeasure Dispenser  
 lb - pound  
 min - minimum  
 Msls - Missiles  
 opn hr(s) - operational hour(s)  
 ORD - Operational Requirements Document  
 prob - probability  
 sec - seconds  
 SIIRCOM - Suite of Integrated Infra-red Countermeasures  
 w/i - within

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ATIRCM/CMWS, December 31, 2003

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

b. Current Change Explanations --

(U) (Ch-1) The performance parameters have been deleted from the production APB. The current estimate is N/A as these parameters are no longer being tracked.

(U) (Ch-2) These performance characteristics have been added to the approved program reflected in the production APB.

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
Development (RDT&E)	568.1	601.9	593.0
Procurement	2323.3	2215.7	2202.7
Recurring Flyaway	(1949.5)		(1828.8)
Nonrecurring Flyaway	(156.9)		(113.9)
Total Flyaway	(2106.4)		(1942.7)
Other Wpn System Costs	(144.1)		(178.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(72.8)		(81.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	2891.4	2817.6	2795.7
Escalation	470.2	423.0	502.4
Development (RDT&E)	(-8.3)	(-29.0)	(-20.5)
Procurement	(478.5)	(452.0)	(522.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3361.6	3240.6	3298.1

(U) Development estimate has been converted from FY 1996 to FY 2003 base year dollars using a factor of 1.10012 for RDT&E and 1.10005 for Procurement.

b. (U) Quantity --

Development (RDT&E)	25	18	18
Procurement	3069	2650	2650
Total	3094	2668	2668

(U) The unit of measure (A-Kit) reflects the number of platforms upon which the

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ATIRCM/CMWS, December 31, 2003

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

ATIRCM/CMWS units will be installed. Mission kits may not be the same quantity as the number of A-Kits.

Milestone C LRIP decision made November 26, 2003, for a quantity of 59.

c. (U) Foreign Military Sales --  
None.

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (NOV 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	2817.6	2795.7	
(2) Quantity	2668	2668	
(3) Unit Cost	1.056	1.048	-0.76
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	2215.7	2202.7	
(2) Quantity	2650	2650	
(3) Unit Cost	0.836	0.831	-0.60

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ATIRCM/CMWS, December 31, 2003

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	+0.2	+67.4	-	+67.6
Quantity	-	-976.1	-	-976.1
Schedule	-	-188.6	-	-188.6
Engineering	+176.8	-	-	+176.8
Estimating	-164.0	+1337.1	-	+1173.1
Other	-	-	-	-
Support	-	+289.1	-	+289.1
Subtotal	+13.0	+528.9	-	+541.9
Current Changes:				
Economic	-0.5	+27.1	-	+26.6
Quantity	-	-22.1	-	-22.1
Schedule	-	-100.7	-	-100.7
Engineering	-	-	-	-
Estimating	+0.2	-335.7	-	-335.5
Other	-	-	-	-
Support	-	-173.7	-	-173.7
Subtotal	-0.3	-605.1	-	-605.4
Total Changes	+12.7	-76.2	-	-63.5
Current Estimate	572.5	2725.6	-	3298.1

(U) Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	568.1	2323.3	-	2891.4
Previous Changes:				
Quantity	-	-634.9	-	-634.9
Schedule	-	-246.4	-	-246.4
Engineering	+160.9	-	-	+160.9
Estimating	-136.2	+1050.0	-	+913.8
Other	-	-	-	-
Support	-	+174.7	-	+174.7
Subtotal	+24.7	+343.4	-	+368.1
Current Changes:				
Quantity	-	-16.9	-	-16.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.2	-315.5	-	-315.3
Other	-	-	-	-
Support	-	-131.6	-	-131.6
Subtotal	+0.2	-464.0	-	-463.8
Total Changes	+24.9	-120.6	-	-95.7
Current Estimate	593.0	2202.7	-	2795.7

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ATIRCM/CMWS, December 31, 2003

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	-0.5
Adjustment for current and prior inflation (Estimating)	+0.2	+0.2
RDT&E Subtotal	+0.2	-0.3
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	+43.5
Economic adjustment for negative program change (Economic)	N/A	-16.4
Adjustment for current and prior inflation (Estimating)	+0.5	+0.5
Quantity decrease of 29 A-Kits from 2679 to 2650 (Quantity)	-16.9	-22.1
Allocation to schedule variance resulting from quantity change (QR) (Schedule)	0.0	-39.3
Allocation to estimating variance resulting from quantity change (QR) (Estimating)	-1.1	-1.4
Acceleration of annual procurement buy profile (Schedule)	0.0	-61.4
Revision of estimating methodology for System Engineering Program Management (SEPM) in new Army Cost Position (ACP) (Estimating)	-82.7	-94.5
Revision of learning curve assumption for A-Kit installation in new ACP (Estimating)	-200.4	-200.1
Revision of learning curve assumption for A-Kit production in new ACP (Estimating)	-24.3	-30.1
End production one year earlier saving SEPM cost from FY 2024 (Estimating)	-7.5	-10.1
Revision of initial spares estimating methodology in new ACP (Support)	+0.8	+2.0
Acceleration of initial spares annual procurement buy profile (Support)	0.0	-3.8
Reduction of 29 training systems in new ACP (Support)	-37.8	-46.9
Reduction in data requirements in new ACP (Support)	-16.8	-19.6
Reduction in requirements for upgrades to simulators in new ACP (Support)	-24.6	-32.6
Reduction in Contractor Logistics Support requirement from 17 years to 5 years in new ACP (Support)	-53.2	-72.8
Procurement Subtotal	-464.0	-605.1

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ATIRCM/CMWS, December 31, 2003

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

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

14. ~~(S)~~ 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	+0.035	-0.200	-0.108	+0.066	+0.314	--	+0.043	+0.150	1.24

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.913	+0.036	-0.233	-0.109	--	+0.378	--	+0.044	+0.116	1.03

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	JUN 1995	JUN 1995
Milestone II	N/A	JUN 1995	JUN 1995	JUN 1995
Milestone C	N/A	FEB 2002	NOV 2003	NOV 2003
(b)(1)				
Total Cost	0.0	3361.6	3240.6	3298.1
Total Quantity	0	3094	2668	2668
Prog Acq Unit Cost	0.0	1.1	1.2	1.2

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ATIRCM/CMWS, December 31, 2003

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

(U) Contract DAAB07-95-C-D606 completed February 2002 and variances are no longer reported.

a. RDT&E --  
 (U) CMWS - SOA:  
 BAE Systems, Nashua, NH  
 DAAB07-02-C-B213, FFP  
 Award: March 1, 2002  
 Definitized: January 31, 2003

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$24.3	\$24.3	26

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$27.8	\$27.8	37	\$27.8	\$27.8

Explanation of Change:

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

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

a. 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> (FY06-23)	<u>Total</u>
RDT&E	507.8	7.1	7.1	50.5	572.5
Procurement	81.7	79.3	79.2	2485.4	2725.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	589.5	86.4	86.3	2535.9	3298.1

b. Annual Summary -- ATIRCM/CMWS

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

<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>
1996				9.5	8.9
1997				17.4	16.4
1998				12.6	12.0
1999				1.7	1.6
Subtotal	2			41.2	38.9

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ATIRCM/CMWS, December 31, 2003

16b. (U) 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 \$
1990				0.7	0.6
1991				3.3	2.8
1992				16.9	14.6
1993				9.1	8.0
1994				8.3	7.5
1995				8.4	7.7
1996				16.9	15.8
1997				21.9	20.7
1998				34.3	32.6
1999				40.5	39.0
2000				48.4	47.3
2001				38.6	38.2
2002				39.4	39.3
2003					
2004				6.9	7.1
2005				6.8	7.1
2006				10.1	10.7
2007				13.5	14.5
2008				13.1	14.4
2009				9.7	10.9
Subtotal	7			346.8	338.8

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

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				23.3	21.4
1996				38.8	36.2
1997				36.9	34.8
1998				24.6	23.4
1999				31.6	30.4
2000				49.8	48.6
Subtotal	9			205.0	194.8

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	32	14.8	27.7	43.4	43.5
2003		5.3	2.9	16.4	16.7

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ATIRCM/CMWS, December 31, 2003

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

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004			4.0	4.0	4.1
Subtotal	32	20.1	34.6	63.8	64.3

(U) FY 03 flyaway dollars support Army Systems Engineering Program Management in year when Army had no funding. FY 04 flyaway dollars support quantities shown in Army funding section. Funds are combined to support total program requirements.

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997		9.6		9.6	9.1
1998		7.6		7.6	7.3
1999					
2000		5.2		5.2	5.1
2001					
2002					
2003					
2004	35	19.0	45.1	72.9	75.2
2005	48	3.7	61.7	75.6	79.2
2006	105		60.5	94.6	100.8
2007	124	3.8	82.2	99.4	107.9
2008	168		111.7	134.4	148.8
2009	170	8.9	103.6	123.7	139.7
2010	155		93.3	109.3	125.9
2011	144	7.2	88.2	109.6	128.7
2012	131	10.8	84.4	109.8	131.9
2013	146	18.0	82.9	110.0	134.4
2014	167		100.1	110.2	137.4
2015	164		99.6	110.4	140.4
2016	164		99.9	110.7	143.5
2017	166		99.8	110.8	146.6
2018	165		99.3	111.0	149.8
2019	146		100.7	109.0	150.0
2020	105		97.9	106.9	150.0
2021	105		95.8	104.8	150.0
2022	105		94.8	102.7	150.0
2023	105		92.7	100.7	150.0
2024					
Subtotal	2618	93.8	1794.2	2138.9	2661.3

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ATIRCM/CMWS, December 31, 2003

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	2			41.2	38.9
Army	2625	93.8	1794.2	2485.7	3000.1
USAF	9			205.0	194.8
OSD	32	20.1	34.6	63.8	64.3
Grand Total	2668	113.9	1828.8	2795.7	3298.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	12	12
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 576.6

(U) Percent Total Program Expended: 17.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Average of 20-year operational life (FY 2004-2038) of 2668 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 operations and support costs are associated with the system.

Unit Level Consumption includes replenishment spares and repair parts. Contractor Support includes 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 November 2003.

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ATIRCM/CMWS, December 31, 2003

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

b. (U) Costs -- (FY 2003 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	N/A
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	N/A

Total O&S Cost	ATIRCM/CMWS	Antecedent System
BY\$ (In Millions)	504.5	N/A
TY\$ (In Millions)	792.6	N/A

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AF-8 C-130J

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: C-130J Hercules

AS OF DATE: December 31, 2003

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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 C130J0 (Air Force)

MILCON:

PE 0401132F

O&M:

PE 0401132F

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C-130J Hercules, December 31, 2003

## **5. References:**

SAR Baseline (Production Estimate):

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline dated October 25, 1996.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated March 7, 2003.

## **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, fire-fighting 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 from austere landing zones with as little as 3,000 feet of dirt runway.

A stretched version of the C-130J offers operators 55 feet of cargo compartment length. The additional 15 feet translates into 30 percent more useable volume for increased seating, litters, pallets or airdrop platforms thus providing the significant advantage of sortie number reduction for mission completion. The C-130J offers a greater value when compared to any other tactical airlifter. Reductions in maintenance man-hours per flight and flight and maintenance manpower result in a 47% lower squadron operating and support cost.

## **7. Executive Summary:**

On December 31, 2001, the Under Secretary of Defense (Comptroller) approved FY03 President's Budget (PB) titled: C-130J Multiyear Procurement. The FY 2003 President's Budget calls for the Air Force to procure 40 aircraft from FY03 to FY08. In FY04 Congress removed the quantity restriction and granted authority to place two aircraft, which were in the FY03 PB for a total of 42, on the multiyear contract. The United States Air Force/United States Marine Corps Multiyear contract was awarded March 14, 2003. The award of the Multiyear contract insures a stable production line of C-130J/KC-130J aircraft and an experienced labor pool for the next six years. The percentage savings generated for the USAF was 10.9% (\$324M) and for USMC 9.8% (\$177M). This contract represents each Service's first large commitment to this program since its inception in 1996.

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C-130J Hercules, December 31, 2003

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

The C-130J Block 5.4 upgrade placed on contract March 24, 2003, via an Uninitiated Contract Action (UCA) was definitized on November 25, 2003. This upgrade represents the key to achieving "basic operational capability" and is a precondition for entering Operational Test and Evaluation (OT&E), Phase II. The System Program Office, Air Mobility Command (AMC) and Lockheed Martin Aeronautics began planning and defining the Block Upgrade 6.0, which is scheduled to be on contract in Spring 2004 and fielded in 2005. The Operational Requirements Document was rewritten to more closely match the C-130J evolutionary acquisition strategy which includes Block 5.4 as spiral one and 6.0 spiral two. It is currently undergoing AF major command comment resolution and awaiting Air Force Requirements and Oversight Council (AFROC). The associated Test & Evaluation Master Plan revision is also underway.

Precursors to Block 5.4, Block 5.3.6, and the "Group Hug Mod" program that incorporates outstanding Time Compliance Technical Orders (TCTOs) into the current fielded fleet of C-130Js, are progressing on schedule and plan. Twenty-one out of thirty-five aircraft have completed the process and the program is on track for completion in May 2004.

The Block 6.0 Upgrade will be the first task order awarded concurrently with the Block Upgrade Improvement Contract (BUIC) that the United States Air Force is in the process of contracting with Lockheed Martin-Marietta. This will be a FAR Part 15 development contract. The BUIC is an Indefinite Delivery/Indefinite Quantity Contract with a five-year ordering period and a ceiling of \$325 million. A Spring 2004 award date is planned.

During 2003 the C-130J team successfully executed a way-forward plan to enhance the AP/APN 241 Low Power Color Radar installed on all variants of the C-130J (and the C-130H) to enable its performance of the weather mission. The radar was designed to provide precision ground mapping and avoidance of severe weather formations. However, 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, an Air Force Reserve Command decision was made to enhance the radar for this mission. As a result, a spiral development program was initiated, and the requirements definition phase was contracted for in November 2002.

In the last spiral of WC-130J Radar Enhancement, Qualification Testing and Evaluation (QT&E) on the WC-130J will occur when the improved radar software becomes available for test in actual cyclonic storm conditions. The software development and integration has proved more difficult than anticipated and has caused a slip to the development, integration and test schedules. The radar software Formal Qualification Test and Characterization Demonstration will be conducted January 12-16, 2004. The first opportunity to begin severe weather testing will be late spring 2004 off the coast of Southern Mexico. Funding in the amount of \$35M is currently available to develop a higher power radar transmitter for the second spiral of radar enhancement. The Contractors are reevaluating the technical approach and are expected to propose their development effort by February 2004.

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C-130J Hercules, December 31, 2003

7. Executive Summary (Cont'd):

The de-ice boot durability correction (petal modification) was installed on four aircraft and continues to work well in the non-storm environment. The SATCOM has also demonstrated a continuous operational capability in a benign weather environment. The Petal Modification along with the SATCOM will undergo further evaluation in a hurricane environment when the radar software is assessed in mid-calendar year 2004.

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 -- None

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C-130J Hercules, December 31, 2003

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Cockpit Crew (All Missions)	2	2 / 2	TBD	2
Maximum Payload (lbs)	39311	39311 / 38910	TBD	38910
Normal Maximum Take-off Gross Weight (lbs)	155000	155000 / 155000	155000	155000
Design Landing Gross Weight (lbs)	130000	130000 / 130000	130000	130000
Take-off Distance at Max Take-off Weight over 50 ft Obstacle (ft)	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 / +120	TBD	-40/+120
Sortie Reliability (SR) (%)	95.4	95.4 / 94.2	TBD	97
Mission Capable Rate (MC) (%)	84.0	84.0 / 81.0	TBD	81.0
Mean Repair Time (hrs)	6.3	6.3 / 7.4	TBD	5.9
Mean Time Between Repair (MTBR) (hrs)	4.6	4.6 / 3.8	TBD	3.8

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C-130J Hercules, December 31, 2003

10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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 Report (LG98ER0362 Rev 1, May 1999).

b. Current Change Explanations -- None

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	8.9	204.9	198.5
Procurement	721.8	13041.0	13105.1
Fly Away	(540.1)		(10812.3)
OTHER COSTS	(122.2)		(1724.7)
Peculiar Support	(9.4)		(57.6)
Initial Spares	(50.1)		(510.5)
Construction (MILCON)	0.0	153.0	148.5
Acquisition O&M	0.0	45.0	44.9
Total FY 1996 Base-Year \$	730.7	13443.9	13497.0
Escalation	109.0	2939.0	2899.5
Development (RDT&E)	(0.3)	(33.1)	(32.2)
Procurement	(108.7)	(2869.8)	(2831.3)
Construction (MILCON)	(0.0)	(29.4)	(29.3)
Acquisition O&M	(0.0)	(6.7)	(6.7)
Total Then Year \$	839.7	16382.9	16396.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	11	168	168
Total	11	168	168

There was no low rate initial production for the C-130J.

c. Foreign Military Sales -- None.

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C-130J Hercules, December 31, 2003

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

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	13443.9	13497.0	
(2) Quantity	168	168	
(3) Unit Cost	80.023	80.339	+0.39
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	13041.0	13105.1	
(2) Quantity	168	168	
(3) Unit Cost	77.625	78.007	+0.49

13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	O&M	TOTAL
Production Estimate	9.2	830.5	-	-	839.7
Previous Changes:					
Economic	-0.2	-383.8	-	-	-384.0
Quantity	-	+13411.0	-	-	+13411.0
Schedule	-	-377.3	-	-	-377.3
Engineering	+0.4	-	-	-	+0.4
Estimating	+228.5	-645.3	+182.4	+51.7	-182.7
Other	-	-	-	-	-
Support	-	+3194.2	-	-	+3194.2
Subtotal	+228.7	+15198.8	+182.4	+51.7	+15661.6
Current Changes:					
Economic	-0.5	+44.4	+0.3	-	+44.2
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-6.7	+529.5	-4.9	-0.1	+517.8
Other	-	-	-	-	-
Support	-	-666.8	-	-	-666.8
Subtotal	-7.2	-92.9	-4.6	-0.1	-104.8
Total Changes	+221.5	+15105.9	+177.8	+51.6	+15556.8
Current Estimate	230.7	15936.4	177.8	51.6	16396.5

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

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

	RD&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	+195.5	-413.7	+153.0	+45.0	-20.2
Other	-	-	-	-	-
Support	-	+2619.6	-	-	+2619.6
Subtotal	+195.9	+12496.7	+153.0	+45.0	+12890.6
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-6.3	+395.1	-4.5	-0.1	+384.2
Other	-	-	-	-	-
Support	-	-508.5	-	-	-508.5
Subtotal	-6.3	-113.4	-4.5	-0.1	-124.3
Total Changes	+189.6	+12383.3	+148.5	+44.9	+12766.3
Current Estimate	198.5	13105.1	148.5	44.9	13497.0

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Reprogramming of \$8M from 2003 President's Budget reduced RD&E.	-6.3	-6.7
Revised estimate based on increase of funding requirements in the out-years. (Estimating)		
RD&E Subtotal	-6.3	-7.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+41.8
Economic adjustment for negative program change. (Economic)	N/A	+2.6
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.3
Total Program then-year in 2002 SAR entered as \$551M but was \$451M. Added 21M to WC-130J program in 2003 and 23.6 in EC-130J program. Balance of total based on revised estimate based on increase of funding requirements in the out-years. (Estimating)	-114.5	-138.6

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Support reduction due to movement of aircraft modification funding then-year 571.3M and GFE 95.5M from support to flyaway. (Support)		-508.5	-666.8
Flyaway increase due to movement of aircraft modification funding and GFE. (Estimating)		+508.5	+666.8
Procurement Subtotal		-113.4	-92.9
(3) MILCON			
Revised escalation indices. (Economic)		N/A	+0.3
Adjustment for Current and Prior Inflation. (Estimating)		+0.1	+0.1
Revised estimate based on reduction of funding requirements in the out-years. (Estimating)		-4.6	-5.0
MILCON Subtotal		-4.5	-4.6
(4) O&M			
Revised estimate based on reduction of funding requirements in the out-years. (Estimating)		-0.1	-0.1
O&M Subtotal		-0.1	-0.1

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
76.34	-2.02	+8.50	-2.25	+0.002	+1.99	--	+15.04	+21.26	97.60

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	-2.02	+9.28	-2.25	--	-0.689	--	+15.04	+19.36	94.86

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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	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	16396.5
Total Quantity	N/A	N/A	11	168
Prog Acq Unit Cost	N/A	N/A	76.3	97.6

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

a. Procurement --  
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		
Target	Ceiling	Qty
\$1365.0	N/A	19

Estimated Price At Completion	
Contractor	Program Manager
\$1365.0	\$1365.0

Explanation of Change:

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

Contract Comments:

Difference between Initial Contract Price and Current Contract Price is due to additional aircraft purchases (contract quantity change from 12 to 19) and aircraft modifications.

C-130J Multiyear:  
Lockheed Martin, Marietta, GA  
F33657-03-C-2014, FFP  
Award: March 14, 2003  
Definitized: September 30, 2003

Initial Contract Price		
Target	Ceiling	Qty
\$4050.0	N/A	40

Current Contract Price		
Target	Ceiling	Qty
\$4105.0	N/A	40

Estimated Price At Completion	
Contractor	Program Manager
\$4105.0	\$4105.0

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C-130J Hercules, December 31, 2003

15. Contract Information (Cont'd):

Explanation of Change:

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

Contract Comments:

Difference between Initial Contract Price and Current Contract Price due to addition of contracted efforts.

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

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

<u>Appropriation</u>	<u>Prior Years (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-19)</u>	<u>Total</u>
RD&E	12.0	13.6	36.3	168.8	230.7
Procurement	3039.2	453.3	956.1	11487.8	15936.4
MILCON	36.0	25.2	5.0	111.6	177.8
O&M	8.7	6.7	7.6	28.6	51.6
Total	3095.9	498.8	1005.0	11796.8	16396.5

b. Annual Summary -- C-130J

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>
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				1.6	1.8
2004				12.2	13.6
2005				32.2	36.3
2006				11.9	13.6
2007				48.6	56.6
2008				23.1	27.4
2009				58.8	71.2

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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				198.5	230.7

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		261.8	486.8	515.5
2000	1		53.8	139.2	149.5
2001	3		175.9	295.5	320.0
2002	5		332.3	407.0	445.3
2003	1		107.5	306.1	338.6
2004	4		281.4	404.4	453.3
2005	11		716.2	840.2	956.1
2006	9		531.5	731.5	846.4
2007	9		528.4	682.6	804.8
2008	9		587.4	741.7	891.5
2009	12		860.1	1012.9	1241.8
2010	12		844.4	924.7	1156.8
2011	12		834.7	924.7	1179.9
2012	12		827.8	917.8	1194.1
2013	12		826.5	927.5	1230.8
2014	12		825.6	906.4	1227.2
2015	12		815.7	866.3	1196.3
2016	4		371.5	348.0	490.4
2017				6.3	9.1
2018				6.3	9.3
2019				6.3	9.4
Subtotal	168		10812.3	13105.1	15936.4

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 is included within the aircraft procurement total program funding.

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C-130J Hercules, December 31, 2003

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 \$
2002				9.6	10.5
2003				23.0	25.5
2004				22.4	25.2
2005				4.4	5.0
2006				7.5	8.7
2007				31.1	36.9
2008					
2009				1.6	2.0
2010					
2011				3.1	4.0
2012				45.8	60.0
Subtotal				148.5	177.8

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				6.7	7.6
2006				4.9	5.6
2007				6.4	7.4
2008				6.3	7.5
2009				6.7	8.1
Subtotal				44.9	51.6

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		10812.3	13497.0	16396.5

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C-130J Hercules, December 31, 2003

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	32	32

Percent Total Program Quantities Delivered: 19.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1775

Percent Total Program Expended: 10.8%

**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 with a service life of 49 years.
- Aircraft are grouped in 7 squadrons
- 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 FY05 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 Avg Annual Cost for 168 Aircraft	C-130E, C-130H Avg Annual Cost for all Aircraft
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
Total	324.1	N/A

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C-130J Hercules, December 31, 2003

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

Total O&S Cost	C-130J	C-130E, C-130H
BY\$	15873.8	N/A
TY\$	35958.0	N/A

Report Creation Date: 03/22/2004 6:49:28 PM

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N-7 CVN 21

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

PROGRAM: CVN 21 Class

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): CVNX

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

Program Executive Office	CAPT. Michael Schwartz
Aircraft Carriers	Assigned: August 8, 2003
614 Sicard Street SE Stop 7007	DSN 326-0838; COMM (202) 781-0838
Washington, DC 20376-7007	SchwartzMA@navsea.navy.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603512N	Project 29181, 42208, 42693, 44004, 44006
PE 0603570N	Project S2692
PE 0604567N	Project 42301, 44007, 44008

5. References:

CVN 21 Class

SAR Baseline (Planning Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 15, 2000.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

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04-C-0710

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5. References (Cont'd):

Follow-on Ship

SAR Baseline (Planning Estimate):

Defense Acquisition Executive (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:

The Future Aircraft Carrier (CVN 21) is the planned successor to the NIMITZ-class (CVN 68) aircraft carrier and pulls forward technologies originally planned for CVNX 2. The Joint Requirements Oversight Council approved Operational Requirements Document for the Future Carrier Program's CVNX evolutionary approach has been modified to incorporate the CVN 21 single acquisition approach. The Follow-on Ship is now considered to be a modified repeat.

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 crisis; 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, 2003

## 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. The follow-on CVN 21 is now considered a modified repeat.

Design and integration efforts planned for CVN 21 technologies began early in the Integrated Product and Process Development contract. These efforts will continue under a construction preparation contract leading to the 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 and new technologies have also been added and include new/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 provided as government furnished equipment. As with past Aircraft Carrier construction programs, the program office intends to leverage 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.

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.

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CVN 21 Class, December 31, 2003

8. Threshold Breaches:

CVN 21 Class

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:

There are two factors contributing to the cost and schedule breaches:

1) Navy's decision to delay the construction start of the program from FY 2006 to FY 2007 in the President Budget FY 2003.

2) Deputy Secretary of Defense direction to incorporate advanced technologies intended for later carriers into FY 2007 aircraft carrier (increased sorties generation rates, advanced arresting gear, etc).

These decisions resulted in the restructuring of the program plan. As a result, the schedule for the completion of the Operational Requirements Document (ORD), Independent Cost Estimate (ICE), the Early Operational Assessment (EOA), as well as Milestone B (currently reflected as Milestone II) have been revised.

Milestone	From	To
Early Operational Assessment (EOA)	June 2003	March 2004
Milestone II (to be changed to MS B at the DAB)	June 2003	April 2004

ASN (RD&A) concurred with the Program Deviation Report (PDR) on September 3, 2003.

A revised Acquisition Program Baseline (APB) is in process.

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CVN 21 Class, December 31, 2003

8c. Threshold Breaches (Cont'd):

Follow-on Ship

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:

Schedule changes have been directed on CVN21 (formerly CVNX1) thus resulting in changes in the schedule for the follow-on ship (formerly CVNX2).

ASN (RD&A) concurred with the Program Deviation Report (PDR) on September 5, 2003.

A revised Acquisition Program Baseline (APB) is in Navy approval process.

9. Schedule:

CVN 21 Class

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	MAR 2004
Milestone II	APR 2002	APR 2002	APR 2004
CVNX1 Start Construction	JAN 2006	JAN 2006	JAN 2007
CVNX1 Initial Operational Capability	MAR 2014	MAR 2014	SEP 2015 (Ch-1)
Milestone III	MAR 2020	MAR 2020	MAR 2017

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CVN 21 Class, December 31, 2003

9b. Schedule (Cont'd):

CVN 21 Class

b. Current Change Explanations --

(Ch-1) CVN 21 ship certifications will be completed in September 2015, thus changing the Initial Operational Capability date from March 2015 to September 2015.

Follow-on Ship

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	JUN 2000	JUN 2000	JUN 2000
CVNX2 Early Operational Assessment	FEB 2002	FEB 2002	MAR 2004
Milestone II	APR 2002	APR 2002	APR 2004
CVNX2 Start Construction	MAR 2011	MAR 2011	NOV 2010
CVNX2 Initial Operational Capability	MAR 2019	MAR 2019	MAR 2019
Milestone III	MAR 2020	MAR 2020	MAR 2017

b. Current Change Explanations -- None

10. Performance Characteristics:

CVN 21 Class

a. Performance --

	Planning Estimate (SAR) Note 1	Approved Program (APB) Obj/Threshold Note 1 / Note 1	Demon- strated Perf	Current Estimate Note 1
CVNX1 Interoperability			TBD	
CVNX1 Sustained Sortie Rate	140	140 / 140	TBD	160
CVNX1 Surge Sortie Rate	210	210 / 210	TBD	270
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	5.0
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 April 12, 2000.

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CVN 21 Class, December 31, 2003

10b. Performance Characteristics (Cont'd):  
CVN 21 Class

b. Current Change Explanations -- None

Follow-on Ship

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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, 2003

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

CVN 21 Class

	Planning <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	2121.5	2121.5	2856.5
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	2856.5
Escalation	192.6	192.6	237.0
Development (RDT&E)	(192.6)	(192.6)	(237.0)
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	3093.5
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	N/A	N/A	0
Total	N/A	N/A	0

There has been no Low Rate Initial Production (LRIP) approved for this program.

c. Foreign Military Sales -- None.

d. Nuclear Costs --

Nuclear costs will be added at Milestone B decision (Third Quarter FY 2004).

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CVN 21 Class, December 31, 2003

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

Follow-on Ship

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	1038.3	1038.3	447.3
Procurement	0.0	N/A	0.0
Total Sailaway			(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 \$	1038.3	1038.3	447.3
Escalation	235.2	235.2	65.0
Development (RDT&E)	(235.2)	(235.2)	(65.0)
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 \$	1273.5	1273.5	512.3
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	N/A	N/A	0
Total	N/A	N/A	0

There has been no Low Rate Initial Production (LRIP) approved for this program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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CVN 21 Class, December 31, 2003

**12. Unit Cost Summary:**

CVN 21 Class

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

Follow-on Ship

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 Class

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2314.1	-	-	2314.1
Previous Changes:				
Economic	-47.4	-	-	-47.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+266.4	-	-	+266.4
Estimating	+590.4	-	-	+590.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+809.4	-	-	+809.4
Current Changes:				
Economic	+1.4	-	-	+1.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-31.4	-	-	-31.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-30.0	-	-	-30.0
Total Changes	+779.4	-	-	+779.4
Current Estimate	3093.5	-	-	3093.5

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CVN 21 Class, December 31, 2003

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

CVN 21 Class

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	+217.9	-	-	+217.9
Estimating	+545.2	-	-	+545.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+763.1	-	-	+763.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-28.1	-	-	-28.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-28.1	-	-	-28.1
Total Changes	+735.0	-	-	+735.0
Current Estimate	2856.5	-	-	2856.5

b. 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	+0.5
Adjustment for Current and Prior Inflation. (Estimating)	-0.3	-0.3
Revised technology estimates. (Estimating)	-27.8	-31.1
RDT&E Subtotal	-28.1	-30.0

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CVN 21 Class, December 31, 2003

13. Cost Variance Analysis (Cont'd):

Follow-on Ship

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1273.5	-	-	1273.5
Previous Changes:				
Economic	-12.7	-	-	-12.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-748.5	-	-	-748.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-761.2	-	-	-761.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-761.2	-	-	-761.2
Current Estimate	512.3	-	-	512.3

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CVN 21 Class, December 31, 2003

**13a. Cost Variance Analysis (Cont'd):**  
Follow-on Ship

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	-590.9	-	-	-590.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-590.9	-	-	-590.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-590.9	-	-	-590.9
Current Estimate	447.4	-	-	447.4

b. Current Change Explanations -- None

**14. Unit Cost and Other History (Then-Year Dollars in Millions):**  
CVN 21 Class

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.

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CVN 21 Class, December 31, 2003

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

CVN 21 Class

**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	APR 2004
Milestone III	MAR 2020	N/A	N/A	MAR 2017
IOC	MAR 2014	N/A	N/A	SEP 2015
Total Cost	2314.1	N/A	N/A	3093.5
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

**Follow-on Ship**

**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	APR 2004
Milestone III	MAR 2020	N/A	N/A	MAR 2017
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, 2003

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

a. RDT&E --	Initial Contract Price		
CVNX1 IPPD:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NGNN, Newport News, VA	\$161.3	\$161.3	0
N00024-00-C-2108, CPFF			
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>
\$325.2	\$325.2	0	\$325.2	\$325.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.2	\$-2.1
Cumulative Variances To Date (09/30/03)	\$-2.4	\$-16.9
Net Change	\$0.8	\$-14.8

Explanation of Change:

The improving cost change is due to a decrease in overall labor rate associated with changes in labor mix.

The unfavorable schedule variance is attributable to performance against the Integrated Master Schedule (IMS), Revision (H) dated August 11, 2003. This was the first revision of the IMS to reflect the CVN 21 scope of work. Subsequent analysis has shown that the schedule was overly front-loaded and that work should be redistributed to match actual design dependencies.

Contract Changes:

The difference between initial contract price and current contract price is due to the IPPD contract being modified to add an FY04 line item to continue R&D work on the CVN 21 program.

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CVN 21 Class, December 31, 2003

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 (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	1137.7	316.8	327.3	1824.0	3605.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1137.7	316.8	327.3	1824.0	3605.8

CVN 21 Class

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	1132.7	316.8	327.3	1316.7	3093.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1132.7	316.8	327.3	1316.7	3093.5

Follow-on Ship

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

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CVN 21 Class, December 31, 2003

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

b. Annual Summary -- CVN 21 Class

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 \$
1998				46.9	46.1
1999				83.7	83.3
2000				176.1	177.8
2001				225.2	230.5
2002				267.7	276.5
2003				304.8	318.5
2004				299.2	316.8
2005				304.8	327.3
2006				273.7	298.7
2007				209.6	232.9
2008				185.5	210.1
2009				132.0	152.5
2010				114.5	134.9
2011				73.9	88.8
2012				61.0	74.8
2013				48.0	60.0
2014				34.5	44.0
2015				15.4	20.0
Subtotal				2856.5	3093.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				2856.5	3093.5

b. Annual Summary -- Follow-on Ship

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				169.2	191.6
2009				273.3	315.7
Subtotal				447.3	512.3

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CVN 21 Class, December 31, 2003

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

Follow-on Ship

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				447.3	512.3

17. Delivery/Expenditure Information:

CVN 21 Class

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: 31.6%

Follow-on Ship

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): \$ 5

Percent Total Program Expended: 1.0%

18. Operating and Support Costs:

CVN 21 Class

Not applicable for Pre-Milestone B programs.

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CVN 21 Class, December 31, 2003

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

Follow-on Ship

Not applicable for Pre-Milestone B programs.

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: STANDARD MISSILE-2

AS OF DATE: December 31, 2003

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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 3.0    CAPT M.A. OUTTEN  
2341 JEFFERSON DAVIS HIGHWAY    Assigned: October 8, 2002  
ARLINGTON, VA 22202-3862    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

AS ANNOUNCED  
~~AS ANNOUNCED~~  
FOR OPEN PUBLICATION

MAR 25 2004

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Derived from:  
Downgrade instructions: 8 NAVINST S5513, 3B  
Declassify on: X3~~

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04-C-0716

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5. (U) References:

SM-2 BLK I\II\III\A\B

SAR Baseline (Production Estimate):

(U) SM-2 Block II Milestone IIIE 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) Navy Acquisition Executive (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:

4. 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

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6. ~~(S)~~ Mission and Description (Cont'd):

capability with incorporation of a dual mode Infrared/RF guidance system. These versions of STANDARD Missile will be employed on ships capable of firing SM-2 Block III. The SM-2 Block III missile achieved Initial Operating Capability (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/Vertical Launching System (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) This will be the final SAR submission for the STANDARD Missile-2 Block I/II/III/A/B end item. As of December 31, 2003, this end item has delivered 90.2% of total All Up Rounds.

(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 Electronic Counter Measures (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 (ARB). The Block III achieved Initial Operating Capability (IOC) in August 1990. The Block IIIA which includes an upgraded ordnance section, completed Operational Evaluation (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 Test and Evaluation Master Plan (TEMP) was approved by OUSD(A&T) on April 26, 1994. The Approved Program Baseline (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 Guided Test Vehicle series was completed in November 1994 with 7 of 8 flights successful. On October 6, 1994, Developmental Test/Initial Operational Test and Evaluation (DT/IOT&E) was

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

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 Navy Program Decision Meeting (NPDM).

(U) On June 15, 1995, the SM-2 Block IIIB completed its initial phase of flight testing at White Sands Missile Range (WSMR), with the successful intercept of a Vandal target simulating the prime threat. On May 1, 1995, the SM-2 Block IV received Defense Acquisition Board (DAB) approval for Low Rate Initial Production (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 Acquisition Decision Memorandum (ADM) was signed. The at-sea Developmental Test for the SM-2 Block IIIB was successfully completed on December 8, 1995.

(U) The SM-2 Block IIIB at-sea ORFVAL was successfully completed on April 15, 1996, and full rate production was approved at a MSII 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, 2003, SM-2 Block IV has delivered 120 of 160 planned production rounds.

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8. (U) Threshold Breaches:

SM-2 BLK I\II\III\A\B

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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

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9. (U) Schedule:

SM-2 BLK I\II\III\A\B

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
BLOCK II MR			
First Flt Test (development test)	FEB 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 III E (AFP)	DEC 1984	DEC 1986	DEC 1986
BLOCK II ER			
FOT&E Vertical Launch Cruiser CG 54	DEC 1986	N/A	APR 1988
USS Anietam (Blk II MR)			
OPEVAL Complete	MAR 1983	MAR 1983	MAR 1983
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
BLOCK III			
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
BLOCK IIIA			
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
BLOCK IIIB			
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

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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>
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 IIB	SEP 1993	N/A	N/A
Milestone III (Full Rate Production)	N/A	JUN 1996	JUL 1996

(U) Acronyms:

MR - Medium Range  
 DT/OT - Developmental Test / Operational Test  
 OPEVAL - Operational Evaluation  
 FOT&E - Follow-on Operational Test and Evaluation  
 ALP - Approval for Limited Production  
 ArP - Approval for Full Production  
 ER - Extended Range  
 LRIP - Low Rate Initial Production  
 WSMR - White Sands Missile Range  
 ARB - Acquisition Review Board  
 IOC - Initial Operational Capability

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

(U) Acronyms:

FSED - Full Scale Engineering Development  
 NPDM - Navy Program Decision Meeting  
 LRIP - Low Rate Initial Production  
 IOC - Initial Operational Capability

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9a. (U) Schedule (Cont'd):  
SM-2 BLK IV

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

SM-2 BLK I\II\III\A\B

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
BLOCK II MR				
Max Range (nm)				
Min Range (nm)				
Max Alt (k ft)				
Miss Distance (ft)				
Prob of Successful Engagement (%)				
Flight Reliability				
Launch Reliability				
BLOCK II ER				
Max Range (nm)				
Min Range (nm)				
Max Alt (k ft)				
Miss Distance (ft)				
Prob of Successful Engagement (%)				
Flight Reliability				
Launch Reliability				
BLOCK III				
Intercept Altitude (ft)				
Prob of Air Target Kill (%)				
Technical Reliability				
Flight Reliability				
Launch Availability (8 mon storage)				
Compatibility	N/A			
BLOCK IIIA				
Intercept Altitude (ft)				
Warhead Fragment Velocity (ft per sec)				

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

SM-2 BLK I\II\III\A\B

	Production Estimate (CAP)	Approved Program (APB) Obs/Threshold	Demon- strated Data	Current Data
(S) Directional Warhead	(b)(1)			
(S) Aim Accuracy (deg)				
(S) Prob of Air Target				
(S) Kill (%)				
(S) Technical				
(S) Reliability				
(S) Flight Reliability				
(S) Launch Availability				
(S) (8 mon storage)				
(S) Compatibility	N/A	(b)(1)		
Block IIIB				
(S) Unintegrated IR	(b)(1)			
(S) Seeker Sensitivity				
(S) (pw/cm <sup>2</sup> )				
(S) Integrated IR Seeker	N/A			
(S) Sensitivity				
(S) (pw/cm <sup>2</sup> )				
(S) Pointing Accuracy	(b)(1)			
(S) (deg)				
(S) Track Rate (deg per				
(S) sec)				
(S) Prob of Air Target				
(S) Kill (%)				
(S) Technical	(b)(1)	/ N/A	(b)(1)	
(S) Reliability				
(S) Flight Reliability	(b)(1)			
(S) Launch Availability				
(S) (8 mon storage)				
(S) Compatibility	N/A	(b)(1)		

(S) Changes in demonstrated performance figures reflect latest reliability analyses based on aggregate annual fleet training and CSSOT firing data. Block IIIB data based (b)(1)

(U) Acronyms:  
MR - Medium Range  
ER - Extended Range  
IR - Infrared

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10b. ~~(U)~~ Performance Characteristics (Cont'd):  
SM-2 BLK I\II\III\A\B

b. Current Change Explanations -- None

SM-2 BLK IV

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obs/Threshold	Demon- strated	Current
<del>(S)</del> Intercept Altitude (K ft)	(U)			
<del>(S)</del> Probability of Air Target Kill (%)				
<del>(S)</del> Technical Reliability				
<del>(S)</del> Flight Reliability				
<del>(S)</del> Launch Availability (6 month storage) (Objective not tested until FOT&E)				
<del>(S)</del> Compatibility				

(U) Changes in demonstrated performance figures reflect latest reliability analyses based on flight test results in 2003.

(U) Acronyms:  
FOT&E - Follow-on Operational Test and Evaluation

b. Current Change Explanations -- None

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

SM-2 BLK I\II\III\A\B

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	648.4	770.6	802.7
Procurement	5923.2	7145.7	7176.4
AUR Hardware	(4510.5)		(4738.9)
Other Flyaway	(500.0)		(1151.0)
Total Flyaway	(5010.5)		(5889.9)
Non-recurring Support	(388.9)		(597.3)
Fleet Support	(330.9)		(435.4)
Total Other Wpn Sys	(719.8)		(1032.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(253.8)
Construction (MILCON)	0.0	34.0	34.2
Acquisition O&M	0.0	0.0	0.0
Total FY 1984 Base-Year \$	6571.6	7950.3	8013.3
Escalation	1481.2	1960.8	1937.3
Development (RDT&E)	(53.2)	(86.6)	(92.3)
Procurement	(1428.0)	(1865.4)	(1836.4)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	8052.8	9911.1	9950.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	10778	11505	11505
Total	10778	11505	11505

(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, 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

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

SM-2 BLK I\II\III\A\B

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. In FY04, Japan procured 28 SM-2 Block IIIB missiles, Spain procured 29 SM-2 Block IIIA missiles and Taiwan procured 152 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	341.1
ASB Hardware	(1551.7)		(213.2)
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)		(16.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1984 Base-Year \$	2198.5	657.9	661.1
Escalation	815.9	231.1	232.8
Development (RDT&E)	(56.2)	(72.1)	(71.9)
Procurement	(759.7)	(159.0)	(160.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3014.4	889.0	893.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3000	162	160
Total	3000	162	160

(U) Note: At the LRIP Program Decision May 4, 1995, 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 dated October 17, 1997, authorizes procurement of additional SM-2 Block IV LRIP Missiles to a maximum quantity of 180.

c. Foreign Military Sales -- None.

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

SM-2 BLK IV

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 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1984 BY\$)	7950.3	8013.3	
(2) Quantity	11505	11505	
(3) Unit Cost	0.691	0.697	+0.87
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1984 BY\$)	7145.7	7176.4	
(2) Quantity	11505	11505	
(3) Unit Cost	0.621	0.624	+0.48

SM-2 BLK IV

	UCR Baseline (AUG 1999 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1984 BY\$)	657.9	661.1	
(2) Quantity	162	160	
(3) Unit Cost	4.061	4.132	+1.75
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1984 BY\$)	338.1	341.1	
(2) Quantity	162	160	
(3) Unit Cost	2.087	2.132	+2.16

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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)	
	Base-Year	Then-Year
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Economic adjustment for negative program change. (Economic)	N/A	+1.3
Reduced Block IIIB RDTE requirement (FY04-FY13). (Estimating)	-5.9	-10.8
RDTE Subtotal	-5.9	-9.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.7
Net increase due to revised procurement support and hardware estimates (FY03-FY08). (Estimating)	+1.2	+1.4
Adjustment for Current and Prior Inflation. (Support)	+0.6	+0.6
Increase in initial spares requirements (FY03-FY09). (Support)	+14.1	+23.3
Change in Non-recurring Support due to reduced requirement for Tooling and Test Equipment and component improvements (FY03-FY07). (Support)	-1.4	-2.2
Change in Fleet Support due to reduced requirement for telemeters and installation and checkout equipment. (Support)	-3.3	-5.1
Procurement Subtotal	+11.6	+18.5

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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	-11.2	-	-10.1
Quantity	-	-3038.9	-	-3038.9
Schedule	-	+1026.5	-	+1026.5
Engineering	-	+127.7	-	+127.7
Estimating	+50.7	-146.9	-	-96.2
Other	-	-	-	-
Support	-	-115.3	-	-115.3
Subtotal	+51.8	-2158.1	-	-2106.3
Current Changes:				
Economic	-	+0.4	-	+0.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.2	-	-0.2
Other	-	-	-	-
Support	-	-14.4	-	-14.4
Subtotal	-	-14.2	-	-14.2
Total Changes	+51.8	-2172.3	-	-2120.5
Current Estimate	391.9	502.0	-	893.9

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STANDARD MISSILE-2, December 31, 2003

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	+16.4	-	+11.3
Other	-	-	-	-
Support	-	-83.1	-	-83.1
Subtotal	+36.1	-1564.7	-	-1528.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	0.0	-	0.0
Other	-	-	-	-
Support	-	-8.8	-	-8.8
Subtotal	-	-8.8	-	-8.8
Total Changes	+36.1	-1573.5	-	-1537.4
Current Estimate	320.0	341.1	-	661.1

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
Net increase due to rounding of revised estimates. (Estimating)	+0.2	0.0
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Reduction in Initial Spares requirements. (Support)	-8.9	-14.5
Procurement Subtotal	-8.8	-14.2

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STANDARD MISSILE-2, December 31, 2003

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	-0.023	+0.076	+0.021	+0.087	--	+0.044	+0.118	0.865

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	
0.602	-0.004	-0.020	+0.070	+0.010	+0.000	--	+0.044	+0.101	0.703

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	N/A	JUL 1996
IOC	N/A	N/A	JUN 1993	OCT 1997
Total Cost	N/A	N/A	8052.8	9950.6
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

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	-0.061	-1.16	+6.42	+0.798	-0.603	--	-0.811	+4.58	5.59

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STANDARD MISSILE-2, December 31, 2003

14b. (U) Unit Cost and Other History (Cont'd):  
SM-2 BLK IV

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	-0.067	-3.17	+6.42	+0.798	-0.919	--	-0.811	+2.25	3.14

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 1996	N/A	AUG 1996
Milestone III	N/A	N/A	N/A	TRD
IOC	N/A	MAR 1993	N/A	AUG 1999
Total Cost	N/A	3014.4	N/A	893.9
Total Quantity	N/A	3000	N/A	160
Prog Acq Unit Cost	N/A	1.0	N/A	5.6

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

a. Procurement --  
(U) SM-2 BLK IV AUR:  
RAYTHEON (RSC), TUCSON, AZ  
N00024-99-C-5373, FPAF  
Award: April 16, 1999  
Definitized: April 21, 2000

Initial Contract Price		
Target	Ceiling	Qty
\$43.4	\$43.4	43

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$44.6	\$44.6	43	\$44.6	\$44.6

Explanation of Change:

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

(U) Contract Comments:  
Contract price includes only USN All Up Rounds.

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STANDARD MISSILE-2, December 31, 2003

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

(U) SM-2 BLK IIIB AUR: 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			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$46.2	\$46.2	71	\$46.2	\$46.2

Explanation of Change:

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

(U) Contract Comments:  
Contract price includes only USN All Up Rounds.

(U) SM-2 Block IIIB AUR: 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>
\$255.0	\$255.0	150	\$255.0	\$255.0

Explanation of Change:

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

(U) Contract Comments:  
Contract price includes \$104.6M for FY00 and FY01 procurement buys for 150 SM-2 Block IIIB AUR's, \$82.4M for FMS and \$68.0M for Mods and upgrades.

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STANDARD MISSILE-2, December 31, 2003

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

(U) SM-2 Block IIIB AUR's:	Initial Contract Price		
Raytheon (RSC), Tucson, AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-02-C-5312, FFP/PI	\$117.7	\$117.7	96
Award: July 31, 2002			
Definitized: July 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>
\$307.8	\$307.8	189	\$307.8	\$307.8

Explanation of Change:

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

(U) Contract Comments:

Contract price includes \$147.6M for FY02 and FY03 procurement of 189 SM-2 Block IIIB AUR's, \$83.3M for FMS and \$76.9M for Mods and upgrades.

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	1253.3	10.8	10.7	12.1	1286.9
Procurement	7510.0	157.3	171.8	1675.7	9514.8
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	8806.1	168.1	182.5	1687.8	10844.5

SM-2 BLK I\II\III\A\B

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STANDARD MISSILE-2, December 31, 2003

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

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	861.4	10.8	10.7	12.1	895.0
Procurement	7008.0	157.3	171.8	1675.7	9012.8
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7912.2	168.1	182.5	1687.8	9950.6

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</u>	<u>Total</u>
RDT&E	391.9	-	-	-	391.9
Procurement	502.0	-	-	-	502.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	893.9	-	-	-	893.9

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

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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 \$
1998				0.3	0.5
1999				0.8	1.2
2000				0.4	0.6
2001				0.3	0.5
2002				8.5	13.1
2003				0.5	0.8
2004				6.8	10.8
2005				6.7	10.7
2006				6.6	10.7
2007				0.1	0.2
2008				0.1	0.2
2009				0.1	0.2
2010				0.1	0.2
2011				0.1	0.2
2012				0.1	0.2
2013				0.1	0.2
Subtotal				802.7	895.0

(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

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STANDARD MISSILE-2, December 31, 2003

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 \$
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		43.4	65.5	99.1
2000	75		58.3	60.5	92.1
2001	75		53.2	71.3	109.8
2002	96		85.4	104.5	162.2
2003	93		85.8	103.6	162.8
2004	75		73.2	98.7	157.3
2005	75		74.7	106.1	171.8
2006	75		74.9	106.1	174.7
2007	75		74.1	106.1	178.1
2008	94		85.3	117.7	201.4
2009	110		94.5	128.9	224.9
2010	110		94.0	124.8	222.2
2011	110		90.9	121.6	220.9
2012	110		90.8	121.5	225.0
2013	108		90.2	120.9	228.5
Subtotal	11505		5889.9	7176.4	9012.8

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		5889.9	8013.3	9950.6

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

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
1993				12.6	17.1
1994				6.5	9.0
1995				6.4	7.8
Subtotal				320.0	391.3

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					
Subtotal	160		277.1	341.1	502.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	160		277.1	661.1	893.9

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STANDARD MISSILE-2, December 31, 2003

17. (U) Delivery/Expenditure Information:

SM-2 BLK I\II\III\A\B

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDTE	0	0
Procurement	10374	10374

(U) Percent Total Program Quantities Delivered: 90.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7440.6

(U) Percent Total Program Expended: 74.8%

SM-2 BLK IV

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDTE	0	0
Procurement	160	120

(U) Percent Total Program Quantities Delivered: 75.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 721.1

(U) Percent Total Program Expended: 80.7%

18. (U) Operating and Support Costs:

SM-2 BLK I\II\III\A\B

a. (U) Assumptions and Ground Rules --

Since the SM-2 is a wooden round, Personnel Costs are unnecessary for missile operation. The O&S Consumables include Range and Target Cost as well as Post Flight Analysis. The Direct Maintenance consists of Intermediate and Depot Maintenance. The Sustaining Investment Category includes Replenishment Spares and Support Equipment, Equipment Modification, Receipt, Segregation Storage and Issue (RSSI). Direct Support consists of Transportation and Technical Support. There is no Antecedent System.

(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 February 2004.

NOTE: Other: (1.5) = Other Direct Support; (1.2) = Disposal (@ 24 years)

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STANDARD MISSILE-2, December 31, 2003

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
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	3.3	N/A
Intermediate Maintenance	2.8	N/A
Depot Maintenance	3.3	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.8	N/A
Indirect Costs	0.0	N/A
Other	2.7	N/A
Overhaul/Rework	4.6	N/A
Total	17.5	N/A

Total O&S Cost	SM-2 BLK I\II\III\A\B	No Antecedent
BY\$ (In Millions)	579.0	N/A
TY\$ (In Millions)	804.0	N/A

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 February 2004.

Note: Other (.08) = Other direct support; Other (.06) = 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	N/A

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STANDARD MISSILE-2, December 31, 2003

18b. (U) Operating and Support Costs (Cont'd):  
SM-2 BLK IV

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK IV Avg Annual Cost Per Missile *	No Antecedent Program
Intermediate Maintenance	0.1	N/A
Depot Maintenance	0.1	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.1	N/A
Indirect Costs	0.0	N/A
Overhaul/Rework	0.5	N/A
Other	0.1	N/A
Total	1.1	N/A

Total O&S Cost	SM-2 BLK IV	No Antecedent
BY\$ (In Millions)	6.5	N/A
TY\$ (In Millions)	10.8	N/A

Report Creation Date: 03/22/2004 8:20:52 AM

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AF-11 GBS

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

AS OF DATE: December 31, 2003

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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)

RDT&E PE 97X0833:Defense Emergency Relief Funds (DERF)

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

- 1 -

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GBS, December 31, 2003

## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (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:**

The Global Broadcast Service (GBS) program has successfully supported all contingencies and operations throughout 2003. Operation Iraqi Freedom brought GBS to the frontlines. GBS personnel and receive suites were sent to deploying units. The GBS program provided GBS refresher training. Special equipment requests for video feeds were fulfilled to satisfy warfighter missions around the world.

The current GBS architecture is based on Asynchronous Transfer Mode (ATM) technology and is a combination of commercial and customized technologies and extensive software development. In December 2002, DoD directed GBS's migration to a more sustainable commercial and standards-based open architecture, based upon the Internet Protocol (IP). Also, the GBS program received FY03 Iraqi Freedom Funds (IFF) supplemental funding for IP Acceleration of production units to replace deployed ATM units. Based upon extensive warfighter inputs, the accelerated IP production effort included design and development of a new, single case version of the Receive Suite (88XR) for the Army, Navy, and Marine Corps. The Air Force will deploy the previously designed IP Receive Suite (RS) utilizing the Technology Advancement Group (TAG) Computer/Server. Production and fielding will commence in summer 2004, with all ATM RS's replaced by the end of FY04.

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7. Executive Summary (Cont'd):

As reported in the previous Selected Acquisition Report (SAR), a revised 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 Initial Operational Capability (IOC) approach and incorporated the migration to a commercial standards based open architecture. In December 2003, Air Force Space Command (AFSPC) HQs formally declared that GBS had met its IOC 1 criteria. IOC 2 & 3 are scheduled for the end of FY05. Also in December 2003, the GBS program successfully completed its Developmental Test / Operational Test (DT/OT) #0 event, verifying the viability of commercial IP-based receive suites. Additional DT/OT testing is scheduled for 2004.

With the transition to IP, the Army is designing an IP version of the Theater Injection Point (TIP), which will be TIP #3. The previous 2 Army TIPs will be refurbished over the next 2 years. The Air Force (AF) deferred the purchase of AF TIPs until FY05; the FY04 funds will be reallocated to procure additional AF receive suites, getting these superior capabilities to deployed Air Force units sooner.

In June 2003, the first Next Generation Receive Terminal (NGRT) rolled off the production line. The NGRT is an Operational Requirements Document (ORD) compliant, 2-person lift antenna. The joint development of the NGRT resulted in a highly efficient, lightweight, portable antenna system. 56 Low Rate Initial Production (LRIP) units are being fielded worldwide to all services and Combatant Commands (COCOMs), plus an additional 120 NGRT systems will follow in FY04.

In October 2003, the GBS program office awarded a contract extension to the current contract through 2005. The \$73M extension continues ongoing efforts to design, develop, integrate, test, and deploy the IP-based satellite information dissemination system worldwide. The program will leverage the deployment of the first IP Satellite Broadcast Manager (SBM) facility in Wahiawa, HI, in order to deploy new IP capable upgrades to the Norfolk, VA, and Sigonella, Italy, SBMs. The contract modification also provided for design and development of new IP-based Shipboard and Subsurface RS's for the United States Navy. Finally, this extension includes Contractor Logistics Support and Sustainment needed to support the current and future SBMs and RSs.

The GBS program met an aggressive major schedule milestone by delivering and installing the IP upgrade equipment to the SBM at Wahiawa, HI in November 2003. This provides the first step towards transition from ATM to a total IP broadcast. Norfolk and Sigonella SBMs are scheduled to receive the same upgrade in 2004. Another significant milestone was the installation of an Extremely High Frequency (EHF) terminal at the Sigonella SBM. This allows more frequent beam movement, providing more flexibility and support to mission operations to the warfighter.

GBS successfully participated in the Joint Warrior Interoperability Demonstration (JWID) 2003. It was a collaboration between GBS and the Australian Theatre Broadcast System. The capability allows a deployed warfighter the ability to receive coalition data, intelligence products,

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

imagery and video from coalition partners. JWID 2004 will be further expanded to include more coalition partners.

**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
Initial Operational Capability (IOC)	DEC 1999	SEP 2003	DEC 2003 (Ch-1)
Milestone III	DEC 1999	N/A	N/A
IOC 2&3	N/A	SEP 2005	SEP 2005
Beyond LRIP Review	N/A	SEP 2005	SEP 2005

ACRONYMS:

DAE-Defense Acquisition Executive  
LRIP-Low Rate Initial Production

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1): GBS Initial Operational Capability (IOC) 1, which was declared by Air Force Space Command (AFSPC) on December 12, 2003, slipped from September 2003.

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 summarizes the threshold requirements associated with each IOC:

IOC 1:

1. Primary Injection Point (TIPs) operational on Ultra High Frequency (UHF) Follow-On (UFO) 8, 9, 10.
2. Full Satellite Broadcast Manager capability.
3. Field 20% of Joint Program Office (JPO) Receive Suites (19 units).
4. Personnel training in operations and maintenance of fielded equipment.
5. Logistically support the system to effectively sustain Global Broadcast Service (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.

10. Performance Characteristics:

a. Performance --

	Development	Approved	Demon-	Current
	Estimate (SAR)	Program (APB)	strated	Estimate
		Obj/Threshold	Perf	
System Coverage	65 deg	65 deg / 65 deg	65 deg	65 deg
	South to	South to/ South to	South to	South to
	65 deg	65 deg / 65 deg	65 deg	65 deg
	North	North / North	North	North
Spot Beams	Two	Two / Two	Two	Two
	500nm	500nm / 500nm	500nm	500nm
	steer-	steer- / steer-	steer-	steer-
	able,	able, / able,	able,	able,
	one	one / One	One	One
	2000 nm	2000 nm / 2000 nm	2000 nm	2000 nm
	steer-	steer- / steer-	steer-	steer-
	able	able / able	able	able

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10a. Performance Characteristics (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
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- / unclass- ified to / ified to TS/SCI / TS/SCI traffic / 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 / 2 GHz UFO GBS, / 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: add SSRT / FGRT, and ART / TGRT 500nm: / and Add 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	Frequent
Steerable Antenna Tasking	SBM Primary means	SBM / SBM Primary / Primary Means / Means	SBM Primary Means	SBM Primary Means
Interoperability	N/A	100% / 100% IERS / critical satisfie / IERS d / satisfie / d	100% IERS satis- fied	100% IERS satis- fied

ACRONYMS:

ARS/ART-Airborne Receive Suite/Terminal

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10a. Performance Characteristics (Cont'd):

FGRS/FGRT-Fixed Ground Receive Suite/Terminal  
 GBS-Global Broadcast Service  
 IERS-Information Exchange Requirements  
 PIP-Primary Injection Point  
 SBM-Satellite Broadcast Manager  
 SRS/SRT-Shipboard Receive Suite/Terminal  
 SSRS/SSRT-Subsurface (submarine) Receive Suite/Terminal  
 TGRS/TGRT-Transportable Ground Receive Suite/Terminal  
 TIP-Theater Injection Point  
~~TS-1000 Sensitive Compartmented Information Terminal~~  
 UFO-UHF Follow-on Satellite

Note: The term "suite" is now used instead of "terminal"

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)	397.5	388.8	394.1
Procurement	53.9	361.3	247.8
Flyaway	(48.5)		(197.8)
Nonrecurring flyaway			(31.9)
Nonrecurring flyaway			(42.6)
Total Flyaway	(48.5)		(272.3)
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	0.0	0.0	0.0
Total FY 1997 Base-Year \$	451.4	750.1	673.8
Escalation	45.7	71.5	47.0
Development (RDT&E)	(41.7)	(20.5)	(17.9)
Procurement	(4.0)	(51.0)	(29.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	497.1	821.6	688.9
b. Quantity --			
Development (RDT&E)	221	136	136
Procurement	125	1085	941
Total	346	1221	1077

For the current estimate, the Development Quantity of 136 includes 10 Research, Development, Test and Engineering (RDT&E) First Generation Increment One Units (11E) and 96 Fixed and Transportable Ground Receive Suites (GRS), 27 Shipboard Receive Suites (SRS) and 3 Transmit Suites (TS), (which includes Satellite

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

Broadcast Manager (SBM) and Primary Injection Point (PIP)). The total Procurement Quantity of 941 consists of 936 Fixed and Transportable GRSs to include SRSSs and Sub Surface Receive Suites (SSRS) and 5 Theater Injection Points (TIPs). Funding is included in the Services appropriations for Internet Protocol (IP) upgrades, however, these quantities are not reported as they replace Asynchronous Transfer Mode (ATM) units currently fielded. These IP upgrades include: 224 Receive Broadcast Manager (RBMs), 122 Next Generation Receive Terminals (NGRTs), 2 Transportable Satellite Broadcast Managers (TSBM) and the 50 SRSSs and SSRSs.

Joint Requirements Oversight Council Memo (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 Milestone II (MSII) by the Defense Acquisition Executive (DAE) in November 1997. 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.

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12. Unit Cost Summary:

	UCR Baseline (FEB 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	750.1	641.9	
(2) Quantity	1221	1077	
(3) Unit Cost	0.614	0.596	-2.93
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	361.3	247.8	
(2) Quantity	1085	941	
(3) Unit Cost	0.333	0.263	-21.02

This SAR corrects the Navy reporting of platform integration costs, which were included in the previous SAR in error. The Navy platform integration costs should not be part of the GBS baseline program in accordance with the Acquisition Program Baseline (APB).

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	-17.8	-3.7	-	-21.5
Quantity	-2.7	+259.1	-	+256.4
Schedule	-	+40.9	-	+40.9
Engineering	+27.4	+2.3	-	+29.7
Estimating	-32.3	-33.4	-	-65.7
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	-25.4	+268.0	-	+242.6
Current Changes:				
Economic	-0.3	+0.8	-	+0.5
Quantity	-	+4.1	-	+4.1
Schedule	-	-10.7	-	-10.7
Engineering	-	-0.6	-	-0.6
Estimating	-1.5	-42.6	-	-44.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.8	-49.0	-	-50.8
Total Changes	-27.2	+219.0	-	+191.8
Current Estimate	412.0	276.9	-	688.9

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

Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	397.5	53.9	-	451.4
Previous Changes:				
Quantity	-2.6	+228.5	-	+225.9
Schedule	-	+36.2	-	+36.2
Engineering	+26.3	+2.1	-	+28.4
Estimating	-25.6	-29.1	-	-54.7
Other	-	-	-	-
Support	-	+2.0	-	+2.0
Subtotal	-1.9	+239.7	-	+237.8
Current Changes:				
Quantity	-	+2.2	-	+2.2
Schedule	-	-10.1	-	-10.1
Engineering	-	-0.6	-	-0.6
Estimating	-1.5	-37.3	-	-38.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.5	-45.8	-	-47.3
Total Changes	-3.4	+193.9	-	+190.5
Current Estimate	394.1	247.8	-	641.9

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)	+0.1	+0.1
Budget reductions for Small Business Innovative Research. (Estimating)	-1.6	-1.6
RDT&E Subtotal	-1.5	-1.8
(2) <u>Procurement</u>		
Economic adjustment for negative program change. (Economic)	N/A	+1.3
Navy: Total Quantity Variance associated with decrease of 68 units.	-28.7	-32.2
Navy: Quantity decrease of 68 units. (Quantity)	-21.6	-24.3
Navy: Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	-10.1	-11.2
Revised escalation indices (Economic)	N/A	-0.5
Navy: Allocation to Engineering variance resulting from Quantity Change. (QR) (Engineering)	-0.6	-0.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Navy: Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+3.6	+3.9
Navy: Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.4
Navy: Decrease due to correction of Navy reporting of platform integration costs from previous SAR. These costs are not part of GBS baseline per Acquisition Program Baseline. (Estimating)	-27.1	-28.7
Army: Acceleration of annual procurement buy profile. (Schedule)	0.0	-0.3
Army: Total Quantity Variance associated with increase of 99 units. (Quantity)	+25.1	+30.0
Army: Unit cost decreased since previous SAR (Estimating)	-21.9	-26.5
Air Force: Total Quantity Variance associated with decrease of 5 units. (Quantity)	-1.3	-1.6
Marines: Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.2
Marines: Unit Cost decreased since previous SAR (Estimating)	-3.0	-3.4
Air Force: Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.2
Air Force: Unit cost decreased since previous SAR (Estimating)	-2.4	-2.7
Air Force: Increase for DOD directed Internet Protocol accelerated production of Receive Suites (Estimating)	+13.5	+14.8
Procurement Subtotal	-45.8	-49.0

Procurement Quantities have changed as follows:

	<u>Prior SAR Qty</u>	<u>Current Qty</u>	<u>Increase (Decrease)</u>
Marines	81	81	0
Navy	155	87	(68)
Army	454	553	99
Air Force	<u>225</u>	<u>220</u>	<u>(5)</u>
Totals	915	941	26

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	
1.44	-0.019	-0.734	+0.028	+0.027	-0.102	--	+0.003	-0.797	0.640

**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	-0.003	-0.122	+0.032	+0.002	-0.081	--	+0.003	-0.169	0.294

**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	DEC 2003
Total Cost	0.0	497.1	N/A	688.9
Total Quantity	N/A	346	N/A	1077
Prog Acq Unit Cost	N/A	1.4	N/A	0.6

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

**a. RDT&E --**

**Terminals:**

Raytheon, Reston, VA

F04701-97-C-0044, CPAP

Award: November 17, 1997

Definitized: November 17, 1997

Initial Contract Price  
Target Ceiling Qty

\$84.8 N/A 221

**Current Contract Price**

Target Ceiling Qty  
\$305.7 N/A 313

Estimated Price At Completion  
Contractor Program Manager  
\$305.7 \$305.7

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.4	\$-0.3
Cumulative Variances To Date (12/30/03)	\$1.9	\$-0.4
Net Change	\$0.5	\$-0.1

Explanation of Change:

Schedule Variance: No significant net schedule variance.

Cost Variance: No significant net cost variance.

Contract Comments:

The current contract quantity of 313 is based on 10 Research, Development, Test & Engineering (RDT&E) First Generation Increment One (I1E) Air Force Receive Suites (RS), 27 RDT&E I1E Shipboard RS, 96 RDT&E Joint Program Office (JPO)-funded Air Force RS, 49 procurement Air Force RS, 68 procurement Navy RS, 55 procurement Army RS, 2 procurement Defense Intelligence Agency (DIA) RS, 1 procurement National Geospatial Agency (NGA) RS, 3 RDT&E Primary Injection Points (PIPs), and 2 procurement Army Theater Injection Points (TIPs).

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	321.0	37.8	33.4	19.8	412.0
Procurement	86.1	46.6	33.5	110.7	276.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	407.1	84.4	66.9	130.5	688.9

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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				19.5	20.9
2004				34.7	37.8
2005				30.3	33.4
2006				8.7	9.7
2007				2.1	2.4
2008				1.9	2.2
2009				4.6	5.5
Subtotal	136			394.1	412.0

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	44		8.7	8.7	9.6
2005					
2006	37		6.2	6.2	7.0
Subtotal	81		14.9	14.9	16.6

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		0.6	0.6	0.6
1998					
1999	20		4.1	4.1	4.2
2000	8		0.8	0.8	0.8
2001	13		1.0	1.0	1.1
2002	16		2.0	2.0	2.1
2003		5.1		5.1	5.5
2004	19	9.6	1.4	11.0	12.1
2005		8.2		8.2	9.1

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

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 \$
Subtotal	87	22.9	9.9	32.8	35.5

This SAR corrects the Navy reporting of platform integration costs, which were included in the previous SAR in error. The Navy platform integration costs are not part of the GBS baseline program in accordance with the Acquisition Program Baseline (APB).

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	17		9.0	10.4	10.9
2001		3.8		4.0	4.2
2002	27		7.4	7.8	8.4
2003	7		4.4	5.6	6.1
2004	24		8.0	8.1	8.9
2005	24		11.3	11.4	12.7
2006	65		10.4	10.7	12.1
2007	79		10.6	10.7	12.4
2008	240		27.1	27.1	31.9
2009	61		23.4	23.4	28.0
Subtotal	553	5.9	118.6	131.9	148.7

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	28		6.4	6.4	6.9
2003		13.5		13.5	14.8
2004	53		14.4	14.4	16.0
2005	10		10.3	10.3	11.7
2006	88		12.8	12.8	14.7
2007		0.3		0.3	0.4
2008	12		2.2	2.2	2.6
2009	8		1.3	1.3	1.6

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

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 \$
Subtotal	220	13.8	54.4	68.2	76.1

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
USAF	356	13.8	54.4	462.3	488.1
Navy	168	22.9	24.8	47.7	52.1
Army	553	5.9	118.6	131.9	148.7
Grand Total	1077	42.6	197.8	641.9	688.9

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	136	136
Procurement	193	164

Percent Total Program Quantities Delivered: 27.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 443.1

Percent Total Program Expended: 64.3%

Note: The actual procurement deliveries to date were incorrectly reported as 191 in previous SAR due to a reporting error. Total procurement deliveries to date are 164.

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

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

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

Total O&S Cost	Global Broadcast Service	Antecedent
BY\$ (In Millions)	308.1	N/A
TY\$ (In Millions)	382.5	N/A

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AF-22 NPOESS

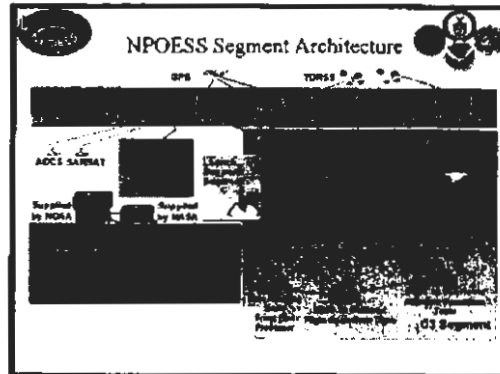
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: NPOESS

AS OF DATE: December 31, 2003

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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  
8455 Colesville Road  
Silver Spring, MD 20910-3320

SES Mr John Cunningham  
Assigned: November 1, 1999  
DSN N/A; COMM 301-713-4850  
john.d.cunningham@noaa.gov

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0305178F  
PE 0603434F Project 40-10

PROCUREMENT:

APPN 3020 ICN WSC NPS000 (Air Force)

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 through FY 2004 with RDT&E via PE 0603434F and in FY05 and beyond via PE 0305178F. DOC funds with NOAA Procurement, Acquisition, and Construction (PAC). Procurement will be funded via PE 0305178F and NOAA PAC. Launch Services are funded entirely with Missile Procurement, Air Force (MPAF) via Evolved Expendable Launch Vehicle (EELV) PE 0305393F. These costs are reported as part of the EELV program. Project ID 2N2ACV and 8N2ACV is now represented by Financial

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04-c-0624

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

Management Center Project 40-10 to better identify the NOAA PAC funding source.

**5. References:**

SAR Baseline (Development Estimate):

USecAF Approved Acquisition Program Baseline (APB) dated August 22, 2002.

Approved Program / Production Estimate (PdE):

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:**

The previous National Polar-orbiting Operational Environmental Satellite System (NPOESS) Selected Acquisition Report (SAR) (as of date: December 31, 2002) estimated that the program development cost would exceed the baseline threshold value due to FY04 President's Budget (PB) and a subsequent FY03 Department of Commerce appropriation reduction. The NPOESS Integrated Program Office (IPO) undertook re-planning efforts to develop and execute a program that meets mission performance requirements within the budget constraints placed upon the program. This has resulted in delayed delivery of the first NPOESS satellite by as much as 21 months (extending the operational period of performance by at least two years with an associated operations and support cost increase). The cost of Evolved Expendable Launch Vehicle (EELV), originally included in the NPOESS estimate, has been removed from the current NPOESS program estimate.

**Program Execution:**

The NPOESS IPO successfully completed the Integrated Baseline Review (IBR) of the replanned program on December 18, 2003. The Engineering, Manufacturing and Development phase of the NPOESS program is fully executable within the FY04 and FY05 President's Budget while maintaining mission performance requirements and maintaining program risk at acceptable levels. The IBR has re-established a basis for cost and schedule tracking.

The NPOESS Presidential Directive requires an annual review of the program by Office of Science and Technology Policy (OSTP) on status and issues. The

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

review was held on August 19, 2003. The primary discussion issue was the way partnered agencies handle reductions and the impacts that Congressional language has on the Department of Commerce, requiring that funds shall only be made available on a dollar for dollar matching basis with funds provided for the same purpose by the Department of Defense.

The NPOESS Preparatory Project (NPP) Spacecraft Critical Design Review (CDR) was held June 10-12, 2003. On October 20-24, 2003, the NPP Mission CDR and NPP CDR was held by both the National Aeronautics and Space Administration (NASA) and IPO review teams. The NASA NPP Mission Confirmation Review for the Deputy Administrator was completed on November 24, 2003.

### **Sensor Development and Fabrication:**

The Aerosol Polarimeter Sensor subcontract was awarded to Raytheon, Santa Barbara in February 2003. Due to the replan, the Boeing Conical-scanning Microwave Image Sounder (CMIS) effort was slowed in FY03. CMIS manpower will begin returning to full levels in FY04 and the program will begin efforts leading to CDR.

The current Visible Infrared Imaging Radiometer Suite (VIIRS) engineering development unit/flight unit 1 (EDU/FU1) schedule is high risk. As part of the IBR, Northrop Grumman Space Technology (NGST) identified funding for risk mitigation measures and to help pull in the schedule into a higher probability of success. The schedule uncertainty and risk are tied to deliveries of the telescope motor/encoder and the readout integrated circuits from their subcontractors.

### **Launch Segment:**

Plans for accomplishing the coupled-loads analysis to support NPOESS structural design were delayed due to the directed ban on new contracts to Boeing on EELV, jeopardizing the loads analysis required for the Preliminary Design Review (PDR) and instrument integration planning. The proposal for the NPOESS/Atlas V special study with Lockheed Martin, to support the coupled loads cycle required for satellite PDR, is scheduled to start in mid-March 2004.

### **Technical:**

A Svalbard-to-mainland fiber Project Implementation Plan was signed on June 26, 2003. This is a joint IPO/NASA/Norwegian Space Center agreement. This effort allows NPOESS, NPP and NASA science satellite data to be returned to the US without delay. The plan includes an agreement with Norway for service to New York and provides 25 years of service, saving approximately \$80M over the life of the NPOESS program.

### **Command, Control, and Communications Segment (C3S):**

The C3S Critical Design Audit (CDA) was held September 8-11, 2003 at Raytheon's Aurora, CO Presentation Center. Overall design maturity of the C3S and its readiness to enter into the segment build phase of development was reviewed. The successful review was comprehensive.

Software build 1.2 has entered qualification testing and is on schedule.

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7. Executive Summary (Cont'd):

Additionally, 2 of 9 software items for Build 1.3 have completed their Critical Design Walkthrough during the week of December 8, 2003. This is ahead of schedule. There remains some risk due to requirements immaturity but this is being managed on an item by item basis.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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 Acquisition O&M costs were previously reported incorrectly. The current estimate has corrected this error and appropriately allocated the costs under RDT&E. However, this adjustment has resulted in a breach to the current RDT&E APB values. A revised Acquisition Program Baseline will be completed in third quarter of FY04.

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9. Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program/PdE</u>	<u>Current Estimate</u>
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 NPOESS Memorandum of Agreement (MOA) established the NPOESS Executive Committee (EXCOM) as the Program approval authority. The previous NPOESS 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 EMD/Production decision.

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

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10. Performance Characteristics:

a. Performance --

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program; PdE</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Key EDR Parameters				
Atmospheric Vertical Moisture Profile				
Measurement	+/- 10%	+/- 10% / greater	TBD	18% OR
Uncertainty		/ of 20%		0.2 g
(Clear:		/ or 0.2 g		kg-1
Surface - 600mb)		/ kg-1		
Measurement	+/- 10%	+/- 10% / greater	TBD	20% or
Uncertainty		/ of 20%		0.2 g
(Cloudy:		/ or 0.2g		kg-1
Surface - 600 mb)		/ kg-1		
Atmospheric Vertical Temperature Profile				
Measurement	+/- 0.5K	+/- 0.5K/ +/- 1.6K	TBD	0.9 K
Uncertainty		/ per 1 km		per 1 km
(Clear:		/ layer		layer
Surface - 300mb)				
Measurement	+/- 0.5K	+/- 0.5K/ +/- 2.5K	TBD	2.0 K
Uncertainty		/ per 1 km		per 1 km
(Cloudy:		/ layer		layer
Surface - 700mb)				
Imagery				
Horizontal Resolution				
Horizontal Cell	0.1 km	0.1 km / 0.4 km	TBD	0.4 km
Size at Nadir,				
clear				
Refresh Visible and IR bands				
Average	1 hour	1 hour / 4 hours	TBD	3.9
Revisit		/ or less		hours
Time				
Maximum	1 hour	1 hour / 6 hours	TBD	6.0
Revisit		/ or less		hours
Time				
Sea Surface Temperature				
Horizontal Resolution				
Horizontal Cell	0.25 km	0.25 km / 1.0 km	TBD	0.75 km
Size at Nadir,				
clear				
Measurement	+/- 0.1	+/- 0.1 / +/- 0.5	TBD	0.5 deg
Uncertainty,	deg C	deg C / deg C		C
clear				

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program; PdE Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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 / Surface to -80 cm / 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. / denial of all U.S. data (ARGOS and SARSAT ex- cepted) / Select. denial of all U.S. data (ARGOS and SARSAT ex- 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-level IERs / critical / top-level 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 revisit time will be 4 hours or less.

Acronyms:

C - Celsius  
cm - centimeter  
EDR - Environmental Data Record  
g kg-1 - grams per kilogram  
IER - Information Exchange Requirements  
K - Kelvin  
km - kilometer  
mb - millibars  
m/s - meters per second  
SARSAT - Search and Rescue Satellite Aided Tracking

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10a. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

a. Cost --	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
Development (RDT&E)	4401.7	3969.2	4759.9
Procurement	1136.3	1136.3	1140.7
Flyaway	(1136.3)		(934.0)
Other Flyaway			(206.7)
Total Flyaway	(1136.3)		(1140.7)
Other Wpn System Cost			(0.0)
New Cost			(0.0)
New Cost			(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	0.0	432.5	0.0
Total FY 2002 Base-Year \$	5538.0	5538.0	5900.6
Escalation	579.6	579.6	480.1
Development (RDT&E)	(363.8)	(332.6)	(288.6)
Procurement	(215.8)	(215.8)	(191.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(31.2)	(0.0)
Total Then Year \$	6117.6	6117.6	6380.7

Cost Footnotes:

The numbers listed in the Production Estimate represent the total NPOESS satellites, ground activities, launch support, Government Program Office support, Integrated Program Office (IPO) share of National Aeronautics and Space Administration (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.

Review of the NPOESS program identified that the costs of the Evolved Expendable Launch Vehicle (EELV) were part of the original NPOESS program estimate. These costs have been removed from the current estimate. Acquisition-related Operations and Maintenance costs were reported incorrectly in the approved Acquisition Program Baseline (APB). These previously reported costs have been moved to Research, Development, Test, and Evaluation to support contractor operations and support (O&S) through deployment and Initial Operational Capability. These changes will be reflected in the revised APB in third quarter FY04.

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**11a. Total Program Cost and Quantity (Cont'd):**  
Weather Satellite System

b. Quantity --

Development (RDT&E)	2	2	2
Procurement	4	4	4
Total	<u>6</u>	<u>6</u>	<u>6</u>

There is no Low Rate Initial Production (LRIP) for NPOESS.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (AUG 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	5538.0	5900.6	
(2) Quantity	6	6	
(3) Unit Cost	923.000	983.433	+6.55
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	1136.3	1140.7	
(2) Quantity	4	4	
(3) Unit Cost	284.075	285.175	+0.39

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4765.5	1352.1	-	6117.6
Previous Changes:				
Economic	-55.0	-22.2	-	-77.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+427.3	+118.1	-	+545.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+372.3	+95.9	-	+468.2
Current Changes:				
Economic	-3.2	-0.5	-	-3.7
Quantity	-	-	-	-
Schedule	+270.2	-	-	+270.2
Engineering	-	-	-	-
Estimating	-356.3	-115.3	-	-471.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-89.3	-115.8	-	-205.1
Total Changes	+283.0	-19.9	-	+263.1
Current Estimate	5048.5	1332.2	-	6380.7

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4401.7	1136.3	-	5538.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-5.3	-	-	-5.3
Engineering	-	-	-	-
Estimating	+436.7	+107.1	-	+543.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+431.4	+107.1	-	+538.5
Current Changes:				
Quantity	-	-	-	-
Schedule	+233.6	-	-	+233.6
Engineering	-	-	-	-
Estimating	-306.8	-102.7	-	-409.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-73.2	-102.7	-	-175.9
Total Changes	+358.2	+4.4	-	+362.6
Current Estimate	4759.9	1140.7	-	5900.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-3.2
Program cost increase due to delaying the availability of the first NPOESS satellite up to 21 months. Increase partially supports costs associated with program re-plan proposal, which resulted from FY03 appropriation and FY04 budget reductions. (Schedule)	+233.6	+270.2
Removal of EELV launch vehicle costs from program estimate, which is reported by the EELV program (Estimating)	-387.1	-450.0
FY03 Supplemental funding to support FY03 funding shortfalls. (Estimating)	+7.5	+9.4
Funding reduction due to Congressional rescissions (Estimating)	-30.9	-31.5
Realignment of procurement to R&D to partially support the increased costs associated with the delay of the of first NPOESS satellite by up to 21 months, which resulted from FY03 and FY04 Budget reductions. (Estimating)	+103.7	+115.8
RD&E Subtotal	-73.2	-89.3
(2) <u>Procurement</u>		
Revised inflation indices (Economic)	N/A	-0.5
Realignment of procurement to R&D to partially support increased costs associated with the delay of the first NPOESS satellite by up to 21 months. (Estimating)	-102.7	115.3
Procurement Subtotal	-102.7	-115.8

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

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline										PAUC
PAUC Changes										Dev Est
Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
1065.80	--	--	--	--	-46.20	--	--	-46.20		1019.60

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		
1019.60	-13.48	--	+45.03	--	+12.30	--	--	+43.85		1063.45

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline										PUC
PUC Changes										Dev Est
Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
--	--	--	--	--	+338.02	--	--	+338.02		338.02

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		
338.02	-5.67	-0.005	--	--	+0.700	--	--	-4.97		333.05

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	MAR 1997	N/A	MAR 1997	MAR 1997
Milestone II	SEP 2000	N/A	FEB 2002	AUG 2002
Milestone III	DEC 2011	N/A	FEB 2002	AUG 2002
IOC	DEC 2010	N/A	JUL 2011	JUL 2011
Total Cost	5329.0	N/A	6117.6	6380.7
Total Quantity	5	N/A	6	6
Prog Acq Unit Cost	1065.8	N/A	1019.6	1063.5

Milestone III Production and Current Estimate dates were incorrectly reported

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

in the December 2002 Selected Acquisition Report (SAR) as October 2013. The current SAR submission corrects the Milestone III SAR Production and Current Estimate date to February and August 2002 respectively. The similar dates for Milestone II and Milestone III results from the NPOESS Acquisition Program Baseline (APB) Memorandum, signed on April 19, 1999, redesignating Milestone II as Milestone II/III, a combined EMD/Production decision.

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

a. RDT&E --		Initial Contract Price		
NPOESS A&O:		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NGST, Redondo Beach, CA				
F04701-02-C-0502, CPAF		\$2942.7	N/A	2
Award: August 23, 2002				
Definitized: August 23, 2002				

Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$3453.6	N/A	\$3467.5	\$3467.5

	<u>Qty</u>	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances		\$0.0	\$0.0
Cumulative Variances To Date (11/30/03)		\$-21.0	\$-13.0
Net Change		\$-21.0	\$-13.0

Explanation of Change:

The unfavorable cost variance is primarily due to ongoing technical and performance issues in the primary payloads, Visible/Infrared Imager Radiometer Suite (VIIRS), Ozone Mapping and Profiler Suite, Conical Scanning Microwave Imager/Sounder, Cross-track Infrared Sounder (CrIS), and 1394 effort.

The unfavorable schedule variance is primarily driven by VIIRS technical and performance issues and late subcontracts delivery related to Application Specific Integrated Circuit (ASIC) fabrication, assembly and test on the 1394 effort.

Contract Comments:

The basic Acquisition and Operations (A&O) contract value includes Engineering and Manufacturing Development (EMD) and Pre-Initial Operational Capability 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 CrIS and VIIRS sensors to the NPOESS Preparatory Project (NPP); the complete NPOESS space segment (satellites C1 and C2); the complete NPP & NPOESS Interface Data Processing

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

(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 (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-18)</u>	<u>Total</u>
RDT&E	1310.4	538.5	615.3	2584.3	5048.5
Procurement	-	-	-	1332.2	1332.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1310.4	538.5	615.3	3916.5	6380.7

Program Funding Summary Footnotes:

The numbers above are total NPOESS satellites and ground activities, 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.

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

b. Annual Summary -- Weather Satellite System

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

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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				144.6	144.2
2002				268.0	269.6
2003				485.5	493.8
2004				522.8	538.5
2005				588.8	615.3
2006				560.5	594.7
2007				513.6	554.7
2008				493.2	543.0
2009				255.5	286.9
2010				163.9	187.8
2011				190.7	222.9
2012				19.7	23.5
2013				34.4	41.8
2014				21.8	27.0
2015				32.1	40.6
2016				19.1	24.6
2017				10.9	14.4
2018				16.7	22.4
Subtotal	2			4759.9	5048.5

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.

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		9.5		9.5	10.2
2007		28.1		28.1	30.6
2008	1		257.9	257.9	286.8

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

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 \$
2009		63.1		63.1	71.6
2010	1		233.2	233.2	269.8
2011	1		282.9	282.9	333.8
2012	1		160.0	160.0	192.5
2013		13.9		13.9	17.0
2014		11.6		11.6	14.5
2015		20.7		20.7	26.4
2016		30.1		30.1	39.2
2017		15.2		15.2	20.2
2018		14.5		14.5	19.6
Subtotal	4	206.7	934.0	1140.7	1332.2

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	206.7	934.0	5900.6	6380.7

**17. Delivery/Expenditure Information:**

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

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1336.7

Percent Total Program Expended: 20.9%

Total expenditures includes \$656.7M of DOC obligations.

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**18. Operating and Support Costs:**

**a. Assumptions and Ground Rules --**

Operations and Support (O&S) 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 December 18, 2003. The Post IOC O&S period is estimated to begin in July 2011 with declaration of IOC and continue through June 2020 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 Average Annual System Cost	Antecedent Systems
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
BY\$ (In Millions)	718.8	N/A
TY\$ (In Millions)	914.8	N/A

Report Creation Date: 03/22/2004 12:05:15 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: T45TS

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): T45TS - Naval Undergraduate Jet Flight Training System (GOSHAWK)
2. DoD Component: Navy
3. Responsible Office and Telephone Number:  
Attn: PMA 273 BLDG 3258      CAPT D. C. Wooten  
NAVAIRSYSCOM      Assigned: August 2, 2000  
22581 Saufley Rd      DSN 757-5203; COMM 301-757-5203  
PATUXENT RIVER, MD 20670-1547      david.wooten@navy.mil
4. Program Elements/Procurement Line Items:  
RDT&E:  
PE 0603208N Project H1142  
PROCUREMENT:  
APPN 1506 ICN 0016/0017 (Navy)  
APPN 1506 ICN 0338 (Navy)  
MILCON:  
PE 080579

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B-10

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04-C-0683

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**5. References:**

SAR Baseline (Production Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) 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:**

As of December 31, 2003 there are 75 T-45 aircraft at NAS Kingsville (four aircraft are awaiting crash damage repair). There are 83 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 FY04 production contract for Integrated Logistics Support (ILS), production integration and testing was awarded January 9, 2004. It is expected that the aircraft and sustaining engineering portions will be definitized by March 2004.

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

The FY04 Engine Production contract with Rolls Royce was awarded on November 28, 2003. This was the second option year on a base contract awarded in September 2001 for the FY02 Production. This contract procures engines and provides them as Government Furnished Equipment (GFE) to the T45 Program. As of December 2003, 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, Operating and Support (O&S) costs reduction and avionics advances are considered top priorities.

During 2003 the program successfully completed 36,300 flight hours at NAS Kingsville and 36,200 flight hours at NAS Meridian. As of December 2003, the Training Command had flown over 388,565 T-45A flight hours and 135,000 T-45C flight hours for a total of 523,565 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 208 aircraft. PB05 reflects a decrease of one aircraft from PB04.

The T45TS program was selected for Commercial Operations & Support Savings Initiative (COSSI) funding for implementation of two Commercial Technology Insertion programs. The avionics Integrated Program Team (IPT) was awarded \$6.9M 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 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 has also been completed. Stage I included: completion of all Design Reviews, Initial Hardware Builds, Integration Testing and Software Qualification Testing and Completed Flight Simulator Demonstration.

Procurement costs are increasing due to Foreign Exchange Rate (FER) increases. A proposed reduction quantity from 15 to 14 in FY04 to offset shortfalls was accepted. FY04 procurement quantity or logistic support will be further impacted if FPRA and FER continues to deteriorate.

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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 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
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

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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>Demon- strated Perf</u>	<u>Current Estimate</u>
Aircraft				
Wing Span (ft)	30.81	30.81 / 30.81	N/A	30.81
Length (ft)	39.26	39.26 / 39.26	N/A	39.26
Height (ft)	13.42	13.42 / 13.92	N/A	13.92
Flight Design Weight (lbs)	13725	13725 / 14000	13868	13868
Specific Range @ 30,000 ft (takeoff less 40% useable fuel) (nm/lb)	.33	.33 / .32	.359	.359
Endurance @ 5000 ft (takeoff less 80% useable fuel) (lb/hr)	1130	1130 / 1160	940	940
Waveoff (altitude loss ft)	50	50 / 70	<70	<70
Bolter (ground roll distance ft @ 15 kts WOD)	325	325 / 425	310-375	310-375
Lateral Directional Stability (sideslip excursion approach configuration) (deg)	4	4 / 6	6	6
Roll Off at Stall (approach configuration) (deg)	<30	<30 / 30	15-20	15-20
"G" Excursion Speed Brake Extension (Gs)	.25	.25 / .40	.35	.35
Longitudinal Stability (stick free damping ratio 10,000 ft & .86 IMN)	.45	.45 / .25	.30	.30
Simulator				
Total Time Lag Error (ms)	124	124 / 155	155	155
Digital Computational System				
Main Memory with spare (MB)	4.0/2.75	4.0/2.75/ 4.0/2.0	4.0/2.0	4.0/2.0

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10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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				
Memcry/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
Academics				
Computer Aided Instruction (CAI) System Availability (% Sched)	95	95 / 85	100	100
Training Integration System (TIS)				
Availability (% Sched)	95	95 / 85	85	100

Training Integration System (TIS) availability is meeting 100% of schedule and 99% of total time.

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10a. Performance Characteristics (Cont'd):

Pilot Training Rate performance characteristic was deleted from reporting in accordance with MSIII approval January 19, 1995.

b. Current Change Explanations -- None

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	898.9	1086.0	1054.6
Procurement	4595.2	5707.9	5271.6
Airframe/CFE	(2738.5)		(3277.9)
Engines	(184.3)		(295.7)
GFE	(137.8)		(165.5)
Change Allowance/ECO	(62.6)		(35.0)
Nonrecurring flyaway	(198.6)		(227.6)
Total Flyaway	(3321.8)		(4001.7)
Training Equipment	(337.1)		(220.1)
Other	(651.3)		(793.4)
Total Other Wpn Sys	(988.4)		(1013.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(285.0)		(256.4)
Construction (MILCON)	34.0	34.0	33.9
Acquisition O&M	0.0	0.0	0.0
Total FY 1995 Base-Year \$	5528.1	6827.9	6360.1
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 \$	5599.5	6890.0	6323.0
b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	174	234	208
Total	176	236	210

The original program planned 48 Low Rate Initial Production (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 decision occurred in January 1995.

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 (MAR 1999 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	6827.9	6360.1	
(2) Quantity	236	210	
(3) Unit Cost	28.932	30.286	+4.68
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	5707.9	5271.6	
(2) Quantity	234	208	
(3) Unit Cost	24.393	25.344	+3.90

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	-3.7	+0.1	+1.9
Quantity	-	+617.6	-	+617.6
Schedule	-	-151.4	-	-151.4
Engineering	-19.6	+43.1	-	+23.5
Estimating	+162.2	+92.7	-0.1	+254.8
Other	-	-	-	-
Support	-	-37.0	-	-37.0
Subtotal	+148.1	+561.3	+0.0	+709.4
Current Changes:				
Economic	-	-3.0	-	-3.0
Quantity	-	-21.5	-	-21.5
Schedule	-	+0.7	-	+0.7
Engineering	-	-	-	-
Estimating	-	+29.1	-	+29.1
Other	-	-	-	-
Support	-	+8.8	-	+8.8
Subtotal	-	+14.1	-	+14.1
Total Changes	+148.1	+575.4	+0.0	+723.5
Current Estimate	879.9	5412.0	31.1	6323.0

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

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	898.9	4595.2	34.0	5528.1
Previous Changes:				
Quantity	-	+595.4	-	+595.4
Schedule	-	-65.9	-	-65.9
Engineering	-20.3	+51.8	-	+31.5
Estimating	+176.0	+91.8	-0.1	+267.7
Other	-	-	-	-
Support	-	-10.8	-	-10.8
Subtotal	+155.7	+662.3	-0.1	+817.9
Current Changes:				
Quantity	-	-18.0	-	-18.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+24.8	-	+24.8
Other	-	-	-	-
Support	-	+7.3	-	+7.3
Subtotal	-	+14.1	-	+14.1
Total Changes	+155.7	+676.4	-0.1	+832.0
Current Estimate	1054.6	5271.6	33.9	6360.1

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.2
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Total Quantity Variance associated with decrease of 1 A/C from 15 to 14. (Quantity)	-18.0	-21.5
Stretchout of annual procurement buy profile due to reduction in A/C in FY04 from 15 to 14. (Schedule)	0.0	+0.7
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.1
Change in estimate due to exchange rate in FY04. FY04 A/C quantity reduced from 15 to 14 (QR) (Estimating)	+23.8	+28.0
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Change in Initial Spares (QR) (Support)	-10.5	-12.0
Change in Training Equipment (Support)	-0.1	-0.1
Change in Other logistics related elements resulting from the restoration of logistics support funding in FY05 and FY06 (Support)	+17.6	+20.6
Procurement Subtotal	+14.1	+14.1

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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	
17.97	-1.31	+4.06	+0.437	+4.34	+5.01	--	+1.31	+13.85	31.81

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
31.82	-0.005	-2.31	-0.718	+0.112	+1.35	--	-0.134	-1.71	30.11

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
13.73	-1.20	+0.970	+4.00	+3.70	+4.68	--	+1.92	+14.07	27.80

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.80	-0.032	-1.68	-0.725	+0.207	+0.586	--	-0.136	-1.78	26.02

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T45TS, December 31, 2003

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

c. <u>Schedule, Cost, and Quantity History</u>				
Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
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	6323.0
Total Quantity	304	N/A	176	210
Prog Acq Unit Cost	18.0	N/A	31.8	30.1

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

a. Procurement --		Initial Contract Price		
T45TS GFE ENG FY02-04:		Target	Ceiling	Qty
ROLLS ROYCE, PLC, BRISTOL, UK				
N0001901C0290, FFP		\$2.1	N/A	14
Award: September 27, 2001				
Definitized: March 28, 2002				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Contractor	Program Manager	Qty
\$79.6	N/A	\$79.6	\$79.6	15

Explanation of Change:

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 basic FY02 contract was awarded to Rolls Royce (September 2001) and contained two option years, FY03 and FY04. Options include T45TS GFE aircraft engines, modules and spare engines. Option years FY03 and FY04 have been exercised.

The change in the current contract price is revised from 33.3 to 79.6 as a result of exercising the FY04 option.

Contract delivery total quantity of 6 installation engines and one module 3 for FY02; 8 installation engines, 2 module 5's and 4 module 7's for FY03; 15 install Engines, 1 spare engine, 4 module 5's and 7 module 7's for FY04.

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15. Contract Information (Cont'd):

Estimated price at completion reflects the FY02 (6 installation engines and one module 3) and FY03 (8 installation engine) requirements.

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
T45TS FY01 PROD:				
MCDONNELL DOUGLAS CORP, ST LOUIS MO				
N0001900C0184, FFP	\$5.2	N/A	14	
Award: September 1, 2000				
Definitized: March 1, 2001				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$246.7	N/A	14	\$246.7	\$246.7

Explanation of Change:

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 \$246.7 includes ECP 236 Bleed Air Pipe, Software Merger change, Spare Landing Gear and Landing Gear Doors and Associated Hardware.

The FY01 quantity of 14 T-45 aircraft was awarded in September 2000 and the price was definitized on March 01, 2001. As of December 2003 three aircraft have been delivered per schedule.

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
T45TS FY02 PRODUCTION:				
MCDONNELL DOUGLAS, ST LOUIS, MO				
N0001901C0267, FFP	\$2.9	N/A	6	
Award: July 7, 2001				
Definitized: July 2, 2002				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$135.6	N/A	6	\$135.6	\$135.6

Explanation of Change:

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

Contract Comments:

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15. Contract Information (Cont'd):

Initial target price was for long lead material. The balance of the funding was awarded the following year.

The Current Target Price of \$135.6M includes Ground Handling, Phase IV, DTIII, repair of the GFP, Ground Training System, ECP 240 GINA Software Companion, Engine Surge Non-recurring and Simulator Parts.

The FY02 quantity of 6 aircraft was awarded July 2001 and the price was definitized on July 02, 2002. As of December 2003 one Aircraft has been delivered per schedule.

FY03 T45TS AIRCRAFT: MCDONNELL DOUGLAS, ST LOUIS, MO N0001903C6528, FFP Award: November 6, 2002 Definitized: August 15, 2003	Initial Contract Price		
	Target	Ceiling	Qty
	\$15.8	N/A	8

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$162.7	N/A	8	\$162.7	\$162.7

Explanation of Change:

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

Contract Comments:

The Current Target Price of \$162.7M reflects Long Lead Parts, Flight Test Program, Integrated Logistics Support, Ground Training Sytem, Definitization of 8 Aircraft, Ground Handling Production Incorporation, Production Integration Testing, Engine Surge Flight Test, ECP 248 and Identification Friend or Foe (IFF)/ Tactical Air Navigation (TACAN) Non-recurring.

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06)</u>	<u>Total</u>
RDT&E	879.9	-	-	-	879.9
Procurement	4588.5	347.1	257.5	218.9	5412.0
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	5499.5	347.1	257.5	218.9	6323.0

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
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

<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>
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

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

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 \$
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	289.4	311.9
2000	15		253.1	309.8	338.1
2001	14	13.4	222.9	276.2	304.5
2002	6	8.2	120.1	162.4	180.8
2003	8	5.5	157.1	196.6	221.7
2004	14	3.3	262.2	303.5	347.1
2005	8	5.3	168.0	221.7	257.5
2006	5	8.0	130.0	185.3	218.9
Subtotal	208	227.7	3774.0	5271.6	5412.0

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
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	210	227.7	4828.6	6360.1	6323.0

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T45TS, December 31, 2003

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	168	168

Percent Total Program Quantities Delivered: 81.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 5132.7

Percent Total Program Expended: 81.2%

T-45 deliveries accepted through the "As Of" date December 31, 2003 are through the 168th aircraft (A168).

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 CNATRA 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 208 T-45 aircraft, the program will be 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 FY18. 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 FYC4).

Reported O&S cost elements include: Mission Personnel, Unit-Level Consumption, CLS, Sustaining Support and Indirect Support. Cost elements for Intermediate and Depot Maintenance activities are included under CLS. All costs are derived from the AIR 4.2.5 O&S Cost Model as of January 2004. The reported Steady State Annual Costs are the unit (per aircraft) cost for FY2008. This year was selected as a typical steady state operating year with constant FHs.

Specifically, in section 18b 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 are included within the CLS portion of the O&S.

Unit-Level Consumption costs include the cost for Petroleum, Oil & Lubricants (POL), CNATRA consumables, and organic Aviation Depot Level repairables required for peacetime operations, and Training Ordnance costs.

CLS costs include the following elements: the costs for Aircraft Maintenance

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T45TS, December 31, 2003

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

including engine; Ground Training System (GTS Maintenance, Replenishment Spares, Repair of Repairables (ROR), Simulator Maintenance, and Operations Costs); Training Support Center Maintenance; Support Equipment, Software Maintenance, Program & Administrative Mgt; Off Site Repair (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.

Indirect costs include Installation Support costs for personnel and infrastructure at the host installation where training is performed (Base Operating Support).

Date of estimate: January, 2004.

The T-45TS Steady State Annual Cost is the per aircraft estimated cost incurred during steady state operations. The source document for all cost estimates is the AIR4.2 O&S Cost Model as of January 2004. This model is updated annually or when a significant change in the support of the system would materially impact the cost model. The cost of antecedent (T-2C, and TA-4J) systems were not available.

The Total O&S Cost for the 30 year life of the T-45TS (1995-2025) is presented in BY1995\$ and TY\$

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

Cost Element	T-45TS Avg Annual Cost Per T-45	No Antecedent Prog
Mission Pay & Allowances	60.2	N/A
Unit Level Consumption	137.7	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	804.3	N/A
Sustaining Support	250.0	N/A
Indirect Costs	204.5	N/A
Total	1456.7	N/A

Total O&S Cost	T-45TS	No Antecedent Prog
BY\$ (In Millions)	7049.2	N/A
TY\$ (In Millions)	7993.0	N/A

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AF-18 MMIII PRP

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

AS OF DATE: December 31, 2003

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04-C-100

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1. (U) Designation and Nomenclature (Popular Name): Propulsion Replacement Program (PRP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:  
CO-ALC/LMP Maj Heidi Fier  
6011 Gum Lane Assigned: May 1, 2003  
Hill AFB, UT 84056-5826 DSN 775-5541; COMM (801)775-5541  
Heidi.Fier@hill.af.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0604851F  
PROCUREMENT:  
(U) ADON 2000 ICH LGND00 (All force)  
  
(U) Program Element Code (PEC) 11213F and Modification #50538X

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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**5. (U) References:**

SAR Baseline (Production Estimate):

(U) Air Force Acquisition Executive (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 current fielded motors prior to the onset of ageout. The solid propulsion systems now in the force began aging out in 2002 and must be replaced in order to support current force planning. PRP was 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 boosters per month during the period FY2000 through FY 2009.

PRP 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.

The ICBM System Program Office (SPO) contracted Northrop Grumman Missions Systems (NGMS), the ICBM Prime Contractor (IPIC), of Clearfield, UT, for the project. The remanufacture of solid rocket motors, interstage hardware, and ordnance work is performed by two major sub-contractors in the following Joint Venture (JV) arrangement: Stage 1 - ATK Thiokol, Brigham City, UT, and Stages 2/3 - Pratt and Whitney (P&W), Chemical Systems Division (CSD), San Jose, CA. Ogden Air Logistics Center(OO-ALC)depot workload responsibilities include disassembly and assembly of the booster and repair/refurbishment of flight controls.

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

(U) The quantity reflected in the December 2003 SAR is 580 units. PRP is still on contract to produce the USSTRATCOM requirement of 601 units. Due to major program issues (i.e., two explosion incidents) at the contractor's facility, the Air Force will be unable to procure the full 96 units in FY04 and is currently restructuring the production contract. Options to this point have purchased 223 boosters. The total in the December 2003 SAR is reflected at 580. The Air Force will address the 21 remaining units to meet the USSTRATCOM

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

total requirement of 601 in the FY 2006 President's Budget.

All nine boosters procured during Low Rate Initial Production (LRIP1) and all thirty-three boosters procured during LRIP2 have been delivered.

Full Rate Production option 1 (FRP1)- sixty-four out of eighty-five boosters procured during FY01 have been delivered.

FRP2 was executed in October 2002 for ninety-six boosters. No complete booster has been delivered to date.

FRP3 was executed on December 15, 2003, with an Undefined Contract Action (UCA) for seventy-five boosters. Definitization of this contract is scheduled to complete by 8 Jun 04.

The program's current focus is on resolving several production challenges. A Joint Independent Review Team (JIRT), consisting of government and industry, was formed in January 2003, in response to foreign objects (FO) found in 29 motors (16 stage 2 and 13 stage 3) produced at P&W. After implementing JIRT recommendations and increasing government surveillance of production, remanufacture of stage 2 and 3 motors at P&W returned to full rate production in July 2003.

On August 7, 2003, a 600-gallon mixing bowl exploded during remote mixing operations at P&W, destroying the facility but causing no injuries. This operation was being performed in support of another program at P&W. All live operations at P&W were shut down pending an investigation.

On September 12, 2003, while performing facility maintenance, an industrial accident occurred in the 400-gallon mixing facility at P&W causing one fatality to a subcontractor. All operations were again shut down pending an investigation.

Investigation results for both of these incidents are proprietary to P&W. Results for the 600-gallon mix facility investigation were provided to the SPD and AFPEO/SP. The investigation for the industrial accident is continuing at this time.

On October 10, 2003, the SPO issued a Cure Notice to NGMS regarding delinquent booster deliveries and lack of a viable recovery plan for restarting stage 2 and 3 production. NGMS provided the SPO a recovery plan that detailed transferring production of stage 2 and 3 motors to ATK Thiokol's Bacchus facility in Magna, UT, with Stage 1 production continuing at ATK Thiokol's Promontory facility in Brigham City, UT. After reviewing the plan for risk and feasibility, SPO and Defense Contract Management Agency (DCMA) personnel determined it was best option to resume with stage 2 and 3 production.

The cure notice was rescinded December 4, 2003, after NGMS provided a restructure plan for FRPs 3 through 6 and an additional option FRP7 to compensate for deferred production of the program. The first two options, FRP1

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

and FRP2, will remain as Fixed-price incentive with successive targets (FPIS)/Fixed-price incentive firm (FPIF) contracts while FRPs 3 through 7 will be negotiated toward a Firm Fixed Price (FFP) contract.

In addition to the contractor production problems, the program has experienced quality issues with the OO-ALC depot. On July 25, 2003, the ICBM System Program Director (SPD) stopped accepting boosters from the depot until a recovery plan was provided to mitigate quality deficiencies in the final build process by the depot. Three fielded PRP boosters that failed field testing precipitated this action. Since then, two additional PRP failed boosters have been identified bringing the total to five booster failures. An assessment team consisting of 20th AF members and contractors provided recommendations regarding equipment, training, technical data, proficiency, compliance safety, quality assurance, process improvement, and logistics. The OO-ALC recovery plan addresses these areas and recommendations. SPO personnel continue to provide engineering support in identifying and mitigating production problems. Depot production on boosters resumed August 2003.

The program has historically been sensitive to rate changes driven by the NASA shuttle program. The recent shuttle tragedy significantly impacts ATK Thiokol's business base and price of Ammonium Perchlorate (AP), thus affecting program costs to PRP. PRP and the NASA shuttle program are the main two customers for AP.

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
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
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  
FAD- First Asset Delivery  
IOC- Initial Operational Capability  
IOT&E- Initial Operational Test and Evaluation  
LRIP- Low Rate Initial Production  
PCA- Physical Configuration Audit  
PDR- Preliminary Design Review

b. Current Change Explanations --

(U) Ch-1: IOC current estimate date was inadvertently left off from December 2002 SAR. IOC was completed January 2002.

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB)	Demon- strated	Current
--	------------------------------	---------------------------	-------------------	---------

(b)(1)

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

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

(b)(1)



(U) ACRONYMS:

FRD- Formerly Restricted Data

FS- Frequency Source

NM- Nautical Miles

SICBM- Small Intercontinental Ballistic Missile

b. Current Change Explanations -- None

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	336.8	336.8	316.4
Procurement	1750.0	1750.0	1698.5
Flyaway	(1632.4)		(1601.5)
Other Wpn System Costs	(117.6)		(97.0)
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 1994 Base-Year \$	2086.8	2086.8	2014.9
Escalation	514.0	514.0	306.0
Development (RDT&E)	(30.5)	(30.5)	(21.5)
Procurement	(483.5)	(483.5)	(284.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2600.8	2600.8	2320.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	607	607	580
Total	607	607	580

(U) The unit of measure for this program is a Propulsion Booster.

The quantity reflected in the December 2003 SAR is 580 units. PRP is still on contract to produce the USSTRATCOM requirement of 601 units. Due to major program issues (i.e., two explosion incidents) at the contractor's facility, the Air Force will be unable to procure the full 96 units in FY04 and is currently restructuring the production contract. Options to this point have purchased 223 boosters. The total in the December 2003 SAR is reflected at 580. The Air Force will address the 21 remaining units to meet the USSTRATCOM total requirement of 601 in the FY 2006 President's Budget.

The planned LRIP quantity was 42, which was completed in October 2002 and represents 7% of the total buy as approved by the Component Acquisition Executive per the Acquisition Strategy Panel.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (SEP 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	2086.8	2014.9	
(2) Quantity	607	580	
(3) Unit Cost	3.438	3.474	+1.05
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	1750.0	1698.5	
(2) Quantity	607	580	
(3) Unit Cost	2.883	2.928	+1.56

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	-22.7	-	-29.9
Quantity	-	-2.1	-	-2.1
Schedule	-	-21.0	-	-21.0
Engineering	-	-	-	-
Estimating	-21.5	-224.2	-	-245.7
Other	-	-	-	-
Support	-	-24.0	-	-24.0
Subtotal	-28.7	-294.0	-	-322.7
Current Changes:				
Economic	-	-8.3	-	-8.3
Quantity	-	-69.0	-	-69.0
Schedule	-	+3.1	-	+3.1
Engineering	-	+25.5	-	+25.5
Estimating	-0.7	+91.4	-	+90.7
Other	-	-	-	-
Support	-	+0.8	-	+0.8
Subtotal	-0.7	+43.5	-	+42.8
Total Changes	-29.4	-250.5	-	-279.9
Current Estimate	337.9	1983.0	-	2320.9

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MMIII PRP, December 31, 2003

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	-19.8	-58.7	-	-78.5
Other	-	-	-	-
Support	-	-21.4	-	-21.4
Subtotal	-19.8	-97.2	-	-117.0
Current Changes:				
Quantity	-	-55.4	-	-55.4
Schedule	-	+0.8	-	+0.8
Engineering	-	+21.3	-	+21.3
Estimating	-0.6	+78.2	-	+77.6
Other	-	-	-	-
Support	-	+0.8	-	+0.8
Subtotal	-0.6	+45.7	-	+45.1
Total Changes	-20.4	-51.5	-	-71.9
Current Estimate	316.4	1698.5	-	2014.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Budget adjustment to reflect actual contract closeout cost. (Estimating)	-0.6	-0.7
RDT&E Subtotal	-0.6	-0.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-9.6
Economic adjustment for negative program change. (Economic)	N/A	+1.3
Total Quantity Variance associated with decrease of 26 units from 606 to 580 units.	-51.6	-64.4
Quantity decrease of 26 units. (Quantity)	-55.4	-69.0
Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	+0.8	+0.4
Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+3.0	+4.2
Stretchout of annual procurement buy profile. (Schedule)	0.0	+2.7
Program cost increase due to Attrition Hardware and Ammonium Perchlorate over life of program. (Engineering)	+21.3	+25.5

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MMIII PRP, December 31, 2003

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for Current and Prior Inflation. (Estimating)	+2.3	+2.7
Overall Program Adjustment to buy required quantities. (Estimating)	+27.1	+32.4
Increase in estimated cost due to plant explosions. (Estimating)	+45.8	+52.1
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Change in Other Wpn System Costs (Support)	+0.6	+0.6
Procurement Subtotal	+45.7	+43.5

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	
4.64	-0.208	--	+0.056	--	-0.300	--	+0.092	-0.360	4.28

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	-0.066	+0.077	-0.031	+0.044	-0.267	--	-0.040	-0.283	4.00

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

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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	
3.68	-0.053	+0.048	-0.031	+0.044	-0.229	--	-0.040	-0.261	3.42

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	2320.9
Total Quantity	N/A	607	607	580
Prog Acq Unit Cost	N/A	4.6	4.3	4.0

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

a. Procurement --

(U) PRP LRIP/FRP 01:

Northrop Grumman Mission, Fairfax VA

F42600-98-C-0001, CPAF/FPIF

Award: October 1, 2001

Definitized: October 1, 2001

Initial Contract Price

Target	Ceiling	Qty
\$215.1	\$234.9	85

Current Contract Price

Target	Ceiling	Qty
\$242.6	\$242.6	85

Estimated Price At Completion

Contractor	Program Manager
\$251.0	\$251.0

Cost Variance Schedule Variance

Previous Cumulative Variances  
Cumulative Variances To Date (12/22/03)  
Net Change

\$-14.8	\$-5.2
\$-1.0	\$-4.0
\$13.8	\$1.2

Explanation of Change:

(U) FRP 1 is 96.1% complete. The current schedule variance is an unfavorable \$3.976M. The net change in schedule variance from last SAR is favorable at \$1.24M. Although a favorable turn has been taken since the previous SAR, the overall schedule variance is unfavorable due to production stoppage of boosters due to two separate explosions at the Pratt and Whitney facility in fall of 2003. FRP 1 was scheduled to complete in September 2003, but due to the production halt, there are 19 complete boosters yet to be delivered.

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

FRP 1 is expected to be complete in October 2004. The current cost variance is an unfavorable \$1.036M reflecting a favorable net change of 13.81M. The favorable change reflects the delivery of motors in final assembly at Pratt and Whitney at the time of the explosion. Program still expects contractor to overrun the contract ceiling.

(U) Contract Comments:

FRP 1 is 96.1% complete and will not be reported in the next SAR.

			Initial Contract Price		
			Target	Ceiling	Qty
(U) PRP LRIP/FRP 02:					
Northrop Grumman Mission, Fairfax VA					
F42600-98-C-0001, CPAF/FPIF			\$220.4	\$233.3	96
Award: October 1, 2002					
Definitized: October 1, 2002					

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$233.9	\$245.3	96	\$260.3	\$260.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.1	\$0.0
Cumulative Variances To Date (12/22/03)	\$3.1	\$-18.3
Net Change	\$3.2	\$-18.3

Explanation of Change:

(U) FRP 2 is 47.8% complete. The current schedule variance is an unfavorable \$18.276M. The net change in schedule variance from last SAR is an unfavorable \$18.276M. The overall schedule variance is unfavorable due to work stoppages related to the explosions at Pratt and Whitney and the attempt to recoup schedule in the FRP 1 option. The unfavorable schedule variance will continue to deteriorate until qualification is complete for stage 2 and 3 live operation at the ATK Bacchus facility in June 2004. Deliveries from contractor to the Government are expected to resume at this time. The cost variance is currently \$3.068M, reflecting a favorable net change of \$2.995M. This favorable change reflects that since no work is currently being done, no money is currently being spent. Expect cost to turn unfavorable by next SAR.

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

(U) PRP LRIP/FRP 03:			Initial Contract Price		
Northrop Grumman Mission, Fairfax VA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F42600-98-C-0001, CPIF/FFP			\$257.0	\$257.0	75
Award: December 15, 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>	
\$257.0	\$257.0	75	\$257.0	\$257.0	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/22/03)	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

(U) FRP 3 is 0% complete, but was put on contract with an Undefined Contract Action on December 15, 2003. The FRP 3 option is scheduled to be definitized by June 2004 and will be FFP. Cost and Schedule variances will be reported in the next SAR.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY94-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-07)	<u>Total</u>
RDT&E	337.9	-	-	-	337.9
Procurement	806.6	297.1	295.0	584.3	1983.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1144.5	297.1	295.0	584.3	2320.9

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

b. Annual Summary -- Minuteman III PRP

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

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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				8.5	9.6
Subtotal				316.4	337.9

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	9		78.5	81.0	90.1
2001	33		126.6	131.6	147.8
2002	85		222.0	235.8	268.3
2003	96		246.6	261.9	300.4
2004	75		240.0	255.5	297.1
2005	96		234.7	250.0	295.0
2006	96		234.8	249.8	299.7
2007	90		218.3	232.9	284.6
2008					
Subtotal	580		1601.5	1698.5	1983.0

(U) The quantity reflected in the December 2003 SAR is 580 units. PRP is still on contract to produce the USSTRATCOM requirement of 601 units. Due to major program issues (i.e., two explosion incidents) at the contractor's facility, the Air Force will be unable to procure the full 96 units in FY04 and is currently restructuring the production contract. Options to this point have purchased 223 boosters. The total in the December 2003 SAR is reflected at 580. The Air Force will address the 21 remaining units to meet the USSTRATCOM total requirement of 601 in the FY 2006 President's Budget.

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	580		1601.5	2014.9	2320.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	136	89

(U) Percent Total Program Quantities Delivered: 15.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 912.9

(U) Percent Total Program Expended: 39.3%

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

PROGRAM: Global Hawk

AS OF DATE: December 31, 2003

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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:

Global Hawk 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&amp;E:

- (U) PE 35205F (Shared) Predator Project
- (U) PE 35220F

## PROCUREMENT:

- (U) APPN 3010 ICN HAE UAV (Air Force)

## MILCON:

- (U) PE 35205F
- (U) PE 35220F

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 6, 2001.

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.

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

(U) Foreword: A March 2002 Defense Acquisition Board (DAB) review approved a new baseline for the Global Hawk program, incorporating the spiral development process. This DAB envisioned multi-mission capable air vehicles (AVs) configured for both imagery intelligence (IMINT) and signals intelligence (SIGINT) missions. The program's Operational Requirements Document (ORD) was updated to reflect this revised approach and validated by the Joint Requirements Oversight Council (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 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 decision also approved a Low Rate Initial Production (LRIP) of 19 AVs and the previously approved four ground stations, the missionized payload configuration, an integrated verification test concept and a "buy-to-budget" acquisition strategy (as an affordability initiative).

Budget Changes: We stated in the last report that we did not expect to be able to execute the ADM-directed program with the revised funding profile in the FY2004 President's Budget (PB). However, additional funding was included in the FY2005 PB to correct many of these issues.

OPERATION IRAQI FREEDOM (OIF): The Global Hawk program office received deployment orders on February 13, 2003. Global Hawk Air Vehicle (AV) number 3

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

(AV-3) arrived in theater on March 8, 2003 and commenced operations on March 10, 2003. At the end of major OIF action, Global Hawk had completed 16 combat missions logging 357 combat flight hours and collecting over 4,800 images. The Global Hawk flew only 3% of all air breathing IMINT missions, yet accounted for 55% of the time sensitive targets (TSTs) generated to kill air defense equipment. The Global Hawk concept of employment also evolved during this operation, resulting in significant cycle time reduction for processing time critical targets (TCTs). Global Hawk AV-3 redeployed to Edwards Air Force Base (AFB), CA on May 5, 2003.

German Demonstration: Global Hawk completed a successful deployment and demonstration of the effectiveness of collecting electronic intelligence (ELINT)/signals intelligence (SIGINT) in German airspace using a German developed sensor. AV-1 flew non-stop from Edwards AFB to Nordholz Air Base, Germany on October 15, 2003. Six on-time demonstration sorties were flown between October 21, 2003 and November 4, 2003. This deployment successfully demonstrated the utility of the system in performing SIGINT missions and paved the way for future deployments to the European theater. The German government is reviewing results and considering plans to acquire Global Hawk systems.

Program Execution: Engineering and Manufacturing Development (EMD) Basic and Spiral 2 efforts are currently progressing on schedule to include the development of the 3000 lb capable payload AV (RQ-4B). Spiral 3, SIGINT focused effort, was definitized on November 21, 2003. Spiral 4A was awarded as an Undefined Contract Action (UCA) in December 2003 with definitization scheduled for July 2004. This spiral will upgrade the communications throughout the Global Hawk System. Spiral 4B's Request for Proposal (RFP) will be issued in March 2004 and includes upgrading to an advanced radar.

Production Lot 1 completed the delivery of its first AV (P-1) in September 2003 and the first Air Force Mission Control Element (AF MCE-1) in August 2003 and will deliver the second AV (P-2) in early 2004. Of particular note is the incorporation of capabilities that the warfighter identified as necessary based on OIF experience. These upgrades were funded with FY2004 Supplemental Congressional appropriations (Iraqi Freedom Fund). The LRIP Lot 2 contract was definitized on March 31, 2003 for the delivery of Air Force and Navy GHMD AVs and Ground Stations during FY2005. Advanced procurement for Lot 3 is being executed with contract definitization scheduled in May 2004. Lot 3 includes deliveries of the first production AF RQ-4B AVs planned for FY2006.

Acquisition activities are underway for the Logistics Support Contract (LSC) with definitization expected in FY2004. This effort will provide interim support at Beale AFB, CA and initial training for aircrew and maintenance personnel.

Federal Aviation Administration (FAA) Certificate of Authorization, August 21, 2003: The Global Hawk became the first unmanned aerial vehicle (UAV) to receive a Certificate of Authorization (COA). This will streamline the planning and coordination of missions in civil airspace.

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

Operational Assessment (OA): Planning and management for this year's OA is being accomplished using an integrated Tiger Team composed of the program office, Headquarters Air Combat Command (ACC), Northrop Grumman Integrated Systems (NGIS), Air Force Operational Test and Evaluation Center (AFOTEC), Air Force Flight Test Center (AFFTC), and ACC Beale units. Key Tiger Team management tools are detailed schedules showing all tasks and events leading to the start of the OA. Based on initial analysis of the schedules OA is expected to begin within its scheduled threshold date of February 2005.

Program Leadership Changes: Navy Commander Donald Zwick assumed Navy Deputy Program Manager duties on January 1, 2004 replacing Commander Rick McQueen.

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
Delivery of first AV with initial Spiral 1 capability	N/A	SEP 2003	SEP 2003
Increment Zero: Delivery of first AV with initial Spiral 1 capability	N/A	SEP 2003	SEP 2003
Operational Assessment Start	N/A	AUG 2004	AUG 2004
Complete	N/A	SEP 2004	SEP 2004
Interim Program Review (IPR)	N/A	NOV 2004	DEC 2004 (Ch-1)
Delivery of first AV with initial Basic ORD Increment 1 capability	N/A	SEP 2005	SEP 2005

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Initial Operational Capability (IOC)	N/A	DEC 2005	DEC 2005
Delivery of first of two AVs with 3,000 lbs payload capability to support IOT&E	N/A	MAY 2006	AUG 2006 (Ch-2)
IOT&E #1			
Start	N/A	JUL 2006	NOV 2006 (Ch-3)
Complete	N/A	SEP 2006	JAN 2007 (Ch-3)
Full Rate Production (FRP) Decision Review (DR)	N/A	NOV 2006	JAN 2007 (Ch-3)
Start FRP	N/A	DEC 2006	JAN 2007 (Ch-3)
Delivery of first AV with initial Basic ORD Increment 2 capability	N/A	SEP 2007	SEP 2007
SIGINT ASIP capability, SIGINT Annex need date	N/A	SEP 2009	FEB 2009 (Ch-4)
MP-RTIP capability, Radar Annex need date	N/A	SEP 2009	AUG 2009 (Ch-4)
Signals Intelligence Operational Test (OT) event	N/A	TBD	TBD
MP-RTIP/ Active Electronically Scanned Array (AESA) OT event	N/A	TBD	TBD
Block 5: Approved for EMD/ LRIP	FEB 2001	MAR 2001	MAR 2001

(U) Schedule milestones reflect the approved APB.

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
MS	Milestone
ORD	Operational Requirements Document
OT	Operational Test
SIGINT	Signals Intelligence

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

b. Current Change Explanations --

(U) (Ch-1): Interim Program Review has been changed from November 2004 to December 2004 based on initial planning between the program office and SAF/AQ.

(Ch-2): Milestones changed to reflect preliminary information received from prime contractor. Refinement of these dates will be provided upon definitization of the Lot 3 contract.

Delivery of first two air vehicles (AVs) with 3,000 lb payload capability to support Initial Operational Test & Evaluation (IOT&E) -- May 2006 to Aug 2006

(Ch-3): Milestones changed to reflect additional information received by the program office as to when assets will be available and certified to start IOT&E.

IOT&E #1 Start -- July 2006 to November 2006

IOT&E #1 Complete -- September 2006 to January 2007

Full Rate Production Decision -- November 2006 to January 2007

Start Full Rate Production (FRP) -- December 2006 to January 2007

(Ch-4): Milestones changed to reflect discussions between Global Hawk program office, system program offices, and contractors. Further refinement of these dates will occur as the development of the systems progress.

SIGINT ASIP capability, SIGINT Annex need date -- Sep 2009 to Feb 2009

MP-RTIP capability, Radar Annex need date -- Sep 2009 to Aug 2009.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Increment Zero:	N/A	40	31.5	31.5 hrs
Endurance -- Air		hrs	hrs	
Vehicle (AV) (KPP)		/ In msn	during	
		/ capable	Advanced	
		/ config-	Concept	
		/ uration,	Demonstr	
		/ must	ations	
		/ have a		
		/ min		
		/ total		
		/ endur-		
		/ ance of		
		/ 28 hrs		
		/ plus		
		/ appro-		
		/ priate		
		/ fuel		
		/ reserves		
		/ IAW Air		

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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 airspace/ airspace	To date the Global Hawk ACTD has operated in Classes A, D and E domestic aerospace and Classes A, E and G international airspace. Actual flights into class B airspace or other ...	Must be sufficiently robust to allow world-wide in all classes of air space.
Increment Zero: Mission Execution - Ground Station (KPP)	N/A	Must allow opera- tors to perform NRT mission control, mission monitor- ing, and/ mission updates/ modifi- cations to include	Must allow opera- tors to perform NRT mission control, mission monitor- ing, and/ mission updates/ modifi- cations to include	Must allow opera- tors to perform NRT mission control, mission monitor- ing, and/ mission updates/ modifi- cations to

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

<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
	dynamic / platform platform/ and and / payload payload / control control / and and / re-taski re-taski/ g g /	pre-prog rammed flight plan in response to ATC and re-taski ng directio n. The ... Global Hawk has demonstr ated some degree of performa nce in 11 of the 12 IER level 1	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		Satisfy 100% of all top- level IERS

(b)(1)

Basic ORD Increment 1: Mission Planning	N/A  12 hrs / 12 hrs /	4 hrs in 4 to 12 developm hrs ent environm ent.
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10a. (U) Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u> Ops environm ent will be longer TBD	<u>Current Estimate</u> AV multi- Int capable
Basic ORD Increment 1: Delivery of first AV with a multi- Intelligence (multi-Int)	N/A	AV / AV multi- / multi- Int / Int capable / capable		

(b)(1)

Basic ORD Increment 2: System Survivability - Air Vehicle (AV)	N/A	Must be / Must be equipped/ equipped to / to employ / detect active / radar- counter-/ guided measures/ threats	TBD	Must be equipped to employ active counter- measures
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10a. (U) Performance Characteristics (Cont'd):

<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
	against / as iden-		against
	radar / tified		radar
	and IR- / in the		and IR-
	guided / STAR and		guided
	threats / relay		threats
	to the / the		to the
	system / informa-		system
	as iden- / tion to		as iden-
	tified / ground		tified
	in the / station		in the

(U) Acronym List:

ACTD	Advanced 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
MSN	Mission
MTBCF	Mean Time Between Critical Failures
Multi-Int	Multiple Intelligence
NIIRS	National Intelligence Imagery Reference Standard
NM	Nautical Miles
NRT	Near Real Time

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

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 --

(b)(1)

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	2375.4
Procurement	3484.4	2904.6	3163.3
Non-recurring	(13.7)		(43.6)
Recurring	(3072.8)		(2699.5)
Total Flyaway	(3086.5)		(2743.1)
Other Weapon Sys	(124.8)		(95.0)
Peculiar Support	(48.6)		(49.0)
Initial Spares	(224.5)		(276.2)
Construction (MILCON)	25.5	125.0	121.3
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	4350.3	5196.7	5660.0
Escalation	1043.7	691.7	620.9
Development (RDT&E)	(65.8)	(225.3)	(212.5)
Procurement	(975.4)	(444.7)	(388.9)
Construction (MILCON)	(2.5)	(21.7)	(19.5)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5394.0	5888.4	6280.9

(U) 1. The Global Hawk procurement includes 51 Air Vehicles (AVs) and the associated Ground Stations (10 Launch & Recovery Elements (LREs) and 10 Mission Control Elements (MCEs)). The Global Hawk system is defined as costs for the AVs and Ground Stations. Advanced Concept Technology Demonstration (ACTD) sunk costs (FY00 and prior years) are excluded from the numbers and computations since they aren't included in the Acquisition Program Baseline (APB) values.

2. 7 ACTD test units are in the ACTD sunk costs (FY00 and prior years) and are therefore excluded.

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

b. (U) Quantity --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	N/A	N/A	0
Procurement	63	51	51
Total	63	51	51

(U) As part of the approval to proceed with a "Spiral" development strategy, the March 2002 Defense Acquisition Board (DAB) established initial Low Rate Initial Production (LRIP) quantities of 17 Air Vehicles (AVs) and four Mission Control Elements (MCEs)/Launch & Recovery Elements (LREs). The LRIP quantity for AVs was increased to 19 at the December 18, 2002 DAB.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	5196.7	5660.0	
(2) Quantity	51	51	
(3) Unit Cost	101.896	110.980	+8.91
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	2904.6	3163.3	
(2) Quantity	51	51	
(3) Unit Cost	56.953	62.025	+8.91

(U) Acronym List:

APUC     Average Procurement Unit Cost  
PAUC     Program Acquisition Unit Cost

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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	906.2	4459.8	28.0	5394.0
Previous Changes:				
Economic	-43.3	-169.9	-3.7	-216.9
Quantity	-	-650.5	-	-650.5
Schedule	+215.2	-1293.2	-	-1078.0
Engineering	+1249.6	+1101.5	+117.0	+2468.1
Estimating	+43.5	-172.4	-0.5	-129.4
Other	-	-	-	-
Support	+24.4	+3.2	-	+27.6
Subtotal	+1489.4	-1181.3	+112.8	+420.9
Current Changes:				
Economic	-2.5	-5.7	+0.4	-7.8
Quantity	-	-	-	-
Schedule	+70.5	-	-0.4	+70.1
Engineering	+58.6	+301.0	-	+359.6
Estimating	+63.2	-33.2	-	+30.0
Other	-	-	-	-
Support	+2.5	+11.6	-	+14.1
Subtotal	+192.3	+273.7	-	+466.0
Total Changes	+1681.7	-907.6	+112.8	+886.9
Current Estimate	2587.9	3552.2	140.8	6280.9

(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	+178.0	-912.6	-	-734.6
Engineering	+1131.3	+930.8	+98.3	+2160.4
Estimating	+34.8	-142.1	-0.9	-108.2
Other	-	-	-	-
Support	+23.2	+12.7	-	+35.9
Subtotal	+1367.3	-565.2	+97.4	+899.5
Current Changes:				
Quantity	-	-	-	-
Schedule	+54.3	-	-1.6	+52.7
Engineering	+52.0	+263.0	-	+315.0
Estimating	+59.0	-28.5	-	+30.5
Other	-	-	-	-
Support	+2.4	+9.6	-	+12.0
Subtotal	+167.7	+244.1	-1.6	+410.2
Total Changes	+1535.0	-321.1	+95.8	+1309.7
Current Estimate	2375.4	3163.3	121.3	5660.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-2.5
Acceleration/delay of capabilities and program extension into 2012. (Schedule)	+54.3	+70.5
Requirement changes (additions & deletions) per current program direction including Multi Platform Radar Technology Insertion Program, Advanced Signals Intelligence Program, Test, Ground Station Improvements, Communications Improvements, Congressional Plus-ups, Diminishing Manufacturing Sources, RQ-4B design, etc. (Engineering)	+52.0	+58.6
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.7
Estimate updates for actuals (labor), methodology changes (Ground Station Improvements, Communication Improvements, Multi Platform Radar Technology Insertion Program, etc), and contract negotiations. (Estimating)	+58.4	+62.5
Additional requirements for the standup of Beale AFB, CA and a Logistics Support Analysis. (Support)	+2.4	+2.5
RDT&E Subtotal	+167.7	+192.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-5.7
Increases due to structural components and labor changes to accomodate the larger RQ-4B design. (Engineering)	+263.0	+301.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.9
Changes due to affordability initiatives, actuals (labor), contract negotiations, methodology updates (ground station, test and propulsion). (Estimating)	-29.3	-34.1
Changes due to actuals, contract negotiations and estimate updates. (Support)	+9.6	+11.6
Procurement Subtotal	+244.1	+273.7
(3) <u>MILCON</u>		
Revised Inflation Indices. (Economic)	N/A	+0.4

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Delay in standing up Forward Operating Locations (FOLs). (Schedule)	-1.6	-0.4
MILCON Subtotal	-1.6	0.0

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
85.62	-4.41	+7.39	-19.76	+55.45	-1.95	--	+0.818	+37.54	123.15

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	-3.44	+3.90	-25.36	+27.50	-4.03	--	+0.290	-1.14	69.65

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

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	FEB 2001	N/A	MAR 2001
Milestone III	N/A	JAN 2011	N/A	JAN 2007
IOC	N/A	DEC 2005	N/A	DEC 2005
Total Cost	N/A	5394.0	N/A	6280.9
Total Quantity	N/A	63	N/A	51
Prog Acq Unit Cost	N/A	85.6	N/A	123.2

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

a. RDT&E --	Initial Contract Price		
(U) Global Hawk EMD:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Corp, San Diego CA			
F33657-01-C-4600, CPAF	\$41.5	N/A	0
Award: March 15, 2001			
Definitized: January 22, 2002			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$631.7	N/A	0	\$661.4	\$661.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-7.6	\$-4.2
Cumulative Variances To Date (12/31/03)	\$-18.6	\$-16.0
Net Change	\$-11.0	\$-11.8

Explanation of Change:

(U) Net unfavorable cost and schedule variances due to re-directed priorities to support OIF. Other contributors to the net unfavorable contract variances are: technical and manufacturing data/drawings have grown in time required per page; actual page counts have grown for the Job Guides and Flight Operations Manual; late delivery of subcontractor items (25 kVa generators, etc.); and design refinement for the wing and associated airframe structures due to the more extensive changes for the larger 3,000 lb payload air vehicle (i.e, 4 vs. 3 wing spars, titanium vs. composite ribs, tail, landing gear, etc.).

(U) Contract Comments:

(U) 1. Includes negotiated values for Spirals 1, 2 and 3. Since the last SAR submittal additional funds have been added for definitizing Spirals 2B and 3, new Integrated Logistics Support (ILS) Technical Order Viewer & training, Advanced Signals Intelligence Program (ASIP)/PACER engine program, Not-to-Exceed (NTE) for Advanced Concept Technology Demonstration (ACTD) ground station upgrades, Rain Intrusion, Air Defense System Integration/Secure Internet Protocol Router Network (ADSI/SIPRNET), and NTE for International Maritime Satellite, totaling \$226.8M.

2. The program office is in the process of conducting a comprehensive Estimate-at-Completion (EAC) review with the contractor, which will be complete by the end of February 2004. This EAC review will assess whether to expect the current cost variance trend to continue and quantify any potential overrun.

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

b. Procurement --  
 (U) GH Procurement - Lot 1:  
 Northrop Grumman Corp, San Diego CA  
 F33657-01-C-4601, FPIF  
 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>
\$101.3	\$117.2	2	\$101.2	\$100.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.6	\$-4.4
Cumulative Variances To Date (11/30/03)	\$-1.2	\$-1.5
Net Change	\$0.4	\$2.9

Explanation of Change:

(U) The Lot 1 contract is 97% complete and will no longer be reported. The net unfavorable schedule variance decreased and will continue to decrease as the contract closes out. The first production ground station and air vehicle were delivered on or ahead of schedule. The program office is currently projecting a \$1.5M overrun (1.5%). Internal program funds have been reserved for the overrun.

(U) Contract Comments:

(U) Initial contract price included only the advance procurement efforts. The current values and dates reflect the entire effort for the Lot 1 buy. Since the last SAR submittal, additional funds were added for ADSI/SIPRNET, Peculiar Support Equipment & Spares, totaling \$0.9M.

(U) GH Procurement - Lot 2:  
 Northrop Grumman Corp, San Diego CA  
 F33657-02-C-5422, FPIF  
 Award: January 31, 2003  
 Definitized: March 31, 2003

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$206.2	\$235.3	4	\$206.2	\$206.2

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/03)	\$2.4	\$6.3
Net Change	\$2.4	\$6.3

Explanation of Change:

(U) Net favorable cost and schedule variance is due to prime contractor working to internal "Challenge" schedule, which is an aggressive schedule to motivate personnel to reach stretch goals.

(U) Contract Comments:

1. Initial contract price included only the the advance procurement for the purchase of four AVs and one LRE funded with FY2002 Air Force Supplemental and FY2003 Air Force funds. Contract was definitized in March 2003. Since the last Synthetic Aperture Radar submittal, additional funds have been added (FY2003 Supplemental Congressional Appropriation) to include Ultra High Frequency Demand Assigned Multiple Access (UHF DAMA), Remote Arts Control Display (RAC-D), Air Defense System Integrator/Secure Internet Protocol Router Network (ADSI/SIPRNET), Rain Intrusion, Spares, OPERATION IRAQI FREEDOM (OIF) Delay & Disruption, and additional Support Equipment, totaling \$17.1M.

2. The last report split the lot contract into 3 pieces (GH 2003 regular procurement, GH 2002 supplemental funding and Navy funding). The Navy portion of Lot 2 is not part of the GH baseline and should never have been reported in the prior Global Hawk SAR submission, so it has been removed. For ease of reporting, the two Air Force pieces have been combined.

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 (FY06-12)</u>	<u>Total</u>
RDT&E	672.8	353.6	336.2	1225.3	2587.9
Procurement	366.0	251.2	359.9	2575.1	3552.2
MILCON	11.7	22.3	10.2	96.6	140.8
O&M	-	-	-	-	-
Total	1050.5	627.1	706.3	3897.0	6280.9

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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				206.4	213.0
2003				316.5	330.1
2004				334.5	353.6
2005				313.6	336.2
2006				208.1	226.6
2007				204.2	226.5
2008				203.6	230.1
2009				202.7	233.7
2010				129.9	152.8
2011				91.2	109.3
2012				37.9	46.3
Subtotal				2375.4	2587.9

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	10.9	158.1	156.9	163.3
2003	3	8.6	131.0	172.1	181.1
2004	4	4.8	199.8	235.2	251.0
2005	4	3.0	249.9	332.0	359.6
2006	6	2.4	369.8	469.8	517.3
2007	7	3.9	439.2	494.5	554.8
2008	7	3.0	361.8	412.2	471.6
2009	6	3.0	301.0	340.0	396.8
2010	6	3.0	288.2	319.7	380.5
2011	5	1.0	200.8	208.5	253.1
Subtotal	51	43.6	2699.6	3161.3	3550.1

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

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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 \$
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				9.4	10.2
2006					
2007					
2008					
2009					
2010				46.4	55.6
2011				33.6	41.0
Subtotal				121.3	140.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	51	43.6	2699.6	5660.0	6280.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	2	1

(U) Percent Total Program Quantities Delivered: 2.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 694.8

(U) Percent Total Program Expended: 11.1%

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**18. (U) Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

1. Service Cost Position (SCP) from the Dec 02 Defense Acquisition Board (DAB) is shown below. No O&S costs are included in the APB.

2. Global Hawk is designed to be forward based at three operating locations around the world and home based at a single main operating base (MOB) - Beale AFB.

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.

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.

5. Includes estimated costs for leasing Commercial Ku Satellite Communication (SATCOM) time. Future Air Force plans are to move away from commercial leases to other military means that would provide SATCOM at no cost to Global Hawk.

6. 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.

7. O&S costs (estimated at \$1,494.3 FY 2000 Constant dollars in thousands) will also be incurred during a six-year phase-in period (FY2003-FY2009) and a six-year phase-out period (FY2031-FY2036).

8. There is no antecedent system for the Global Hawk.

**Acronym List:**

AFB	Air Force Base
DAB	Defense Acquisition Board
CLS	Contractor Logistics Support
FH	Flying Hour
MOB	Main Operating Base
SATCOM	Satellite Communications
SCP	Service Cost Position
SORAP	Source of Repair Assignment Process
SS	Steady State

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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
Mission Pay & Allowances	2.2	N/A
Unit Level Consumption	0.7	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	3.3	N/A
Sustaining Support	4.2	N/A
Indirect Costs	1.0	N/A
Total	11.4	N/A

Total O&S Cost	Global Hawk	Antecedent System
BY\$ (In Millions)	6613.1	N/A
TY\$ (In Millions)	10882.5	N/A

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# A-6 COMANCHE

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

**PROGRAM:** Comanche-TERMINATED

**AS OF DATE:** December 31, 2003

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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 Michael E. Cantor
ATTN: SF&E-AV-RAH, Building 5681	Assigned: June 12, 2003
Redstone Arsenal	DSN 897-0846; COMM 256-313-0846
Huntsville, AL 35898-5000	Mike.Cantor@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 AO8300 (Army)

#### MILCON:

(U) PE 10019484

(U) NOTE: PE 64810 Project D327/DC72 (FY 88 Only)

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

AS AMENDED

~~Classified by: [redacted] Security Classification [redacted], November 4, 2002  
Downgrade instructions: [redacted]  
Declassify on: X3~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (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 Future 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) Subsequent to the development of this SAR, the Department made a decision to terminate the Comanche Program. This report is accurate as of February 2, 2004, and supports the President's FY 05 budget. An Acquisition Decision Memorandum (ADM) was signed by the Defense Acquisition Executive (DAE) on February 27, 2004, authorizing termination of the Comanche Program. Based on anticipated and pending events resulting from the ADM, this will be Comanche's final SAR.

The Comanche Program is continuing Engineering, Manufacturing & Development (EMD) after a successful Milestone II decision in APR 2000. In 2002, a program restructure was approved transitioning the Comanche Program to an evolutionary acquisition approach. The Comanche EMD Program is now driven by evolutionary techniques, models, and concepts for development, testing, production, and fielding. This approach minimizes time, cost, and risk, while providing capabilities in phases that fully integrate with the overall Army's war-fighting capabilities. As a result, the requirements in the Operational Requirements Document (ORD) are prioritized, time-phased, and allocated to various "blocks" (Block I, Block II, Block III). The Block I development program is currently ongoing and an Interim Decision Review (IDR) to fully

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

implement Block II efforts is expected in APR 2004. The Block II IDR will consider standard development milestone criteria, the validated Block II requirement, and successful completion of certain program activities/events. A subsequent Block III IDR is planned in NOV 2005.

Recent program accomplishments completed to support the Block II IDR are: completion of the Weapon System Critical Design Review (CDR); first delivery of an Electro-Optical Sensor System (EOSS); start of aircraft #6 assembly and continued production of aircraft 3 through 5; Operational Flight Program (OFP) 10.3 Software design and code; and, completion of Comanche Radar (CR) Stationary Target Indicator Data Reduction. All other items to be reviewed are on track for completion.

A Change of Charter ceremony for the Comanche Project Manager took place in JUN 2003. Michael E. Cantor, Colonel, Aviation, now holds the charter.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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Comanche-TERMINATED, December 31, 2003

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

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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
Complete	JUL 2003	N/A	N/A
LUT			
Start	APR 2005	JUL 2006	JUL 2006
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
Milestone III	DEC 2006	NOV 2009	NOV 2009
IOC	DEC 2006	SEP 2009	SEP 2009
Depot Support Date	DEC 2006	JUN 2009	JUN 2009
Organic Support Date	DEC 2009	JUN 2012	JUN 2012
Aircraft #3 Delivery	N/A	MAR 2005	MAR 2005
Block II Interim Decision Review	N/A	MAR 2004	APR 2004 (Ch-1)
Block III Interim Decision Review	N/A	NOV 2005	NOV 2005
Block II Operational Test			
Start	N/A	APR 2009	APR 2009
Finish	N/A	MAY 2009	MAY 2009
Block III Operational Test			
Start	N/A	DEC 2010	DEC 2010
Finish	N/A	MAR 2011	MAR 2011
Milestone IIIA - Block III	N/A	JUL 2011	JUL 2011
First Unit Equipped (FUE)	N/A	JUN 2009	JUN 2009

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

(U) Acronyms:

DAB Defense Acquisition Board  
EMD Engineering and Manufacturing Development  
EOSS Electro Optic Sensor System  
FUE First Unit Equipped  
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 OSD requested meeting be held in APR 2004 so the Block II IDR date was changed from MAR 2004 to APR 2004.

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:				
1. Radar Cross-Section (RCS) (dBsm)				
1. Infrared (IR) Engine Exhaust System (watts/steradian)				
1. Night Hot Target Classification Range (km)				
1. Night Target Acquisition Range Identification (km)				
Digitally Exchange Battlefield Infor- mation to Joint & Combined Arms Forces	TBD	N/A / N/A	TBD	N/A

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

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	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
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 Reliability:	78	N/A	/ N/A	TBD	N/A
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
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
Mean Time To Repair (MTTR) (hrs) with cure time	N/A	2.0	/ 2.0	TBD	2.0
Night EOSS Target Acquisition Range					
Classification (km)					
Identification (km)					
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

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(U) Acronyms:

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

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 -- None

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E) .	8474.1	11973.7	12143.1
Procurement	29093.6	20893.0	21305.5
Recurring Flyaway	(21923.7)		(14513.8)
Nonrecurring Flyaway	(314.2)		(363.0)
Total Flyaway	(22237.9)		(14876.8)
Other Wpn System Costs	(4917.8)		(5025.8)
Peculiar Support	(168.0)		(88.9)
Initial Spares	(1769.9)		(1314.0)
Construction (MILCON)	368.4	46.8	46.2
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	37936.1	32913.5	33494.8
Escalation	10198.2	6363.6	5824.3
Development (RDT&E)	(-220.3)	(250.3)	(116.7)
Procurement	(10264.6)	(6102.0)	(5697.5)
Construction (MILCON)	(153.9)	(11.3)	(10.1)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	48134.3	39277.1	39319.1
b. (U) Quantity --			
Development (RDT&E)	8	4	4
Procurement	1205	646	646
Total	1213	650	650

(U) Of the total eleven RDT&E aircraft planned, four were to have been fully configured (i.e., included in Nunn-McCurdy Unit Cost calculation of PAUC) and will not be manufactured. Two are Demonstration Validation Prototypes (DVP) and have been manufactured, and five were to have been Engineering Manufacturing Development (EMD) aircraft and also will not be manufactured.

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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 (OCT 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	32913.5	33494.8	
(2) Quantity	650	650	
(3) Unit Cost	50.636	51.530	+1.77
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	20893.0	21305.5	
(2) Quantity	646	646	
(3) Unit Cost	32.342	32.981	+1.98

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	8253.8	39358.2	522.3	48134.3
Previous Changes:				
Economic	-112.0	-862.3	-2.7	-977.0
Quantity	-161.3	-12564.4	-	-12725.7
Schedule	+780.6	-206.3	-	+574.3
Engineering	+1386.3	-	-	+1386.3
Estimating	+1895.0	+1521.8	-463.3	+2953.5
Other	-	-	-	-
Support	+23.7	-1045.7	-	-1022.0
Subtotal	+3812.3	-13156.9	-466.0	-9810.6
Current Changes:				
Economic	-5.9	+265.4	+0.6	+260.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+199.6	+195.4	-0.6	+394.4
Other	-	-	-	-
Support	-	+340.9	-	+340.9
Subtotal	+193.7	+801.7	-	+995.4
Total Changes	+4006.0	-12355.2	-466.0	-8815.2
Current Estimate	12259.8	27003.0	56.3	39319.1

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

(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	-154.7	-8684.1	-	-8838.8
Schedule	+685.2	-	-	+685.2
Engineering	+1235.4	-	-	+1235.4
Estimating	+1702.4	+1163.0	-321.7	+2543.7
Other	-	-	-	-
Support	+21.6	-679.7	-	-658.1
Subtotal	+3489.9	-8200.8	-321.7	-5032.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+179.1	+160.0	-0.5	+338.6
Other	-	-	-	-
Support	-	+252.7	-	+252.7
Subtotal	+179.1	+412.7	-0.5	+591.3
Total Changes	+3669.0	-7788.1	-322.2	-4441.3
Current Estimate	12143.1	21305.5	46.2	33494.8

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-5.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.5
Wideband Network Waveform (WNW) capability revised to maintain continued interoperability with the Future Combat System (FCS) (Estimating)	+178.7	+199.1
 RDT&E Subtotal	 +179.1	 +193.7

(2) Procurement

Revised escalation indices. (Economic)	N/A	+265.4
Change due to preliminary assessment of known labor/general and administrative (G&A), and overhead rates at Comanche contractor facilities. (Estimating)	+160.0	+195.4
Change in Initial Spares (Support)	-60.7	-71.2
Change in Peculiar Support (Support)	-0.9	-0.9
Changes due to continued update and evaluation of Comanche kit quantities and fielding schedules to include Operational Test/Training Instrumentation System (OTTIS),	+314.3	+413.0

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

Enhanced Fuel and Armament System (EFAMS),  
and others. (Support)

Procurement Subtotal +412.7 +801.7

(3) MILCON

Revised escalation indices. (Economic) N/A +0.6

Revised Estimate due to increase in escalation -0.5 -0.6

(Estimating)

MILCON Subtotal -0.5 0.0

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
39.68	-1.10	+14.79	+0.884	+2.13	+5.15	--	-1.05	+20.81	60.49

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	-0.924	+8.81	-0.319	--	+2.66	--	-1.09	+9.14	41.80

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	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	39319.1
Total Quantity	N/A	1213	0	650
Prog Acq Unit Cost	N/A	39.7	0.0	60.5

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

(U) The initial Air Vehicle EMD Contract, \$3.2B, was awarded in JUN 2000. The EMD contract included the manufacture of 13 aircraft, eight of which were to be production representative. As part of the OCT 2002 restructure of the EMD program, the Air Vehicle EMD contract price was adjusted to \$6.6B. The program EMD aircraft quantities were reduced from 13 to 9, four of which were to be production representative.

a. RDT&E --

(U) Comanche EMD:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Boeing Sikorsky, Huntsville, AL					
DAAH23-00-C-A001, CPAF	\$3150.6	N/A	13		
Award: June 1, 2000					
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>	
\$6586.2	N/A	9	\$6586.2	\$6785.9	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/03)	\$-4.0	\$-25.2
Net Change	\$-4.0	\$-25.2

Explanation of Change:

(U) The net unfavorable cost and schedule variances displayed reflect performance against the Revised Program from FEB 2003 to NOV 2003. There is no significant change in the cost variance. The Schedule Variance is unfavorable in Air Vehicle, Test, Mission Equipment Package and Supportability due to activities taking longer than planned.

(U) EMD SUPPORT PROGRAM:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
LHTEC, INDIANAPOLIS, IN					
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>	
\$182.6	N/A	0	\$181.2	\$190.8	

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$4.9	\$-5.2
Cumulative Variances To Date (11/30/03)	\$-2.9	\$-10.7
Net Change	\$-7.8	\$-5.5

Explanation of Change:

(U) The net unfavorable cost and schedule variances are due to greater than anticipated costs in completing Engineering Development and Testing of the engine and late ramping up and Engineering Development and Testing taking longer to accomplish than planned.

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 (FY84-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-19)</u>	<u>Total</u>
RDT&E	6855.0	1068.0	1229.7	3107.1	12259.8
Procurement	8.0	-	12.0	26983.0	27003.0
MILCON	10.6	-	-	45.7	56.3
O&M	-	-	-	-	-
Total	6873.6	1068.0	1241.7	30135.8	39319.1

b. Annual Summary -- COMANCHE

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>
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

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

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 \$
1997				332.4	325.2
1998				266.3	262.6
1999				353.1	352.2
2000				443.2	448.7
2001				576.4	590.8
2002				733.6	759.1
2003				825.6	865.6
2004				1005.8	1068.0
2005				1141.4	1229.7
2006				969.0	1061.2
2007				709.5	791.3
2008				487.3	554.2
2009				376.3	436.5
2010				190.5	225.4
2011				31.9	38.5
2012					
Subtotal	4			12143.1	12259.8

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 \$
2003				7.6	8.0
2004					
2005				11.1	12.0
2006				261.9	289.1
2007	15	100.9	664.1	857.6	964.7
2008	23	100.8	746.2	1332.9	1529.1
2009	35	7.4	1035.1	1735.3	2030.5
2010	48	74.9	1272.4	1998.8	2385.6
2011	60	61.2	1433.6	2045.3	2489.9
2012	60	17.8	1367.9	1907.9	2369.0
2013	60		1287.4	1850.1	2343.3
2014	60		1254.6	1719.6	2221.6
2015	60		1197.2	1675.0	2207.1
2016	60		1166.4	1634.3	2196.6
2017	60		1140.0	1600.6	2194.4
2018	60		1116.5	1532.5	2143.1
2019	45		832.4	1135.0	1619.0
Subtotal	646	363.0	14513.8	21305.5	27003.0

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Comanche-TERMINATED, December 31, 2003

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

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				2.9	3.7
2013				2.9	3.8
2014				3.0	3.9
2015				2.9	3.9
2016				2.9	4.0
2017				2.9	4.1
2018				2.2	3.1
2019					
Subtotal				46.2	56.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	650	363.0	14513.8	33494.8	39319.1

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 6863.4

(U) Percent Total Program Expended: 17.5%

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**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 Aviation Unit Maintenance (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 Future Force information becomes available. Comanche O&S estimates reflect an interim distribution plan which fields 650 Comanche aircraft partially satisfying the emerging Future 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 Army Working Capital Fund 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), 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 Future Force; Antecedent aircraft N/A.

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

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

Cost Element	COMANCHE Average Annual Cost	Antecedent System
Mission Pay & Allowances	517.3	N/A
Unit Level Consumption	426.1	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	17.3	N/A
Contractor Support	24.8	N/A
Sustaining Support	100.4	N/A
Indirect Costs	54.3	N/A
Other	0.0	N/A
	N/A	N/A
Total	1140.2	N/A

Total O&S Cost	COMANCHE	Antecedent System
BY\$ (In Millions)	14823.2	0.0
TY\$ (In Millions)	28614.4	0.0

Report Creation Date: 03/19/2004 10:32:25 AM

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

**PROGRAM:** GMLRS

**AS OF DATE:** December 31, 2003

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1. Designation and Nomenclature (Popular Name): Guided Multiple Launch Rocket System (GMLRS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Project Manager	COL Earnest D. Harris
Precision Fires Rocket & Msl Sys	Assigned: October 2, 2003
ATTN: SFAE-MSL-PF	DSN 746-1195; COMM 256-876-1195
RSA, AL 35898-8000	earnest.harris@msl.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0673778 Project D784

PROCUREMENT:

APPN 2032 ICN C65404 (Army)

04C-0651

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**5. References:**

SAR Baseline (Production Estimate):

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated May 30, 2003.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated May 30, 2003.

**6. Mission and Description:**

(U) GMLRS

The mission of GMLRS is to attack/neutralize/suppress/destroy targets using indirect precision fires. GMLRS provides Field Artillery units with medium and long-range (out to 70+ kilometers) fires while supporting brigade, division, corps, army, theater, Joint/Coalition Forces and Marine Air-Ground Task Forces (MAGTF) in full, limited or expeditionary operations. GMLRS uses an inertial measuring unit (IMU) with global positioning system (GPS) assistance to guide the rocket to a specific point to deliver effects on a target. GMLRS is fired from the M270A1 tracked launcher or the lighter, wheeled launcher, the High Mobility Artillery Rocket System (HIMARS). GMLRS is transported and fired in a rocket pod (RP) that consists of six rockets with an RP Container (RPC).

(U) GMLRS DPICM

GMLRS is currently designed to carry two warhead payload variants. The first warhead developed along with the rocket bus contains 404 dual-purpose improved conventional munitions (DPICM). This variant, known as GMLRS DPICM, is used to provide precision fires on area targets including personnel and thinly armored vehicles. The GMLRS DPICM is an international cooperative development program with five nations (United States, United Kingdom, France, Germany, and Italy). GMLRS DPICM is currently in Low-Rate Initial Production (LRIP).

(U) GMLRS Unitary

The second GMLRS warhead currently under development is the GMLRS Unitary. This rocket replaces the 404 submunitions with a 200-pound class high explosive warhead. GMLRS Unitary penetrates locations where GMLRS DPICM are either ineffective (due to vegetation, soil type or snow) or impractical (limited by rules of engagement or targets in an urban environment) and attack enemy high-value assets while minimizing collateral damage. The GMLRS Unitary is currently in a development program. The GMLRS Unitary program includes development of an insensitive munition (IM) compliant rocket motor and warhead, as well as, a new RP design to ease logistics and increase survivability. Design changes developed for GMLRS Unitary will be cut into GMLRS DPICM production.

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## **7. Executive Summary:**

A February 2003 Production Readiness Statement concluded that the GMLRS DPICM Program was ready for production. The Army Systems Acquisition Review Council (ASARC) approved entry into Low Rate Initial Production (LRIP) for GMLRS DPICM and entry into System Development and Demonstration (SDD) for GMLRS Unitary in March 2003 and the Acquisition Decision Memorandums (ADMs) were signed on March 24, 2003. The Chief Information Officer (CIO) certified that both GMLRS DPICM and GMLRS Unitary had met all interoperability requirements.

A quarterly exception SAR was done in June 2003 to rebaseline the GMLRS program from the Development Estimate to the Production Estimate approved at the March 2003 LRIP decision.

A successful integration testing of GMLRS DPICM on the M270A1 launcher was conducted on August 22, 2003.

GMLRS DPICM Explosive Ordnance Disposal (EOD) System Trainer meeting was conducted with Metter Industries, a Small Business, on October 15, 2003. Metter will build Classroom and Practical Trainers for the Joint Services, and are anticipated to deliver assets ahead of schedule. Logistics activities are continuing to ensure that soldiers are trained and ready to support the system during the Logistics/Maintenance Demonstration, Operational Test, and fielding.

A paper Joint Requirements Oversight Council (JROC) was completed on November 14, 2003. The JROC Memorandum was published on November 14, 2003 and accepted the Army's proposed change to the threshold average hazardous dud rate for submunitions. The change amends performance requirements for ranges between 20 and 60 km to less than 2 percent with an objective of 0 percent. The threshold average hazardous dud rate must be less than 4 percent with an objective of 0 percent for ranges between 15-20 km and 60-70 km.

Successfully completed negotiations for the GMLRS LRIP I and FY 03 Supplemental definitized effort on January 26, 2004. GMLRS DPICM LRIP II Contract award is planned for February 27, 2004.

Cold Region Test Center Firing of GMLRS DPICM will be conducted on February 6, 2004.

Self Destruct Fuze (SDF) Fly-off tests started on December 11, 2003 and were concluded January 10, 2004 at White Sands Missile Range (WSMR).

A Developmental Test Live Fire (DTLF) Demonstration from a HIMARS Launcher will begin on April 27, 2004 and will conclude May 12, 2004.

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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
GMLRS MS II EMD	MAR 1998	MAR 1998	JUL 1998
DPICM			
Milestone C	MAR 2003	MAR 2003	MAR 2003
Full Rate Production Decision	MAR 2005	MAR 2005	MAR 2005
Initial Operational Capability	NOV 2006	NOV 2006	MAR 2006 (Ch-1)
UNITARY			
Milestone B	MAR 2003	MAR 2003	MAR 2003
Milestone C	SEP 2006	SEP 2006	SEP 2006
Full Rate Production Decision	SEP 2008	SEP 2008	SEP 2008
Initial Operational Capability	MAR 2008	MAR 2008	MAR 2008

Acronyms:

DPICM - Dual Purpose Improved Conventional Munition  
EMD - Engineering and Manufacturing Development  
GMLRS - Guided Multiple Launch Rocket System  
IOC - Initial Operational Capability  
MS - Milestone

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) - The GMLRS DPICM Initial Operational Capability was changed from November 2006 to March 2006 because the FY 03 Supplemental buy allowed procurement of sufficient units to reach IOC by March 2006 instead of November 2006.

10. Performance Characteristics:

a. Performance --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>		<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
DPICM					
Range					
Max (Km)	70	70	/ 60	73 KM	70 KM
Min (Km)	10	10	/ 15	***15 KM	10 KM
Effectiveness					
(Expected	30%	30%	/ 30%	30%+	30%+
Fractional					
Damage [EFD])					
Reliability	.95	.95	/ .92	* .88	.95
Hazardous Dud Rate	0	0	/ <1%	** <4%	** <1%
UNITARY					
Range					
Max (Km)	70	70	/ 60	TBD	70
Min (Km)	10	10	/ 15	TBD	10
Effectiveness	30%	30%	/ Function	TBD	30%
			/ at Kill		
Reliability	.95	.95	/ .92	TBD	.95

\*DPICM Reliability of GMLRS is currently assessed at 88%. This meets both the LRIP threshold requirement of .833 and the objective of .845, which demonstrates the program is on the reliability growth curve to achieve the objective of 95 percent.

\*\*The hazardous 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. This is based on various test scenarios derived from Test and Evaluation Master Plan requirements (TEMP). Accuracy of rocket, coupled with submunition improvements, has resulted in an 88% reduction in dud rate per target and a 95% reduction in potentially hazardous area. The GMLRS DPICM program is continuing to improve the design of the M101 submunition and is pursuing Self-Destruct Fuzes (SDF) from four different vendors.

\*\*\* DPICM Minimum range of 15 KM reflects demonstrated performance, which is the requirement. 16.8 KM demonstrated at WSMR is equivalent to 15 KM at sea level.

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10a. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	485.4	485.4	493.3
Procurement	9294.8	9294.8	9524.5
Recurring Flyaway	(9202.5)		(9429.4)
Nonrecurring Flyaway	(71.6)		(70.3)
Total Flyaway	(9274.1)		(9499.7)
Other Wpn System Spt Co	(19.1)		(23.4)
Other Weapon Systems			(0.0)
Total Other Wpn Sys	(19.1)		(23.4)
Peculiar Support	(0.0)		
Initial Spares	(1.6)		(1.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	9780.2	9780.2	10017.8
Escalation	2068.7	2068.7	2231.1
Development (RDT&E)	(15.1)	(15.1)	(14.3)
Procurement	(2053.6)	(2053.6)	(2216.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	11848.9	11848.9	12248.9
b. Quantity --			
Development (RDT&E)	235	235	235
Procurement	140004	140004	140004
Total	140239	140239	140239

In the March 24, 2003 Acquisition Decision Memorandum, the AAE authorized an LRIP quantity not to exceed 13,998 rockets, which does not exceed the 10% guideline established in 10 U.S.C. 2400 Federal Acquisition Streamlining Act.

Note: The current estimate quantity of 255 RDT&E units reported in the prior SAR was incorrect. The correct number is 235.

c. Foreign Military Sales --

The development of a GMLRS rocket is a cooperative program among France, Germany, Italy, the United Kingdom, and the United States. The GMLRS Engineering Manufacturing Development contract closed January 31, 2003.

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

Currently there are two existing Memorandums of Understanding (MOUs). One involves United States negotiations with France, Germany and Italy on a GMLRS DPICM Production MOU and the other, with the United Kingdom, is awaiting approval by the Office of Secretary of Defense, State Department and Congress.

Future Foreign Military Sales (FMS) cases for Extended Range-MLRS and GMLRS DPICM will likely depend on availability of Self-Destruct Fuzes. Potential FMS customers were provided pricing and availability data on GMLRS DPICM in November/December 2003.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (MAY 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	9780.2	10017.8	
(2) Quantity	140239	140239	
(3) Unit Cost	0.070	0.071	+1.43
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	9294.8	9524.5	
(2) Quantity	140004	140004	
(3) Unit Cost	0.066	0.068	+3.03

As a result of the Congressionally mandated supplemental, the FY 03 buy increased significantly. Increased quantities will now be purchased early in the program where the learning curve is at its highest. Increase required additional tooling and refinement of the Engineering Services estimate.

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**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	500.5	11348.4	-	11848.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	+4.3	-	+4.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.1	+4.3	-	+4.2
Current Changes:				
Economic	-1.7	+112.7	-	+111.0
Quantity	-	-	-	-
Schedule	-	-20.6	-	-20.6
Engineering	-	-	-	-
Estimating	+8.9	+292.6	-	+301.5
Other	-	-	-	-
Support	-	+3.9	-	+3.9
Subtotal	+7.2	+388.6	-	+395.8
Total Changes	+7.1	+392.9	-	+400.0
Current Estimate	507.6	11741.3	-	12248.9

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

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	485.4	9294.8	-	9780.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	+4.1	-	+4.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.1	+4.1	-	+4.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+7.8	+221.5	-	+229.3
Other	-	-	-	-
Support	-	+4.1	-	+4.1
Subtotal	+7.8	+225.6	-	+233.4
Total Changes	+7.9	+229.7	-	+237.6
Current Estimate	493.3	9524.5	-	10017.8

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-1.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Payback of internal funding move around between projects D090 and D784. (Estimating)	+1.8	+1.8
Army budget adjustments (Estimating)	-0.8	-0.8
Conduct Insensitive Munition work in FY 07. (Estimating)	+6.5	+7.6
RDT&E Subtotal	+7.8	+7.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+110.2
Economic adjustment for negative program change. (Economic)	N/A	+2.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
Acceleration of annual procurement buy profile. (Schedule)	0.0	-20.6

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

**b. Current Change Explanations --**

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to reflect reduction in Rocket recurring average unit cost due to rate effect from the FY 03 Supplemental buy. (Estimating)	-6.3	-6.4
Revised estimate to reflect methodology changes resulting from fact finding during Alpha negotiations. (Estimating)	-62.4	-80.3
Revised estimate for additional purchase of Rocket pods (QR) (Estimating)	+38.9	+48.9
Revised estimate to reflect updated Engineering Services Requirements (Estimating)	+69.4	+82.6
Revised estimate to reflect current prime tooling requirements (Estimating)	+0.8	+1.6
Revised estimate to reflect current Self Destruct Fuze facilitization (Estimating)	-4.5	-5.5
Revised estimate to show a shift in Depot Maintenance Plant Equipment facilitization from FY 09 to FY 08 (Estimating)	+0.2	+0.3
Revised estimate to reflect First Destination Transportation change in FY 19 (Estimating)	-0.6	-0.9
The FY 03 Supplemental allowed the Army to accelerate the procurement of 714 rockets. The quantities were moved from FY 18 to FY 03. Once the data base is available for update, the Army intends to adjust the funding. (Estimating)	+185.4	+251.7
Change in Initial Spares (Support)	-0.2	-0.2
Change in Other Wpn System Spt Costs (Support)	+4.3	+4.1
Procurement Subtotal	+225.6	+388.6

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

Initial SAR Baseline to Current SAR Baseline

PAUC Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.039	-0.003	+0.001	+0.001	+0.009	+0.037	--	--	+0.045	0.084

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	
0.084	+0.001	--	--	--	+0.002	--	--	+0.003	0.087

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	
0.037	-0.003	+0.004	+0.001	+0.006	+0.036	--	--	+0.044	0.081

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	
0.081	+0.001	--	--	--	+0.002	--	--	+0.003	0.084

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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	MAR 1998	MAR 1998	JUL 1998
Milestone C	N/A	OCT 2003	MAR 2003	MAR 2003
IOC	N/A	APR 2004	NOV 2006	MAR 2006
Total Cost	N/A	1688.6	11848.9	12248.9
Total Quantity	N/A	43182	140259	140239
Prog Acq Unit Cost	N/A	0.0	0.1	0.1

The MS C and IOC reported above reflect the DPICM variant. MS C for Unitary variant is September 2006 and IOC for the Unitary variant is planned for March 2008.

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

This is the first time this contract is being reported.

a. RDT&E --  
GMLRS Unitary SDD:  
LMMFC-D, Grand Prairie, TX  
DAAHO1-03-C-0171, CPFF  
Award: September 29, 2003  
Definitized: September 29, 2003

Initial Contract Price		
Target	Ceiling	Qty
\$130.8	N/A	

Current Contract Price		
Target	Ceiling	Qty
\$130.8	N/A	

Estimated Price At Completion	
Contractor	Program Manager
\$130.8	\$130.8

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

Explanation of Change:

None.

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GMLRS, December 31, 2003

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

b. Procurement --

GMLRS LRIP I: LMMFC-D, Grand Prairie, TX DAH01-03-C-0154, FFP w/CPFF CLINS Award: June 28, 2003 Definitized: January 28, 2004	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$20.4	N/A	108

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$95.7	N/A	822	\$95.7	\$95.7

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP w/CPFF CLINS contract.

Contract Comments:

The difference between the Initial Contract Price and Current Contract Price is to cover the additional quantity of 714.

**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	179.9	54.9	81.9	190.9	507.6
Procurement	130.4	107.0	112.3	11391.6	11741.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	310.3	161.9	194.2	11582.5	12248.9

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GMLRS, December 31, 2003

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

b. Annual Summary -- GMLRS

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 \$
1998				14.3	13.6
1999				18.4	17.7
2000				27.4	26.8
2001				17.0	16.8
2002				45.7	45.6
2003				58.7	59.4
2004				53.6	54.9
2005				78.8	81.9
2006				118.4	125.1
2007				50.3	54.1
2008				9.8	10.7
2009				0.9	1.0
Subtotal	235			493.3	507.6

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	822	13.6	107.9	127.5	130.4
2004	786	7.7	92.5	103.2	107.0
2005	1026		101.4	106.6	112.3
2006	1218	6.9	110.8	120.6	129.4
2007	2688	8.2	217.8	228.2	249.6
2008	5814	15.2	419.7	437.7	488.2
2009	6942	18.7	482.3	503.5	572.8
2010	9000		643.4	643.4	746.6
2011	12000		819.9	820.0	970.5
2012	15000		980.4	980.5	1183.7
2013	15000		957.1	957.1	1178.7
2014	15000		939.5	939.5	1180.1
2015	15000		925.1	925.1	1185.3
2016	15000		913.1	913.1	1193.3
2017	15000		902.7	902.7	1203.3
2018	9708		815.8	784.1	1066.1
2019				31.7	44.0
Subtotal	140004	70.3	9429.4	9524.5	11741.3

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GMLRS, December 31, 2003

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	140239	70.3	9429.4	10017.8	12248.9

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	61	61
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 145.4

Percent Total Program Expended: 1.2%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --  
Depot Maintenance also includes any 5.03 Replenishment Spares and 5.04 Replenishment Consumables.

The unit for tracking O&S costs is the Rocket Pod. There are very few personnel costs, maintenance costs, contractor supporting costs, or other O&S cost associated with the pod. The total number of rocket pods planned for production is 23,334. The GMLRS average annual cost per pod is derived as follows:

Total BY\$/total Pods/10-year shelf life, resulting in an average annual cost of \$.651K or \$0.7K, as shown in section 18b.

The service life of the GMLRS System is ten (10) years.

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	GMLRS Avg Annual Cost per POD	Basic Rocket
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	0.3	N/A

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GMLRS, December 31, 2003

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

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	GMLRS Avg Annual Cost per POD	Basic Rocket
Contractor Support	0.0	N/A
Sustaining Support	0.1	N/A
Indirect Costs	0.3	N/A
Total	0.7	N/A

Total O&S Cost	GMLRS	Basic Rocket
BY\$ (In Millions)	151.9	N/A
TYS (In Millions)	216.8	N/A

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

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): Advanced Extended High Frequency (AEHF) Satellites

**CLEARED**  
**FOR OPEN PUBLICATION**  
**AS AMENDED**

MAR 25 2004 5

2. (U) DoD Component: USAF

Joint Participants:  
 Canada, Netherlands & United Kingdom

SECURITY REVIEW  
 DEPARTMENT OF DEFENSE

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:

ROUTE:

(U) PE 0603430F

PROCUREMENT:

(U) APPN 3020 ICN ADV555 (Air Force)

Final  
 SAF/AN/ODD/OD

04-C-009

CONFIDENTIAL  
 10/1/2000

~~Classified by: Security Classification Guide (SCG), June 2003  
 Downgrade instructions: SCG, 10/1/2000 to Automatic Downgrade  
 Declassification: Originating Agency Determination Required~~

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (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) Advanced Extremely High Frequency (AEHF) is a joint service satellite communications system that provides global, secure, protected, and jam-resistant communications for high priority military ground, sea, and air assets. The system consists of three satellites in geosynchronous earth orbit (GEO) that provides 10 times the capacity of the 1990s-era Milstar Block II satellites. Assuming a full constellation of three AEHF and one Transformational Communication Satellite, this provides continuous 24-hour coverage between 65 degrees north and 65 degrees south latitude. Advanced EHF allows the National Security Council and Unified Combat Commanders to control their tactical and strategic forces at all levels of conflict through general nuclear war and supports the attainment of information superiority.

(U) The AEHF operational system is composed of three segments: space (the satellites), terminal (the users), and mission control and the associated communications links. The space segment consists of a cross-linked constellation of satellites to provide worldwide coverage. The mission control segment controls satellites on orbit, monitors satellite health, and provides communication system planning and monitoring. This segment is highly survivable, with both fixed and mobile control stations. The terminal segment includes fixed and mobile ground terminals, ship and submarine terminals, and airborne terminals.

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

(U) **Deputy Secretary of Defense (DEPSECDEF) Guidance:** In December 2002, the DEPSECDEF directed a change to the acquisition strategy, which removed Advanced Extremely High Frequency (AEHF) Satellite Vehicle (SV) 4 and SV5 from the program baseline. Under the revised strategy, Full Operational Capability (FOC) will be achieved with a combination of AEHF and Transformational Communications satellites.

(U) **Production Gap:** The FY04 President's Budget (PB) eliminated SV4 and SV5 and introduced a one-year break in production between SV2 and SV3. The elimination of SV4 and SV5 necessitated the need to purchase spare parts in order to reduce risk if a critical part failed during satellite system level testing. In October 2003, the AEHF program received a Congressional increase of \$35M to purchase some of the critical spare parts. The impact on production line costs for SV3 because of the production gap (learning curve, manpower levels, parts/equipment qualification and maintenance) and National Security Agency (NSA) cryptographic (crypto) issues, was supported in the FY05 PB. Based upon

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

ongoing cost analyses and discussions with the contractor, the production gap impact on SV3's price is projected to increase.

(U) **Additional Cost Growth:** A recent comprehensive Contractor Estimate at Completion (EAC) projected an additional cost growth in FY04/FY05 for added testing and simulation needed for contractor difficulties with payload Application Specific Integrated Circuit (ASIC) chip production. Due to funding constraints in those years, it was necessary to redistribute program content, causing shortfalls in the AEHF program in FY06 through FY08. The program also delayed the launch of SV1 and SV2 by four months to April 2007 and April 2008 respectively. The four-month launch slip to SV1 and SV2 will reduce risks associated with the concurrent payload and crypto development.

(U) **Program Status:** The AEHF program continues to progress well through the system development and demonstration phase, meeting all scheduled milestones and is projected to meet all key performance parameters. As of February 27, 2004, the program completed 43 of its 46 component and subsystem Critical Design Reviews (CDRs) and is continuing with early increments of software builds on both the ground and space segments. The downlink Phased Array Antenna has begun electronic power-up testing with initial assessments indicating that the system is operating as planned. The Mission Control Segment (MCS) continues to perform on or below cost and schedule while Space Vehicle works towards recovering from unfavorable cost and schedule variance mainly attributed to the payload ASIC chip development. The program's focus continues to be on risk reduction in all areas. Additionally, the Military Satellite Communications (MILSATCOM) Joint Program Office (MJPO) is working closely with the NSA. The NSA K-5 (crypto) ASIC design modification is on schedule as well. NSA has now reviewed/commented on each Terminal Program Office's (TPO's) Key Management Plan (KMP) and feels that system level III KMP development is on track.

(U) **International Partners (IPs):** The United Kingdom (UK) signed an AEHF developmental Memorandum of Understanding (MOU) on September 9, 2003. Discussions continue with the IPs regarding funding of the NSA requirements for removing AEHF/Milstar backward compatibility functionality in the terminals.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	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
Key Decision Point C	MAR 2005	JUN 2004	AUG 2004

(U) Note:

Key Decision Point (KDP) C, now termed Follow-On Buy Decision, is scheduled to occur after System Critical Design Review (CDR). The decision to pursue a Follow-on Buy Decision versus KDP-C was made December 18, 2003 under the guidelines and criteria outlined in the National Security Space Acquisition Policy 03-01 (NSS 03-01).

Acronyms:

DAB - Defense Acquisitions Board

EMD - Engineering and Manufacturing Development

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

b. Current Change Explanations -- None

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
Capacity	1.2 Gbps CMTW, 600 Mbps Strate- gic	1.2 Gbps/ Support CMTW, / at least 600 Mbps/ 500 Mbps Strate- / for CMTW gic / Scenario / and at / least / 350 Mbps / for / Strate- / gic / Scenario	N/A	Support at least 500 Mbps for CMTW Scenario and at least 350 Mbps for Strate- gic Scenario
Nuclear Protection	Provide assured communi- cations to surviva- ble nuclear forces exposed to the environ- ment speci- fied in NCGS-89- 06, and for those critical networks that support the follow- ing critical func-	Provide / Provide assured / assured communi-/ communi- cations / cations to / to surviva-/ surviva- ble / ble nuclear / nuclear forces / forces exposed / exposed to the / to the environ-/ environ- ment / ment speci- / speci- fied in / fied in NCGS-89-/ NCGS-89- 06, and / 06, and for / for those / those critical/ critical networks/ networks that / that support / support the / the follow- / follow- ing / ing critical/ critical func- / func-	N/A	Provide assured communi- cations to surviva- ble nuclear forces exposed to the environ- ment speci- fied in NCGS-89- 06, and for those critical networks that support the follow- ing critical func-

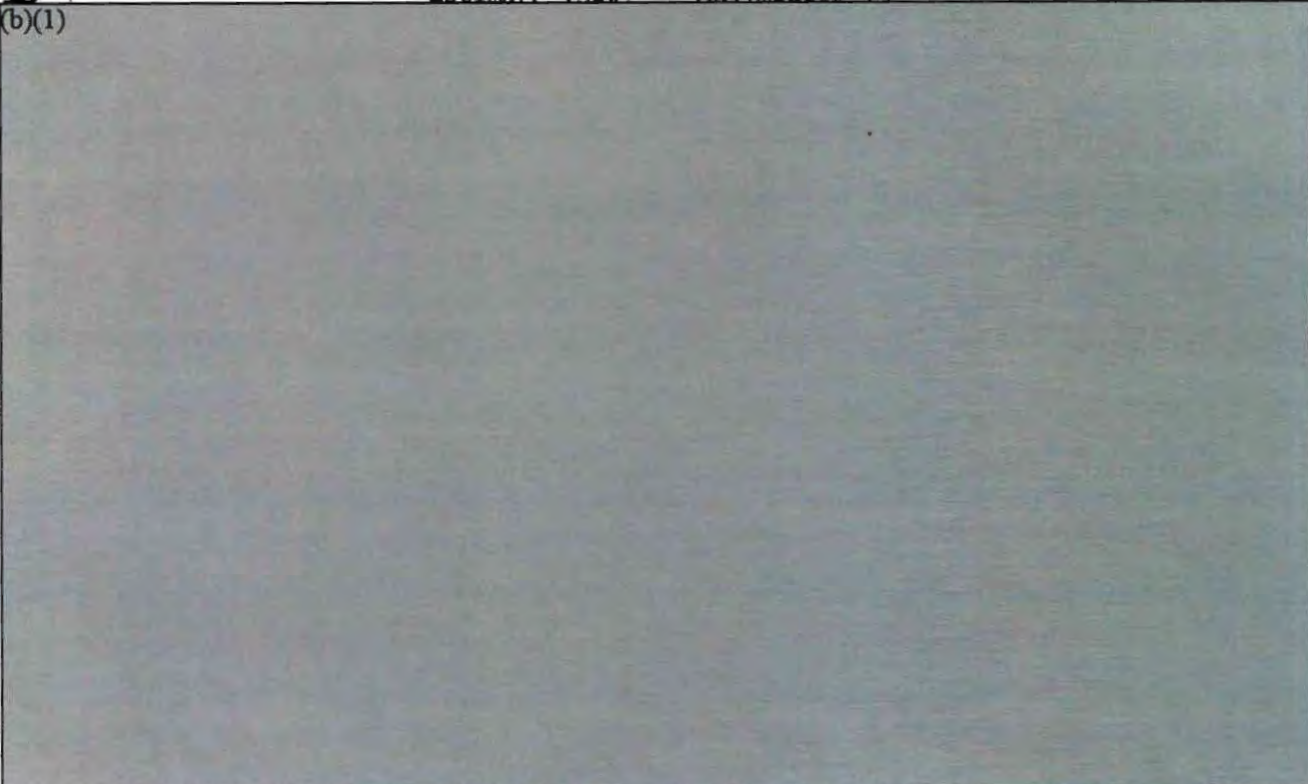
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10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAP)	Approved Program (APB) Obs/Measured	Demon- strated	Current
(b)(1)				
Access and Control	Provide users ability to plan, control, & recon- figure their appor- tioned re- sources; critical func- tions such as situa-	Provide / Provide users / users ability / ability to plan, / to plan, control, / control, & recon- / & recon- figure / figure their / their appor- / appor- tioned / tioned re- / re- sources; / sources; critical / critical func- / func- tions / tions such as / such as situa- / situa-	N/A	Provide users ability to plan, control, & recon- figure their appor- tioned re- sources; critical func- tions such as situa-

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	tion	tion / tion		tion
	monitor-	monitor-/ monitor-		monitor-
	ing,	ing, / ing,		ing,
	decision	decision/ decision		decision
	making,	making, / making,		making,
	force	force / force		force
	direc-	direc- / direc-		direc-
	tion,	tion, / tion,		tion,
	force	force / force		force
	manage-	manage- / manage-		manage-
	ment,&	ment,& / ment,&		ment,&
	plan	plan / planni		planni
Interoperability				
AEHF Interopera-	Support	Support / Support	N/A	Support
bility	joint	joint / joint		joint
	interop-	interop-/ interop-		interop-
	erable	erable / erable		erable
	war-	war- / war-		war-
	fighter	fighter / fighter		fighter
	communi-	communi-/ communi-		communi-
	cations	cations / cations		cations
	among	among / among		among
	all	all / all		all
	military	military/ military		military
	branches	branches/ branches		branches
	EHF	EHF / EHF		EHF
	termin-	termin- / termin-		termin-
	als	als / als		als
MILSTAR Backward	Operate	Operate / Operate	N/A	Operate
Compatible	with the	with the/ with the		with the
	Milstar	Milstar / Milstar		Milstar
	system,	system, / system,		system,
	at all	at all / at all		at all
	LDR and	LDR and / LDR and		LDR and
	MDR	MDR / MDR		MDR
	terminal	terminal/ terminal		terminal
	support-	support-/ support-		support-
	ed data	ed data / ed data		ed data
	rates,	rates, / rates,		rates,
	through-	through-/ through-		through-
	out the	out the / out the		out the
	Milstar	Milstar / Milstar		Milstar
	transi-	transi- / transi-		transi-
	tion to	tion to / tion to		tion to
	the AEHF	the AEHF/ the AEHF		the AEHF
	system	system / system		system

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

Development	Approved Program (APB)	Demon- strated	Current
-------------	---------------------------	-------------------	---------

(b)(1)



(b)(1)



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

(b)(1)



Acronym List:

AEHF - Advanced Extremely High Frequency  
CP - Command Post  
CMTW - Combined Major Theater War  
EHF - Extremely High Frequency  
EIRP - Effective Isotropic Radiated Power  
HGEC - High Gain Earth Coverage  
HRCA - High Resolution Coverage  
LDR - Low Data Rate  
LGEC - Low Gain Earth Coverage  
MDR - Medium Data Rate  
MILSATCOM - Military Satellite Communications  
MRCA - Medium Resolution Coverage  
NCGS - Nuclear Criteria Group Secretariat  
ORD - Operational Requirements Document  
SMART-T - Secure Mobile Anti-jam Reliable Tactical Terminal  
STAR - System Threat Assessment Report  
SOD - Standoff Distance

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(b)(1)

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	4074.2	4389.9	4343.7
Procurement	1205.0	465.5	483.9
Flyaway	(1205.0)		(460.0)
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 \$	5279.2	4855.4	4827.6
Escalation	366.1	243.7	200.0
Development (RDT&E)	(190.7)	(203.2)	(166.2)
Procurement	(175.4)	(40.5)	(33.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5645.3	5099.1	5027.6
b. (U) Quantity --			
Development (RDT&E)	2	2	2
Procurement	3	1	1
Total	5	3	3

(U) Note: Low Rate Initial Production (LRIP) is not applicable for the AEHF program.

c. (U) Foreign Military Sales --  
None.

International Cooperative Program -- Canada, the Netherlands, & the United Kingdom signed Memorandums of Understanding (MOU) in preparation for entering into a Foreign Military Sales case to purchase International Partnership variants of AEHF terminals.

Canada signed the MOU on November 16, 1999.  
The Netherlands signed the MOU on November 8, 2002.  
The United Kingdom signed the MOU on September 9, 2003.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (FEB 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	4855.4	4827.6	
(2) Quantity	3	3	
(3) Unit Cost	1618.467	1609.200	-0.57
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	465.5	483.9	
(2) Quantity	1	1	
(3) Unit Cost	465.500	483.900	+3.95

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	-132.7	-2.6	-	-135.3
Quantity	-	-969.3	-	-969.3
Schedule	-	+86.0	-	+86.0
Engineering	-	-	-	-
Estimating	+285.7	-22.5	-	+263.2
Other	-	-	-	-
Support	-	+27.0	-	+27.0
Subtotal	+153.0	-881.4	-	-728.4
Current Changes:				
Economic	-1.7	-3.9	-	-5.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+93.7	+22.6	-	+116.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+92.0	+18.7	-	+110.7
Total Changes	+245.0	-862.7	-	-617.7
Current Estimate	4509.9	517.7	-	5027.6

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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	-	-849.0	-	-849.0
Schedule	-	+106.6	-	+106.6
Engineering	-	-	-	-
Estimating	+183.5	-23.6	-	+159.9
Other	-	-	-	-
Support	-	+23.9	-	+23.9
Subtotal	+183.5	-742.1	-	-558.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+86.0	+21.0	-	+107.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+86.0	+21.0	-	+107.0
Total Changes	+269.5	-721.1	-	-451.6
Current Estimate	4343.7	483.9	-	4827.6

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-1.7
Adjustment for Current and Prior Inflation. (Estimating)	-1.6	-1.6
PB05 Increase to Mitigate Program Production Gap (Estimating)	+38.3	+40.0
Congressional Add for Critical Spares (Estimating)	+33.9	+35.0
International Partner funding received (Estimating)	+15.7	+20.5
General Congressional Reductions (Estimating)	-2.1	-5.3
PB05 Increase for Renegotiation of Subcontractor Efforts (Estimating)	+1.8	+5.1
RDT&E Subtotal	+86.0	+92.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.9
General Congressional Reductions Due to Non-Pay Inflation (Estimating)	+2.4	+2.5

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
PB05 Increase to Mitigate Program Production Gap (Estimating)	+18.6	+20.1
Procurement Subtotal	+21.0	+18.7

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1129.06	-46.97	+429.61	+28.67	--	+126.50	--	+9.00	+546.81	1675.87

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	-6.50	-49.03	+86.00	--	+0.100	--	+27.00	+57.57	517.70

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

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	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	5027.6
Total Quantity	2	5	N/A	3
Prog Acq Unit Cost	1345.3	1129.1	N/A	1675.9

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

a. RDT&E --	Initial Contract Price			
(U) SDD Letter Contract:	Target	Ceiling	Qty	
Lockheed Martin, Sunnyvale, CA				
F04701-02-C-0002, CPAF	\$2698.0	N/A	2	
Award: November 16, 2001				
Definitized: August 15, 2002				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$3041.8	N/A	2	\$3172.2	\$3234.6
Previous Cumulative Variances		Cost Variance		Schedule Variance
		N/A		N/A
Cumulative Variances To Date (12/31/03)		\$-31.8		\$-17.3
Net Change		\$-31.8		\$-17.3

Explanation of Change:

(U) The unfavorable cost variance is driven by additional risk mitigation and complexity issues within the payload element. Some of the direct drivers were Application Specific Integrated Circuit (ASIC) requirements verification, Digital Processing Subsystem power converter electrical and design issues, Super High Frequency Array Unit Panel rework, new Mechanical Ground Support Equipment design, Command and Data Handling modifications, and schedule recovery of structures drawing releases. The cost variance is offset by favorable variances in the ground and spacecraft bus elements.

(U) The unfavorable schedule variance is primarily driven by payload design and complexity issues. Some of the direct drivers were as follows: power converter requirements and design changes, ASIC and board complexity, digital product design complexity, payload drawing complexity, and drawing delays impacting tooling design and flight structure fabrication efforts.

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

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

<u>Appropriation</u>	<u>Prior Years (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-18)</u>	<u>Total</u>
RDT&E	1792.2	827.3	695.0	1195.4	4509.9
Procurement	-	-	98.6	419.1	517.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1792.2	827.3	793.6	1614.5	5027.6

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				230.5	229.8
2002				456.9	459.6
2003				823.8	837.8
2004				801.6	827.3
2005				665.1	695.0
2006				419.4	445.0
2007				301.2	325.3
2008				155.8	171.5
2009				99.3	111.5
2010				13.7	15.7
2011				13.5	15.8
2012				13.5	16.1
2013				13.6	16.5
2014				12.8	15.9
2015				12.4	15.7
2016				12.0	15.5
2017				11.7	15.4
2018				11.5	15.5
Subtotal	2			4343.7	4509.9

(U) Footnote:

The Research and Development (3600) Appropriation funding profile identified in this SAR includes both US funding and \$270.5M in

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

International Partner (IP) funding. The yearly breakout of the IP funding is as follows:

IP Funds (\$M)	
FY03	35.2
FY04	44.0
FY05	102.0
FY06	56.0
FY07	28.5
FY08	3.0
FY09	1.8
Total	270.5

The Research and Development (3600) Appropriation funding profile identified in this SAR does not include \$140.4M (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	19.0
FY06	21.0
FY07	20.0
FY08	21.0
FY09	21.4
Total	140.4

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 \$
2005				93.6	98.6
2006	1		460.0	366.2	392.2
2007					
2008				10.7	11.8
2009				13.4	15.1
Subtotal	1		460.0	483.9	517.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3		460.0	4827.6	5027.6

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Advanced EHF, December 31, 2003

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): \$ 1367.9

(U) Percent Total Program Expended: 27.2%

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 thirteen year mean mission duration after on-orbit checkout of satellite 3 in FY06 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.

(U) 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 FY09-FY18.

(U) 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 at Schriever Air Force Base. These estimates were finalized on April 15, 2003 with AFSPC's budget request to Headquarters Air Force.

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	12.0	16.9
Unit Level Consumption	7.7	13.2
Intermediate Maintenance	0.0	0.0
Depot Maintenance	6.8	3.9
Contractor Support	1.2	2.6
Sustaining Support	31.2	39.0
Indirect Costs	2.9	4.6
Total	61.8	80.2

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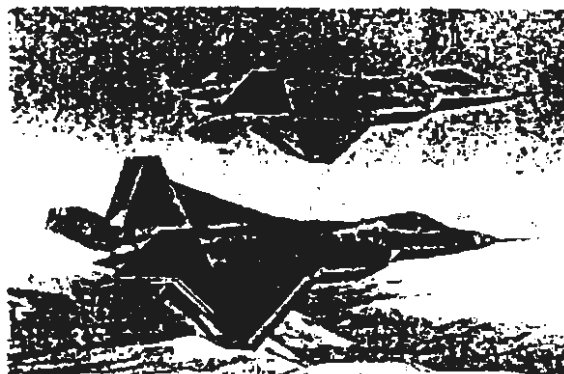
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: F/A-22 Raptor

AS OF DATE: December 31, 2003

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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	BGen 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	Project 4785
(U)	PE 0603109F	(Shared) Sunk
(U)	PE 0603230F	
(U)	PE 0604227F	(Shared) Sunk
(U)	PE 0604239F	Project 4069, 4874
(U)	PE 0604250F	Project 3786

PROCUREMENT:

(U)	APPN 3010 ICN 10F022 (Air Force)
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MILCON:

(U)	PE 0207219F
(U)	PE 0604239F

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

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F/A-22 Raptor, December 31, 2003

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated February 3, 1992.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 1, 2004.

**6. (U) Mission and Description:**

(U) The F/A-22 is a multirole air dominance fighter designed to penetrate enemy airspace and achieve a first-look, first-shot, first-kill capability against multiple targets. The Engineering and Manufacturing Development (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 is characterized by a low observable, highly maneuverable airframe, engines capable of supersonic cruise, and advanced integrated avionics.

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

(U) The FY98 National Defense Authorization Act capped the F/A-22 production program. The cap is currently \$36.755B taking into account out-of-production parts transfers, revised inflation assumptions, and changes from post FY98 appropriations. The current FY05 President's Budget (PB) cost position will allow for a production program of 271 aircraft, which exceeds the cap by \$5.4B per OSD guidance at the LRIP DAB. The Air Force will seek relief from the Congressional cap in the FY06 PB cycle.

The FY04 Appropriation bill reduced the Lot 4 production budget by \$80M. In addition, the FY04 Authorization bill fenced an additional \$136M from the Lot 4 production budget until the five Initial Operational Test & Evaluation (IOT&E) aircraft, plus the avionics software test aircraft, have been equipped with the IOT&E avionics OFP and have demonstrated mean time between covered avionics anomalies of at least five hours. To meet the authorization language, the program office will purchase the last Lot 4 aircraft as an option to the full award after the Congressional criteria have been met.

During the July 9, 2003 review, the Defense Acquisition Board (DAB) approved the plan to conduct Operational Test and Evaluation (OT&E) Phase 1 followed by IOT&E. OT&E Phase 1 initiates operational test with one-ship and two-ship trials while maintaining an event driven IOT&E start. OT&E Phase 1 began as

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~~Reason for Classification: E.O. 12958, Section 1.4 (b)~~

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F/A-22 Raptor, December 31, 2003

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

planned on October 31, 2003 after defined entrance criteria had been met including release of flight envelope, availability of three modified aircraft with updated avionics software, and completion of two-ship training for all IOT&E pilots.

The new F/A-22 Operational Requirements Document (ORD) was briefed to the Joint Capabilities Board (JCB) at the Pentagon on December 16, 2003. All F/A-22 Key Performance Parameters were validated, and the ORD was approved by the Joint Requirements Oversight Council (JROC) in February 2004. The Acquisition Program Baseline (APB) was changed to reflect current performance parameter requirements. In particular, the airlift parameter was changed to reflect the F/A-22 program's incorporation of the C-17 as the primary transport aircraft since the C-141 fleet is being retired.

The Lot 4 production proposal for 22 aircraft was received from Lockheed Martin Aeronautics Company (LM Aero) on June 27, 2003, and a proposal update was received on November 5, 2003. The Lot 4 teams have completed fact-finding, and the Lot 4 business clearance was granted on December 10, 2003. The Government/Contractor team is currently engaged in negotiations.

As of January 21, 2004 nine F/A-22s were delivered to the Air Force since May 2003. Four PRTV II aircraft were delivered to Nellis AFB, and three Lot 1 F/A-22s were delivered to Tyndall AFB. Two aircraft were conditionally accepted by the Air Force and signed over to LM Aero to support additional testing. Aircraft 4016 supports production software development efforts, and aircraft 4022 conducted airframe lightning tests.

Overall Production Operations at the suppliers and contract partners continue to meet LM Aero's requirements. Final Assembly operations at LM Aero have seen reduced levels of traveled work, but not as fast as LM Aero had expected. Likewise, labor performance trends are improving but not meeting LM Aero forecasts. A strong production management team is aggressively developing process improvements and implementing corrective actions. Recent improvement initiatives include the aggressive management of the top 68 remove and replace items, the transition to more hard tooling in the forward fuselage area, and attacking a list of their top 17 producibility items. While LM Aero's production performance is improving, the SPO assesses its rate of improvement is being paced by not maintaining sufficient manning levels in key indirect and support areas such as industrial and manufacturing engineering, and planning. LM Aero's manufacturing span times are continuing to decline as a result of worker learning, process and planning improvements, and additional shifts. LM Aero revised the production delivery schedule in December 2003 showing the plan to recover to contract by aircraft 4042. The SPO assesses this schedule as aggressive.

Avionics stability has progressively improved as a result of a focused effort utilizing dedicated labs and flight test assets. Full IOT&E functionality is now available. Avionics flight-testing has resumed, and the test point

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~~Reason for classification: E.O. 12958, Section 1.5(a)~~

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F/A-22 Raptor, December 31, 2003

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

burndown supported OT&E Phase 1 entry on October 31, 2003, and is projected to support the start of IOT&E in the spring of 2004. Efforts to achieve five hours Mean Time Between Avionics Anomaly (MTBAA) are continuing, and the program is progressing toward the five hour MTBAA requirement. Additional fixes targeting the remaining stability drivers are planned for a mid-February 2004 release. This release will also include performance and functionality fixes identified during flight test and OT&E Phase 1 activities. One additional contingency build is available, if necessary, for final IOT&E clean up.

Improvements in the fly rate of the flight sciences aircraft resulted in the successful release of the OT&E Phase 1 envelope on October 31, 2003. The envelope exceeded the capability requested by AFOTEC in many areas. Various restrictions were addressed and ultimately cleared to support operational testing. However, additional flight test is needed to remove remaining restrictions and provide the operational testers with an envelope adequate for IOT&E. Current rates of test point burndown support release of the updated envelope in February 2004.

The second life of fatigue testing was completed on December 7, 2003. As of January 29, 2004 the F/A-22 full-scale fatigue test has simulated 18,103 total flight hours equivalent to 25 percent of the third life.

Weapons integration and separations testing is proceeding according to schedule and is projected to support IOT&E need dates.

Demonstrated flight-test capabilities to date include: supercruise, flight above 50,000 feet, airspeed to 800 Knots Equivalent Airspeed (KEAS) as well as 2.1 Mach, Angle of Attack from -60 deg to greater than +60 deg, separation tests and guided launches of AIM-9 and AIM-120 missiles, and load factor from -2g to 9g with doors closed and SWB doors open.

For Lot 2 pilot training devices, four Weapons and Tactics Trainers (WTTs) were delivered to Tyndall AFB in November 2003, with final acceptance and DD250 accomplished in December 2003. Two other WTTs were sent to Boeing, Seattle and to L3 Communications, Arlington, Texas to help with the integration efforts for Block 3.1.2/3.1.3. Two Full Mission Trainers completed in-plant test at L3 Communications, and were shipped to Tyndall for installation, with final acceptance/DD250 signoff expected in February 2004.

Low Observables (LO) maintenance continues to show dramatic improvement over legacy LO aircraft. The team is continuing to prove out LO maintainability through full-time maintainability demonstrations and Stability Over Time tests on aircraft 4004, 4007, and 4008, as well as ACC aircraft delivered to Nellis AFB. Over 600 of the 650 flight test hours has been collected on the Test Information Sheet (TIS) dedicated to proving LO maintainability. A recommendation by all stakeholders to end this TIS could be forthcoming in March 2004. Stability Over Time (SOT) testing is still on-going. There have

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F/A-22 Raptor, December 31, 2003

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

been six flights to date that have provided us with a good level of confidence in the Signature Assessment System (SAS) results. The team is monitoring the dynamic Radar Cross Section (RCS) results to ascertain any negative trends that can be linked to maintainability. Dynamic RCS collection missions to date have demonstrated that using SAS in concert with following Technical Order (TO) procedures results in a robust RCS over time. There are three range missions remaining before our planned SOT testing is complete.

F119 LO maintainability is showing improvements. There are also Component Improvement Program (CIP) tasks underway to address maintainability issues. ACC and SPO personnel participated in coating repair demonstrations at the engine contractor facility in December 2003. The demonstrations highlighted the fact that differences exist between approved field repair procedures and those used in the Pratt & Whitney laboratory. These differences are being investigated and a common procedure will be instituted. The daily post-flight, pre-flight, and thru-flight LO inspection times have been significantly reduced.

The F/A-22 program is focused on increasing aircraft suitability as it relates to reliability, maintainability, and availability. Although challenges remain, the program is making progress as aircraft systems mature and experience level grows and is focused on achieving success in IOT&E. Improvements have been made with the latest versions of the on-board diagnostic and health maintenance (DHM) system and the integrated maintenance information system (IMIS) released to the field, which have reduced the pilot debrief time from eight hours to one hour. The mature end-to-end technical order data (TOD) release, scheduled in February 2004, should show significant improvement in the areas of fault report code coverage, procedures, engine, and LO. In addition, the program is working to define the long term reliability growth plan, which will ensure that operational requirements are met. This plan will be presented to the Defense Acquisition Board in March 2004.

The program criteria summarized below were being used to monitor the progress of the F/A-22 program in 2003 for entrance into further procurement activities.

The USD(AT&L) approved the following Lot 4 / Lot 5 Advanced Buy Exit Criteria, which were all completed by October 31, 2003.

1. All PRTV II Aircraft shall be delivered and the number of hours to fabricate, assemble, and test each aircraft reviewed.
- 2a. MTBAA is acceptable to AFOTEC for OT&E Phase 1.
- 2b. OT&E Phase 1 begins.
- 3a. Complete maintenance Technical Order validation to support OT&E Phase 1, less structural repair data and concurrency driven modifications.

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

3b. Deliver the critical peculiar support equipment for Nellis and Tyndall AFBs.

4. Conduct an AMRAAM Integrated Test Vehicle simulated missile launch in conjunction with an ORD Mission-1 type profile demonstration (e.g., takeoff, ingress, supercruise, missile launch, egress, and land using approximate Mission 1 specified ranges).

5. Complete flight testing for the Step 2 A/B envelope and release the Step 2 A/B envelope, along with any required aircraft limitations, needed to conduct OT&E Phase 1 testing.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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
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
IOT&E			
Start	JUN 1999	OCT 2003	APR 2004 (Ch-1)
Complete	SEP 1999	JUN 2004	OCT 2004 (Ch-1)
Milestone III	DEC 1999	SEP 2004	JAN 2005 (Ch-2)
High Rate Production Contract Award	JAN 2001	NOV 2005	DEC 2005 (Ch-3)
Initial Operational Capability	SEP 2003	DEC 2005	DEC 2005
Organic Organizational Maintenance Capability	SEP 2003	N/A	TBD
Required Assets Availability (RAA)	OCT 2002	SEP 2005	SEP 2005
Organic Depot Activation	SEP 2003	N/A	TBD

(U) Acronyms:

DAB - Defense Acquisition Board  
DSARC - Defense Systems Acquisition Review Council  
DT&E - Development Test & Evaluation  
EMD - Engineering & Manufacturing Development  
IOT&E - Initial Operational Test & Evaluation  
LRIP - Low Rate Initial Production  
PPV - Pre-Production Verification

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

b. Current Change Explanations --  
(U)

	FROM Dec 02	TO Dec 03
(Ch-1) IOT&E		
Start (Current Estimate):	Oct 03	Apr 04
Complete (Current Estimate):	Jun 04	Oct 04

IOT&E Start has been moved to Apr 04 due to the initiation of OT&E Phase 1 activities in Oct 03. IOT&E Complete has shifted as a result of the Start change.

(Ch-2) Milestone III (Current Estimate):                      Sep 04                      Jan 05  
MS III has been revised as a result of the shift of IOT&E since the results of IOT&E contribute to the decision to proceed into full rate production.

(Ch-3) High Rate Production Contract Award (Current Estimate):  
   Nov 05                      Dec 05  
High Rate Production Contract Award has been revised to reflect a more realistic Contract Award date.

10. (U) Performance Characteristics:

a. Performance --

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

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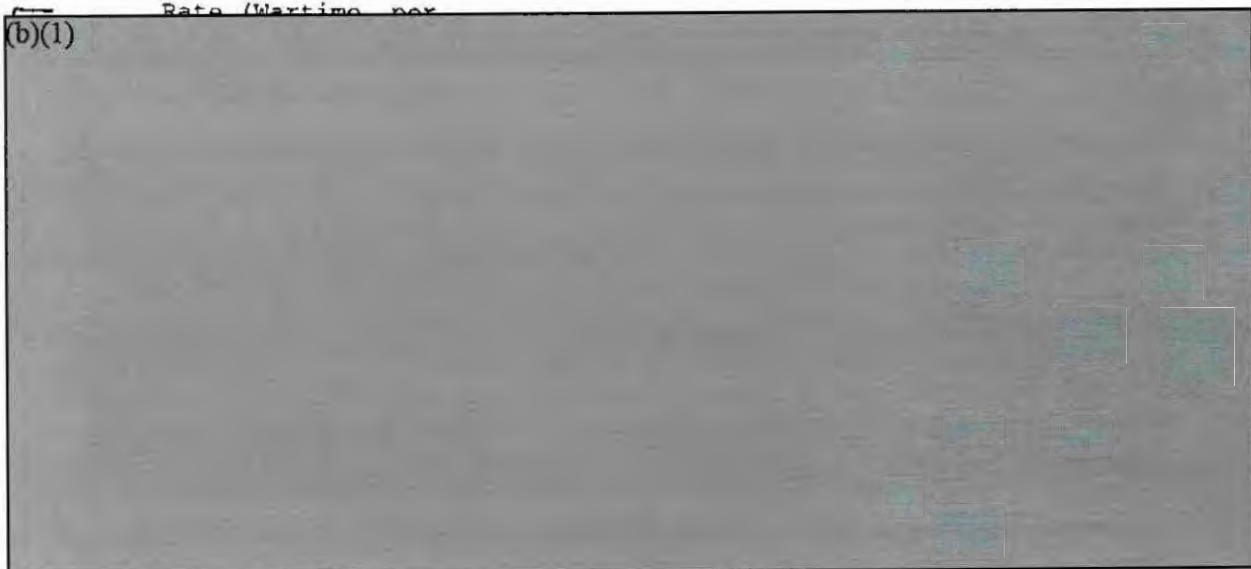
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F/A-22 Raptor, December 31, 2003

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
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	
Reliability, Maintainability, and Supportability					
C-141s / 24 Primary Aircraft Inventory (PAI) Squadron For Deployment (#a/c)**	8	N/A / N/A	TBD	N/A	(Ch-1)
C-17s / 24 Primary Aircraft Inventory (PAI) Squadron for Deployment (#a/c)**	N/A	6 / 7	TBD	6	(Ch-1)
Sortie Generation Rate (Wartime per					

(b)(1)



(Ch-2)

~~Reason for Classification: E.O. 12958, Section 1.5 (1)~~

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

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F/A-22 Raptor, December 31, 2003

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Direct on-and-off Maintenance Personnel (spaces per ac)	8.7	10.5 / 12.5	TBD	10.5### (Ch-1)
Weight Empty	42500	44065 / 44065	TBD	43019
Engine Thrust				
(.9 Mach @ 30K, Max)	14450	14450 / 14450	TBD	17112
(1.5 Mach @ 45K, Mil)	8000	8000 / 8000	TBD	9408
Fuel Consumption (specific fuel consumption)				
(.9 Mach @45K @2850 lbs thrust)	1.008	1.008 / 1.008	TBD	.970
(1.5 Mach @45K @8390 lbs thrust)	1.202	1.202 / 1.202	TBD	1.136
Warning Time *	*	/ *	TBD	###
Angle of Arrival (AOA) @ X Freq *	*	/ *	TBD	###

(U) \* Classification/control is beyond the level of this document.

(U) \*\* Indicates Operational Requirements Document (ORD) Key Performance Parameter (KPP) [Note: Airlift and MTBM KPPs are based upon F/A-22 system maturity (100,000 flight hours).]

(U) + Classified KPP values can be viewed in the classified annexes of the August 1996 F-22 ORD.

(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.

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~~F/A-22 Raptor, December 31, 2004~~

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

b. Current Change Explanations --

	FROM	TO
	Dec 02	Dec 03

(U) (Ch-1) The new F/A-22 Operational Requirements Document (ORD) was approved by the Joint Requirements Oversight Council in February 2004. Current estimate changes were driven by ORD KPP changes reflected in the APB:

(U) C-141's/24 PAI Squadron For Deployment (# a/c)	8.8	N/A
(U) C-17s/24 PAI Squadron For Deployment (# a/c)	N/A	6.0

The C-141 fleet is being retired, so the change reflects the incorporation of the C-17 as the primary transport aircraft with the C-17 equipment loads at an Allowable Cargo Load of 164,900 lbs.

(U) Direct on-and-off Maint Personnel	9.3	10.5
---------------------------------------	-----	------

The total personnel required in spaces per aircraft, based upon 72 PAI, has been redefined as deploying under the Air Expeditionary Force (AEF) construct as three "independent" 24 PAI squadrons to accomplish organizational on-equipment and off-equipment maintenance task allocations.

(U) (Ch-2) Fluctuations in the changed parameters from the last SAR generally result from completed tradeoff studies, incorporation of engineering changes, and aircraft testing.

(b)(1)

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F/A-22 Raptor, December 31, 2003

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)	16560.0	24388.3	24387.9
Procurement	43510.0	31361.4	31372.9
Airframe	(21485.7)		(16358.1)
Engines	(5993.7)		(3662.0)
Avionics	(9250.6)		(5138.6)
Special Projects			(222.9)
Munitions			(73.6)
Total Nonrecurring			(1626.1)
In-line Modernization			(133.5)
Total Flyaway	(36730.0)		(27214.8)
Other Weapon Systems	(1032.1)		(460.7)
Peculiar Support	(1896.1)		(3678.9)
Initial Spares	(3851.8)		(18.5)
Construction (MILCON)	200.0	465.8	430.5
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	60270.0	56215.5	56191.3
 Escalation	 38839.0	 15569.8	 15501.9
Development (RDT&E)	(2969.0)	(4261.8)	(4255.5)
Procurement	(35762.0)	(11142.1)	(11094.6)
Construction (MILCON)	(108.0)	(165.9)	(151.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	99109.0	71785.3	71693.2
 b. (U) Quantity --			
Development (RDT&E)	0	8	8
Procurement	648	270	271
Total	648	278	279

(U) These figures represent the FY05 PB position, with the exception of in-line modernization production estimates up to completion of Spiral 3B in FY11. The current estimate of 279 total aircraft includes 8 RDT&E aircraft (2 fully configured EMD aircraft as well as the 6 PRTV II aircraft initially appropriated in FY00) plus the 271 procurement aircraft (2 PRTV aircraft appropriated in FY99 as well as lots 1-11).

The Air Force intention is to procure an objective of 339 aircraft for \$43B. However, the program office currently forecasts that 277 aircraft can be purchased (excludes the 2 fully configured EMD aircraft). The F/A-22 enterprise is working on cost reduction initiatives to allow procurement of additional aircraft above the 277 forecast.

The F-22 Low Rate Initial Production (LRIP) quantity was originally set at the Milestone II review, in the 1 Aug 91 Acquisition Decision Memorandum (ADM), and represented approximately 12% (76 of 650) of the total aircraft procurement.

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F/A-22 Raptor, December 31, 2003

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

Since that time, funding reductions, the Joint Estimate Team, the Quadrennial Defense Review (QDR), and the FY00 National Defense Appropriation Act reduced the total quantity, lowered the maximum annual production rate, slowed the production ramp rate, and redesignated the six FY00 aircraft. The production program now contains 90 LRIP aircraft in Lots 1-5, which is 32% (90 of 277) of the total aircraft procurement. The LRIP program establishes an initial production base for the system and presents an orderly increase in the production rate.

LRIP is comprised of Lots 1 through 5. This plan emphasizes early implementation of producibility improvements to achieve overall program affordability goals. This approach will reinforce cost consciousness leading into full rate production and allows the production processes to fully mature, providing a strong foundation for long term affordability. Producibility projects currently being implemented address a wide range of cost savings opportunities. Examples include manufacturing process improvements to improve production yields for avionics modules, improvements in fabrication and assembly processes for the airframe, and redesign of several components enabling lower production cost.

The LRIP quantity has been reviewed a number of times since it was first established. The Joint Estimate Team examined plans to determine if parts flow, process maturation and major assembly schedules supported the full rate production delivery profile. The QDR reduced the total quantity and maximum production rate, and slowed the ramp rate to an orderly transition to full rate production. The analysis of the QDR changes concluded that the revised ramp rate included reasonable quantities each year until the maximum production rate is achieved.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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F/A-22 Raptor, December 31, 2003

12. (U) Unit Cost Summary:

	UCR Baseline (APR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	56215.5	56191.3	
(2) Quantity	278	279	
(3) Unit Cost	202.214	201.403	-0.40
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	31361.4	31372.9	
(2) Quantity	270	271	
(3) Unit Cost	116.153	115.767	-0.33

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	-869.5	-8324.5	-64.3	-9258.3
Quantity	+542.0	-40159.3	-	-39617.3
Schedule	+2427.2	+4214.2	-	+6641.4
Engineering	+3138.5	+266.4	+5.0	+3409.9
Estimating	+3668.5	+12768.1	+383.0	+16819.6
Other	-	-	-	-
Support	+214.4	-5533.4	-	-5319.0
Subtotal	+9121.1	-36768.5	+323.7	-27323.7
Current Changes:				
Economic	-6.6	-28.9	+5.7	-29.8
Quantity	-	+86.9	-	+86.9
Schedule	-	-29.2	-	-29.2
Engineering	-	-	-	-
Estimating	-0.1	+18.2	-55.1	-37.0
Other	-	-	-	-
Support	-	-83.0	-	-83.0
Subtotal	-6.7	-36.0	-49.4	-92.1
Total Changes	+9114.4	-36804.5	+274.3	-27415.8
Current Estimate	28643.4	42467.5	582.3	71693.2

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F/A-22 Raptor, December 31, 2003

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	-19430.0	-	-19000.6
Schedule	+1840.1	+13.2	-	+1853.3
Engineering	+2291.2	+263.1	+4.0	+2558.3
Estimating	+3052.5	+9601.3	+261.8	+12915.6
Other	-	-	-	-
Support	+215.1	-2586.5	-	-2371.4
Subtotal	+7828.3	-12138.9	+265.8	-4044.8
Current Changes:				
Quantity	-	+54.9	-	+54.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.4	-17.7	-35.3	-53.4
Other	-	-	-	-
Support	-	-35.4	-	-35.4
Subtotal	-0.4	+1.8	-35.3	-33.9
Total Changes	+7827.9	-12137.1	+230.5	-4078.7
Current Estimate	24387.9	31372.9	430.5	56191.3

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices (Economic)	N/A	-6.6
Adjustment for Current and Prior Inflation (Estimating)	+0.1	+0.2
Modernization budget realignment for execution (Estimating)	-0.3	0.0
Congressional reduction and miscellaneous adjustments (Estimating)	-0.2	-0.3
RDT&E Subtotal	-0.4	-6.7
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-61.8
Economic adjustment for negative program change (Economic)	N/A	+32.9
Total Quantity Variance associated with procurement of 1 additional Lot 3 aircraft	+69.1	+102.9
Procurement of 1 additional Lot 3 aircraft (Quantity)	+54.5	+81.2

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Allocation to schedule resulting from procurement of 1 additional Lot 3 aircraft (QR) (Quantity)	0.0	+5.3
Allocation to engineering resulting from procurement of 1 additional Lot 3 aircraft (QR) (Quantity)	+0.4	+0.4
Allocation to Estimating variance resulting from procurement of 1 additional Lot 3 aircraft (QR) (Estimating)	+14.2	+16.0
Acceleration of annual procurement buy profile (Schedule)	0.0	-29.2
Adjustment for Current and Prior Inflation (Estimating)	+12.2	+15.9
FY04 Appropriations bill cut (Estimating)	-61.2	-80.0
Economic Order Quantity shift due to Multi-year delay (Estimating)	-3.8	0.0
Congressional reductions and miscellaneous adjustments to aircraft procurement (Estimating)	-12.3	-17.0
Increase due to updated risk assessment (Estimating)	+33.3	+83.0
Adjustment for Current and Prior Inflation (Estimating)	+0.1	+0.1
Congressional reductions and miscellaneous adjustments to procurement of munitions (Estimating)	-0.2	+0.2
Adjustment for Current and Prior Inflation (Support)	+2.0	+3.7
Reduction in Peculiar Support estimate (Support)	-37.0	-85.5
Reduction in Other Weapon Systems estimate (Support)	-0.4	-1.2
Procurement Subtotal	+1.8	-36.0
(3) <u>MILCON</u>		
Revised escalation indices (Economic)	N/A	+0.2
Economic adjustment for negative program change (Economic)	N/A	+5.5
Air Force offsets to pay higher service priorities (Estimating)	-35.3	-55.1
MILCON Subtotal	-35.3	-49.4

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F/A-22 Raptor, December 31, 2003

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

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	-33.29	+60.60	+23.70	+12.22	+60.15	--	-19.36	+104.02	256.96

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
122.33	-30.82	+22.31	+15.44	+0.983	+47.18	--	-20.72	+34.37	156.71

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	OCT 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	DEC 2004
IOC	SEP 2003	SEP 2003	N/A	DEC 2005
Total Cost	99109.0	99109.0	N/A	71693.2
Total Quantity	648	648	N/A	279
Prog Acq Unit Cost	152.9	152.9	N/A	257.0

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F/A-22 Raptor, December 31, 2003

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

a. RDT&E --

(U) F/A-22 EMD (LMAC):

LOCKHEED MARTIN AERO CORP, Marietta GA

F33657-91-C-0006, CPAF

Award: August 2, 1991

Definitized: August 2, 1991

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$9550.1	N/A	11

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$14722.7	N/A	9	\$15953.0	\$15953.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-488.9	\$-13.2
Cumulative Variances To Date (11/30/02)	\$-457.4	\$-32.2
Net Change	\$31.5	\$-19.0

Explanation of Change:

(U) (U) There was an overall favorable change of \$31.5M in the cost variance (CV) for this period (30 November 2003 CPR data) since the December 2002 SAR (30 November 2002 CPR data). The primary contributor to the overall favorable variance was the incorporation of prior year actual overhead rate adjustments to the Overhead, G&A and other burden accounts.

The overall unfavorable change of -\$19.0M in schedule variance (SV) for this period was driven primarily by the delayed delivery of six maintenance Resident Training Center (RTC) devices (-\$16.8M). This variance was due to increased manufacturing time by L3 Communications and occurred in June 03. One trainer was delivered to Tyndall AFB in August 2003 and the remaining five are projected to be delivered in CY04 timeframe. No program impact is anticipated.

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1375.1	N/A	33

(U) EMD ENGINE (P&W):  
UNITED TECHNOLOGIES CORP., E. HARTFORD CT  
F33657-91-C-0007, CPFF  
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>
\$2429.7	N/A	25	\$2485.7	\$2485.7

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F/A-22 Raptor, December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-31.5	\$-6.1
Cumulative Variances To Date (11/30/02)	\$-36.8	\$-3.8
Net Change	\$-5.3	\$2.3

Explanation of Change:

(U) Through November 2003, the cumulative unfavorable cost variance was -\$36.8M (-1.6%). This is a decline of \$5.3M from the December 2002 SAR. The cumulative variance drivers include the Nozzle, Engine Development Test, Controls, and Augmentor WBS elements.

Through November 2003, the cumulative unfavorable schedule variance was -\$3.8M (-0.17%). This variance is an improvement of \$2.3M from the December 2002 SAR. The cumulative variance drivers include Test Facilities, Engine Development Test, delayed instrumentation and spare hardware delivery.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
b. Procurement -- (U) F/A-22 Lot 2 (LMA): LOCKHEED MARTIN AERO CORP, MARIETTA GA F33657-00-C-0020, FFP Award: December 30, 1999 Definitized: December 30, 1999	\$2520.3	N/A	13

<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>
\$2520.3	N/A	13	\$2520.3	\$2520.3

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.

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

(U) F/A-22 Lot 3 (LMA):			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
LOCKHEED MARTIN AERO CORP, MARIETTA GA					
F33657-01-C-2095, FFP	\$3379.6	N/A	21		
Award: December 24, 2002					
Definitized: April 8, 2003					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$3379.6	N/A	21	\$3379.6	\$3379.6

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) F/A-22 PRTV/PRTV II:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
LOCKHEED MARTIN AERO CORP, MARIETTA GA					
F33657-97-C-0030, FFP	\$2018.2	\$2018.2	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:

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

(U) Contract Comments:

PRTV aircraft (FY99) were purchased with 3010 funds. Per Congressional direction, PRTV II aircraft (FY00) were purchased with 3600 funds (even though the advance buy portion was funded with 3010).

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

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
(U) F/A-22 LOT 1 (LMA):				
LOCKHEED MARTIN AERO CORP, MARIETTA GA				
F33657-99-C-0036, FFP	\$1918.6	N/A	10	
Award: December 31, 1999				
Definitized: December 31, 1999				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1918.6	\$1918.6	10	\$1918.6	\$1918.6

Explanation of Change:

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

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
(U) F/A-22 Lot 4 AB (LMA):				
Lockheed Martin Aero Corp, Ft Worth TX				
F33657-02-C-0010, FFP	\$831.1	\$	22	
Award: December 24, 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>
\$831.1	N/A	22	\$	\$

Explanation of Change:

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

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F/A-22 Raptor, December 31, 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 (FY83-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	24829.2	928.5	564.5	2321.2	28643.4
Procurement	11224.8	4147.3	4192.1	22903.3	42467.5
MILCON	161.0	31.2	40.2	349.9	582.3
O&M	-	-	-	-	-
Total	36215.0	5107.0	4796.8	25574.4	71693.2

(U) RDT&E Balance To Complete is composed of EMD (\$75.8M) and Modernization (\$2245.4M). Funding for EMD ends in FY06. Modernization reflects only funding within the FYDP (FY06-09) and will continue to fund spiral development activities indefinitely.

b. Annual Summary -- F/A-22 Raptor

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
2000				1810.1	2239.1
2001				1124.8	1411.6
2002				693.0	877.3
2003				710.5	909.4

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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 \$
2004				715.9	928.5
2005				429.3	564.5
2006				379.6	507.2
2007				470.1	639.4
2008				441.5	612.4
2009				397.6	562.2
Subtotal	8			24387.9	28643.4

(U) 3600 appropriation includes \$3.0B (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	7.5
1998				59.2	72.4
1999	2	57.1	470.8	648.4	801.4
2000			165.1	225.8	283.2
2001	10	172.1	960.8	2005.1	2536.5
2002	13	419.2	2274.1	2374.9	3032.7
2003	21	416.3	2490.6	3469.2	4478.7
2004	22	175.2	2460.0	3165.8	4140.9
2005	24	127.6	2436.5	3149.6	4182.7
2006	26	109.4	2496.9	3276.8	4427.0
2007	32	107.3	2892.4	3094.1	4257.5
2008	32	35.2	2466.6	2942.3	4128.1
2009	32	1.4	2403.1	2778.2	3978.4
2010	32	1.9	2299.3	2491.8	3638.1
2011	25	3.4	1772.6	1605.1	2390.0
2012				6.8	10.4
2013					
2014					

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

Reason for Classification: E.O. 12958, Section 1.4(a)  
 \*\*\* UNCLASSIFIED \*\*\*

F/A-22 Raptor, December 31, 2003

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 \$
2015					
Subtotal	271	1626.1	25588.8	31299.3	42365.5

(U) Modernization BP10 estimates (PE 0207138F), up to completion of Spiral 3B in FY11, are included in this summary.

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			4.9	4.9	6.4
2005			7.1	7.1	9.4
2006			8.1	8.1	10.9
2007			7.8	7.8	10.8
2008			8.6	8.6	12.0
2009			8.6	8.6	12.3
2010			10.5	10.5	15.4
2011			8.3	8.3	12.4
Subtotal			73.6	73.6	102.0

(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.

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Reason for Classification: E.O. 12958, Section 1.4(a)

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F/A-22 Raptor, December 31, 2003

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

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				30.1	40.2
2006				40.1	54.5
2007				67.4	93.3
2008				86.4	122.0
2009				55.6	80.1
2010					
Subtotal				430.5	582.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	279	1626.1	25662.4	56191.3	71693.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	8	8
Procurement	271	6

(U) Percent Total Program Quantities Delivered: 5.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 32465

(U) Percent Total Program Expended: 45.3%

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Reason for Classification: E. O. 12958, Section 1.5(a)

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F/A-22 Raptor, December 31, 2003

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 (VAMOSC) 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 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	F/A-22 Raptor F/A-22 Squadron/Year During Steady State	F-15C Avg Annual Cost Per 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

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

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F/A-22 Raptor, December 31, 2003

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

Total O&S Cost	F/A-22 Raptor	F-15C
BY\$ (In Millions)	19254.1	N/A
TY\$ (In Millions)	37036.9	N/A

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~~Reason for Classification: E.O. 12958, Section 1.5(a)~~

AF-16 JSTARS

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

**PROGRAM:** Joint STARS

**AS OF DATE:** December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): Joint Surveillance Target Attack Radar System (JSTARS)

2. (U) DoD Component: USAF

Joint Participants:  
US Army

3. (U) Responsible Office and Telephone Number:

Joint STARS Program Office  
Electronic Systems Center  
75 Vandenberg Drive  
Hanscom AFB, MA 01731-2119

GS-15 Richard O. Bleau  
Assigned: April 15, 2002  
DSN 478-5725; COMM (781)377-5725  
richard.bleau@hanscom.af.mil

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

RDT&E:

(U) PE 0207581F  
(U) PE 0603770F  
(U) PE 0604270F Project 3894 (Shared)  
(U) PE 0604616F  
(U) PE 0604770D  
(U) PE 0604770F

PROCUREMENT:

(U) APPN 3010 ICN 0207581F (Air Force)

MILCON:

(U) PE 0604770F

**CLEARED**  
FOR OPEN PUBLICATION  
AS AMENDED  
MAR 25 2004 5

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: Joint STARS Classification Guide dated June 10, 1998  
Downgrade instructions: None  
Declassify on: Originating Agency Determination Required (OADR)~~

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Joint STARS, December 31, 2003

**5. (U) References:**

SAR Baseline (Production Estimate):

(U) Air Force Acquisition Executive Approved Acquisition Program Baseline (APB) dated October 24, 1996.

Approved Program:

(U) CAE Approved Acquisition Program Baseline (APB) dated March 17, 2003.

**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 JSTARS 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 command and control (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 Airborne Warning and Control System (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 is organized as a Single Integrated Operating Environment with several related programs, all of which share a capabilities focus for Ground Moving Target Indicator. Our product areas include: Platforms, Sustainment and Support, Training Systems and Global Air Traffic Management, Battle-Management Command & Control and Analysis & Integration (A&I).

Of note: Since the stand up of the 116th ACW, in October 2002, JSTARS has played a key role in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). The first "blended Wing" performed superbly in the crucible of combat. This success is helping ground and air component commanders including special operations forces gain a heightened appreciation for the force multiplying efforts of Ground Moving Target Indicator (GMTI) Intel while meeting challenges of day-to-day operations.

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

**Platforms:** Since our last SAR we delivered one JSTARS E-8C to the Warfighter five weeks ahead of schedule. P-15 was delivered on February 25, 2003 [our eleventh consecutive early delivery]. Our next aircraft (P-16) is on track to deliver ahead of its contract schedule date of March 31, 2004. P-17 is scheduled to deliver to the Warfighter in March 2005. P-17 will be our last aircraft delivery.

**Per Congressional direction in the FY04 Defense Authorization Bill, the Platform Team in the System Program Office is drafting a report comparing the cost of maintaining current engines, buying new engines, or leasing new engines for the E-8C. The Service position and rationale will be outlined in that report which is due to the congressional committees by February 13, 2004.**

**Sustainment and Support:** The Northrop Grumman Corporation Total System Support Responsibility team continues to excel in supporting the Warfighter. In support of Operation Enduring Freedom/Operation Iraqi Freedom, (January -December 2003) 99.2% of JSTARS scheduled missions were flown (514/518 sorties). In addition, the fleet achieved a 96.7% Mission Effectiveness Rate (497/514). The JSTARS average Mission Capability Rate for calendar year 2003 was 72.0% against the Air Combat Command standard of 75%. The largest single contributor to this shortfall was engine related maintenance problems.

**Training Systems and Global Air Traffic Management (GATM):** We delivered an initial Distributed Mission Training capability with a Support and Training System Mission and Maintenance Trainer in November 2002 and added full network connectivity in October 2003. Our first full motion Weapon System Trainer was Ready-for-Training May 1, 2003 with plans to deliver a second Weapon System Trainer in January 2004.

We also continue to work with the Airborne Warning and Control System Global Air Traffic Management team to identify common issues and refine a common approach for our programs. We have received certification for Reduced Vertical Separation Minimum operations that enables us to fly in airspace with reduced separation in critical in the U.S. and around the world and are progressing with fleet retrofits. We have the Traffic Alert and Collision Avoidance System (TCAS) Pre-System Development and Demonstration (SDD) effort on contract and will issue the TCAS SDD request for proposal in January 2004.

**Battle Management Command and Control (BMC2):** We are on track to complete the retrofit/delivery phase of our Computer Replacement Program. Using Commercial Off The Shelf technology, open system architecture and the Improved Data Modem, JSTARS is providing a concise Time Critical Targeting (TCT) link to the Apache Longbow with all aircraft to be equipped by early FY05. We are also continuing our Link 16 Attack Support Upgrade (ASU) effort in response to requirements to accelerate JSTARS Link 16 to maintain pace with that of F-15Es, enabling greater TCT capability. ASU detailed design is scheduled to be complete by February 23, 2004 followed by fielding of the first spiral, Air Control/Theater Missile Defense (AC/TMD), in FY06 and Full Battle Management capability planned for FY07.

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

During OIF operators needed more Satellite Communications (SATCOM) capability. Installation of additional SATCOM radios will be completed in conjunction with the migration of Airborne Command and Control Center (ABCCC) functionality to the E-8C platform as part of the Combined SATCOM ABCCC Capability Insertion (CSACI). Program plans to deliver three fully capable Demand Assigned Multiple Access (DAMA) SATCOM/ABCCC jets to the 116th ACW by the end of FY04 were impaired by delays in obtaining a Joint Tactical Radio System waiver. Retrofit and production line insertion will begin in FY05. Eight operational jets along with one test jet will be outfitted with the CSACI capability. The remainder of retrofits will be funded in FY05 and beyond.

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. We have also initiated an effort in collaboration with the Air Force Research Laboratory to develop enhanced capabilities (e.g., MTIX functionalities) for the JSWS (JSWS-Plus), which will result in a significant reduction of footprint in the Air Operations Center.

Analysis and Integration (A&I): The Analysis and Integration Integrated Product Team (IPT) for JSTARS is a multi-disciplined group with varied responsibilities including system engineering, developing and managing capability-based roadmaps, modeling, simulation and analysis, advanced development, and architectures. These efforts provide decision makers analysis to determine impacts of projected upgrades and provide a disciplined approach for JSTARS system improvements. Additionally, the A&I IPT has the lead for enterprise integration into the larger Command & Control Constellation (C2C) and improving Joint STARS' net-centric capabilities including the joint Net Centric Collaborative Targeting and the Office of the Secretary of Defense (OSD) Horizontal Fusion initiatives.

Joint Surveillance Target Attack Radar System (JSTARS) is submitting this Selected Acquisition Report (SAR) as a final SAR for the program. As of February 26, 2004, JSTARS is 94% delivered, which meets/exceeds the statutory requirement of 90% for a final SAR.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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  
AFAE: Air Force Acquisition Executive  
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

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

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(U) Acronym List:

CEP: Circular Error Probable  
FLOT: Forward Line Own Troops  
GPS: Global Positioning System  
GRCA: Ground Reference Coverage Area  
hr: hour  
JSORD: Joint STARS Operational Requirements Document  
MTBCF: Mean Time Between Critical Failure  
METT-T: Mission, Enemy, Terrain, Troops Available, and Time  
MTI: Moving Target Indicator  
Pd: Probability of Detection  
SS: Sector Searches  
SAR: Synthetic Aperture Radar  
WAS: Wide Area Surveillance

(U) \*NOTE- The following is required information needed to fully understand the data located in the Performance Characteristics Section 10. Acronyms used above and not referenced below include: Forward Line Own Troops (FLOT) and Mean Time Between Critical Failure (MTBCF).

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

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	3820.4	4407.9	4318.8
Procurement	5982.4	5927.7	5532.5
Recurring	(4570.5)		(3932.4)
Non-Recurring	(196.5)		(102.4)
Total Flyaway	(4767.0)		(4034.8)
Other Wpn Sys	(585.6)		(954.8)
Peculiar Support	(58.8)		(83.9)
Initial Spares	(571.0)		(459.0)
Construction (MILCON)	129.5	113.4	113.4
Acquisition O&M	0.0	0.0	0.0
Total FY 1998 Base-Year \$	9932.3	10449.0	9964.7
Escalation	-170.2	-248.2	-322.7
Development (RDT&E)	(-465.8)	(-386.5)	(-399.2)
Procurement	(296.5)	(141.0)	(79.2)
Construction (MILCON)	(-0.9)	(-2.7)	(-2.7)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	9762.1	10200.8	9642.0
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	19	17	17
Total	20	18	18

(U) The Low Rate Initial Production quantity of 5 aircraft was approved at the Defense Acquisition Board Review in May 1993. Full Rate Production quantity of 19 was approved at the Joint Surveillance Target Attack Radar System (JSTARS) Milestone III Decision, and with the FY1999 budget. The Quadrennial Defense Review recommendation to reduce the JSTARS fleet from 19 to 13 took effect with the FY1999 budget, the last four aircraft was Office of Secretary Defense (OSD) and Congressional Adds to the President's Budget.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1998 BY\$)	10449.0	9964.7	
(2) Quantity	18	18	
(3) Unit Cost	580.500	553.594	-4.63
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	5927.7	5532.5	
(2) Quantity	17	17	
(3) Unit Cost	348.688	325.441	-6.67

(U) The approved Acquisition Program Baseline, March 17, 2003, reflects an additional aircraft (P-17) and associated costs.

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	-18.5	-21.7	-0.7	-40.9
Quantity	-	-606.7	-	-606.7
Schedule	-10.7	-	-	-10.7
Engineering	+431.7	+222.4	-8.2	+645.9
Estimating	+130.5	-459.9	-9.0	-338.4
Other	-	-	-	-
Support	+30.8	+210.1	-	+240.9
Subtotal	+563.8	-655.8	-17.9	-109.9
Current Changes:				
Economic	-1.2	+0.5	-	-0.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.4	-83.4	-	-81.0
Other	-	-	-	-
Support	-	+71.5	-	+71.5
Subtotal	+1.2	-11.4	-	-10.2
Total Changes	+565.0	-667.2	-17.9	-120.1
Current Estimate	3919.6	5611.7	110.7	9642.0

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Joint STARS, December 31, 2003

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	+376.2	+194.3	-7.7	+562.8
Estimating	+98.6	-384.2	-8.4	-294.0
Other	-	-	-	-
Support	+29.2	+214.2	-	+243.4
Subtotal	+496.1	-439.3	-16.1	+40.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.3	-78.7	-	-76.4
Other	-	-	-	-
Support	-	+68.1	-	+68.1
Subtotal	+2.3	-10.6	-	-8.3
Total Changes	+498.4	-449.9	-16.1	+32.4
Current Estimate	4318.8	5532.5	113.4	9964.7

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-1.2
Estimate to put Trainer System on Motion & Visual. (Estimating)	+3.2	+3.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Revised Estimate for budget adjustments. (Estimating)	-1.0	-1.2
RDT&E Subtotal	+2.3	+1.2

(2) Procurement

Revised escalation indices. (Economic)	N/A	+0.5
Feasibility study for lease or replacement for the JSTARS engines. (Estimating)	+3.2	+3.5
Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
Reprogramming and realigning funds. (Estimating)	-38.0	-41.3
Increase in Initial Spares. (Support)	+16.6	+17.8
Decrease in Peculiar Support. (Support)	-0.2	-0.2

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Joint STARS, December 31, 2003

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase in Combined Satellite Communication & Airborne Battlefield Command & Control Center Capability Integration. (Support)	+8.2	+8.7
Correction to prior SAR to align Flyaway & Support dollars.		
Estimating (Estimating)	-43.5	-45.2
Support (Support)	+43.5	+45.2
Procurement Subtotal	-10.6	-11.4

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
488.11	-2.31	+20.53	-0.594	+35.88	-23.30	--	+17.36	+47.56	535.67

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

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
330.47	-1.25	+3.20	--	+13.08	-31.96	--	+16.56	-0.368	330.10

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	JUN 1996	SEP 1996
IOC	TBD	SEP 1997	SEP 1997	DEC 1997
Total Cost	1388.2	6741.9	9762.1	9642.0
Total Quantity	0	21	20	18
Prog Acq Unit Cost	0.0	321.0	488.1	535.7

(U) NOTE: The SAR Planning Estimate (PE) Total Cost of 1388.2 was based on the RDT&E program only.

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Joint STARS, December 31, 2003

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

a. Procurement --	Initial Contract Price		
(U) Prod Lot X (P-16):	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Corp, Melbourne FL			
F19628-01-C-0015, FPIF	\$38.4	N/A	1
Award: March 17, 2001			
Definitized: June 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>
\$239.3	\$256.7	1	\$236.0	\$221.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$5.1	\$2.2
Cumulative Variances To Date	\$13.3	\$0.4
Net Change	\$8.2	\$-1.8

Explanation of Change:

(U) The Lot X (P-16) contract was originally definitized on June 17, 2002. Since the last SAR, \$22.2M has been added to the Ceiling price for the additional Demand Assigned Multiple Access (DAMA) Satellite Communications (SATCOM) effort, Flight Manual Update (FMU), Traveling Wave Tube (TWT), and High Power Combiner Assembly (HPCA) Engineering Change proposals (ECPs).

The net change in Schedule Variance (SV) is due to the completion of work at Lake Charles (Aircraft Refurbishment and Mod) which resets the largest contributor to last year's SV to zero. The current SV is favorable, with a small percentage of work left to be completed prior to delivery. The Schedule Performance Index for this contract continues to track at 1.0. The aircraft delivered approximately 4 weeks early to the contractual delivery date of March 31, 2004.

(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.

As of this reporting period this contract is over 90% complete with P-16 scheduled for delivery to the warfighter on February 26, 2004.

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

(U) <u>Prod Lot XI (P-17):</u>			Initial Contract Price		
Northrop Grumman, Melbourne, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
F19628-02-C-0022, FPIF	\$46.3	N/A	1		
Award: March 30, 2002					
Definitized: March 28, 2003					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$265.9	\$277.1	1	\$265.9	\$243.8

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	N/A	N/A
Net Change	\$4.1	\$2.3
	\$4.1	\$2.3

Explanation of Change:

(U) The Lot XI (P-17) contract was definitized since the last SAR on March 28, 2003. The current favorable cost/schedule variance Cost Performance Report (CPR dated November 20, 2003) is due to refurbishment activities, with the Aircraft, Mod Support and the Configuration Update sub-systems actuals lagging behind the Level of Effort plan. The cumulative schedule variance, as of December 2003, is the result of a number of Comm Sub-Systems being delivered earlier than scheduled.

(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.

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Joint STARS, December 31, 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 (FY82-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	3433.5	57.8	89.3	339.0	3919.6
Procurement	5379.6	46.6	53.4	132.1	5611.7
MILCON	110.7	-	-	-	110.7
O&M	-	-	-	-	-
Total	8923.8	104.4	142.7	471.1	9642.0

b. Annual Summary -- JSTARS

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

<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>
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
1997				204.9	204.7
1998				106.7	107.2
1999				73.2	74.3
2000				68.2	70.3
2001				90.3	94.4
2002				69.0	72.8
2003				62.4	66.6
2004				53.5	57.8
2005				81.5	89.3
2006				115.3	128.4
2007				70.1	79.4
2008				62.2	71.8
2009				50.4	59.4
Subtotal	1			4318.8	3919.6

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Joint STARS, December 31, 2003

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

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	539.2	658.7	631.7
1994	2	6.0	584.7	551.5	537.7
1995	2	32.1	638.7	682.9	675.4
1996	2	15.3	351.7	503.1	504.1
1997	2	17.3	487.5	535.3	541.7
1998	1	17.2	182.8	345.7	352.3
1999	2		285.2	613.1	631.2
2000	1		200.4	338.8	353.9
2001	1		208.5	327.0	344.5
2002	1		218.4	368.8	392.3
2003	1		235.3	258.2	277.6
2004				42.7	46.6
2005				48.3	53.4
2006				14.9	16.8
2007				21.4	24.5
2008				48.5	56.7
2009				28.6	34.1
Subtotal	17	102.4	3932.4	5532.5	5611.7

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

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Joint STARS, December 31, 2003

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	18	102.4	3932.4	9964.7	9642.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	15	16

(U) Percent Total Program Quantities Delivered: 94.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7772

(U) Percent Total Program Expended: 80.6%

(U) Since our last SAR we delivered two JSTARS E-8C to the Warfighter, approximately five weeks ahead of schedule. P-15 was delivered on February 25, 2003 and P-16 was delivered on February 26, 2004 [our eleventh and twelfth consecutive early deliveries]. P-17 is scheduled to deliver to the Warfighter in March 2005. P-17 will be our last aircraft delivery.

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-33-102C engine. The support concept priced assumes two-levels (organizational/depot) of support on the Prime Mission Equipment. The airframe support will be Government organizational level support. The remaining support is 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 structure within the ALC is an essential requirement for execution of the approved JSTARS 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. The Operations and Support period for the current estimate has a nine-year Ramp Up (FY96-05) and Steady State to FY34. The Steady State costs presented below were extracted from the latest Contractor Logistic Support (CLS) Brochure dated August 26, 2003 assuming a total of 17 aircraft. The total O&S Cost is a Total Ownership Cost from 1996

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Joint STARS, December 31, 2003

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

- 2034 and is based on a 29 year service life for 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

Total O&S Cost	JSTARS	Avg Annual Cost Per
BY\$	8232.1	N/A
TYS	9927.7	N/A

Report Creation Date: 3/23/2004 9:28:32 AM

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N-12 E-2C REPRO

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: E-2C REPRODUCTION

AS OF DATE: December 31, 2003

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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	robert.labelle@navy.mil

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

RDT&E:

(U) PE 0204152N Project E0463, E2321

PROCUREMENT:

(U) APPN 1506 ICN 0195 (Navy) (Shared)

(U) APPN 1506 ICN 0195 is shared with the E-2 Advanced Hawkeye (AHE) program, which is funded FY08 and beyond and is reported in a separate SAR. E-2C Reproduction procurement funding ends in FY07, as shown in section 16.

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MAR 25 2004

7

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-C-0719

No Security Objection  
to Open Publication  
(AS AMENDED)

04-C-222  
MAR 25 2004

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

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E-2C REPRODUCTION, December 31, 2003

5. (U) References:

SAR Baseline (Production Estimate):

(U) Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated October 27, 1994.

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, ALR-73 Passive Detection Systems and ALQ-217 Electronic Support Measures (ESM) which allow the E-2C to detect emitters/targets well beyond radar range.

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 Assistant Secretary Navy (Research Development & Acquisition) (ASN(RD&A)) in September 1994. Full Rate Production of MCU was approved in May 1998 and was incorporated in FY99 through FY03 E-2C Multi-Year Procurement (MYP).

From FY99 through FY03, Navy purchased a total of 21 E-2C airframes under a fully-funded, five year, firm-fixed-price MYP contract. 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.

FY04 President's Budget Submission was appropriated and authorized for a MYP of eight E-2C aircraft. A four year firm-fixed price contract was awarded January 22, 2004 for the procurement of two E-2 aircraft per year from FY04 through FY07. The E-2 aircraft FY04-FY07 multi-year preserves the industrial base and provides a long-term commitment that ensures critical work skills are available for the increased production rate of Advanced Hawkeye (AHE) aircraft planned for FY08 and beyond.

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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
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)			
Milestone II	SEP 1994	SEP 1994	SEP 1994
Navy Program Review	MAR 1997	MAR 1997	AUG 1997
- LRIP I			
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

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

FRP Full Rate Production  
IOC Initial Operational Capability  
LRIP Low Rate Initial Production

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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	(b)(1)	N/A / N/A	(b)(1)	
Range (nm)	(b)(1)	N/A / N/A	(b)(1)	
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
Load Time (sec)	45	45 / 270	227	227
In-Flight Reload (sec)	20	20 / 144	3.9	3.9
Operational Availability	0.97	0.97 / 0.93	.98	.97

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E-2C REPRODUCTION, December 31, 2003

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

(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 -- 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)	205.7	430.6	416.3
Procurement	2422.0	3442.1	3441.0
Airframe & Changes	(1914.2)		(2463.0)
Engine & Accessories	(206.2)		(229.5)
Electronics	(87.5)		(181.1)
Armament & Other GFE	(5.6)		(23.0)
Non-Recurring			(80.9)
Total Flyaway	(2213.5)		(2977.5)
Other Weapons Sys Cost	(141.1)		(261.1)
Peculiar Support	(0.0)		(85.7)
Initial Spares	(67.4)		(116.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1994 Base-Year \$	2627.7	3872.7	3857.3
Escalation	560.2	497.6	447.2
Development (RDT&E)	(18.2)	(37.4)	(33.2)
Procurement	(542.0)	(460.2)	(414.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3187.9	4370.3	4304.5
b. (U) Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	36	44	44
Total	36	44	44

(U) There are no Low Rate Initial Production (LRIP) quantities approved for the E-2C reprocurd aircraft.

c. (U) Foreign Military Sales --

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E-2C REPRODUCTION, December 31, 2003

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

**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/futura 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 have been transferred from Israel to Mexico as a third party transfer.

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	3872.7	3857.3	
(2) Quantity	44	44	
(3) Unit Cost	88.016	87.666	-0.40
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	3442.1	3441.0	
(2) Quantity	44	44	
(3) Unit Cost	78.230	78.205	-0.03

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E-2C REPRODUCTION, December 31, 2003

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	-13.4	-264.4	-	-277.8
Quantity	-	+578.9	-	+578.9
Schedule	-	+48.8	-	+48.8
Engineering	+178.4	+183.0	-	+361.4
Estimating	+50.5	+122.5	-	+173.0
Other	-	-	-	-
Support	-1.0	+264.5	-	+263.5
Subtotal	+214.5	+933.3	-	+1147.8
Current Changes:				
Economic	+0.1	+1.1	-	+1.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.0	-57.1	-	-46.1
Other	-	-	-	-
Support	-	+13.7	-	+13.7
Subtotal	+11.1	-42.3	-	-31.2
Total Changes	+225.6	+891.0	-	+1116.6
Current Estimate	449.5	3855.0	-	4304.5

(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	-	+477.3	-	+477.3
Schedule	-	+50.4	-	+50.4
Engineering	+154.7	+151.4	-	+306.1
Estimating	+46.3	+128.9	-	+175.2
Other	-	-	-	-
Support	-	+242.5	-	+242.5
Subtotal	+201.0	+1050.5	-	+1251.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+9.6	-44.0	-	-34.4
Other	-	-	-	-
Support	-	+12.5	-	+12.5
Subtotal	+9.6	-31.5	-	-21.9
Total Changes	+210.6	+1019.0	-	+1229.6
Current Estimate	416.3	3441.0	-	3857.3

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E-2C REPRODUCTION, December 31, 2003

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	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
Congressional Plus-Up for Net-Centric Test Bed, Non-Cooperative Combat Identification, and E-2C Program Support Activity (Estimating)	+9.4	+10.7
Reduction in Indirect Costs and Navy Working Capital Fund (NWCF) Rates. (Estimating)	-0.5	-0.8
Small Business Innovative Research (SBIR) Adjustment. (Estimating)	-0.3	-0.4
Below Threshold Realignments (BTR) of Funding. (Estimating)	+1.3	+1.5
Correction from previous SAR. (Estimating)	+0.4	+0.7
Congressional Reductions and Rate Adjustments. (Estimating)	-0.5	-0.5
RDT&E Subtotal	+9.6	+11.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.0
Economic adjustment for negative program change. (Economic)	N/A	+5.1
Reduction in trainers (Estimating)	-12.3	-16.7
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.3
Revised estimate to reflect actual costs (Estimating)	-30.9	-39.3
Below Threshold Realignment (BTR) of Funding (Estimating)	-1.6	-2.1
Congressional Reductions and Rate Adjustments (Estimating)	-1.4	-1.7
Reduction in Indirect Costs and Navy Working Capital Fund (NWCF) Rates (Estimating)	-2.4	-3.2
Miscellaneous budget reductions (Estimating)	+1.5	+1.9
Adjustment to offset inflation indices previously not available. (Estimating)	+2.1	+2.7
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Reduction in Initial Spares (Support)	-18.5	-22.4
Increase in Peculiar Support Equipment and Training (Support)	+4.0	+5.0
Increase in Production Support and Integrated Logistics Support to reflect actual costs (Support)	+26.8	+30.9
	_____	_____

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E-2C REPRODUCTION, December 31, 2003

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Procurement Subtotal	-31.5	-42.3

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
88.55	-6.29	-2.93	+1.11	+8.21	+2.88	--	+6.30	+9.28	97.83

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

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
82.33	-5.98	-1.82	+1.11	+4.16	+1.49	--	+6.32	+5.28	87.61

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	4304.5
Total Quantity	0	0	36	44
Prog Acq Unit Cost	0.0	N/A	88.5	97.8

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E-2C REPRODUCTION, December 31, 2003

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

a. Procurement --			Initial Contract Price		
(U) FY99-03 E-2C Multiyear:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Northrop-Grumman Corp, Bethpage NY					
N00019-97-C-0147, FFP	\$1293.8	\$1293.8	21		
Award: April 26, 1999					
Definitized: September 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>	
\$1293.8	\$1293.8	21	\$1293.8	\$1293.8	

Explanation of Change:

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.

(U) FY04-07 E-2C Multiyear:			Initial Contract Price		
Northrop-Grumman Corp, Bethpage NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-03-C-0044, FFP					
Award: March 28, 2003	\$706.1	\$706.1	8		
Definitized: January 22, 2004					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$706.1	\$706.1	8	\$706.1	\$706.1	

Explanation of Change:

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

(U) Contract Comments:

This is the first time this contract is being reported. Initial Contract Award was executed as an Advanced Acquisition Contract (AAC) for FY04 only. Contract definitization executed the full multi-year for FY04-07. The entire MYP contract is fully negotiated and priced. The total cost of the MYP contract is \$706.1 million.

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E-2C REPRODUCTION, December 31, 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 (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	417.1	19.3	6.1	7.0	449.5
Procurement	2918.4	229.8	249.1	457.7	3855.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3335.5	249.1	255.2	464.7	4304.5

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				18.4	20.7
2003				16.6	18.9
2004				16.7	19.3
2005				5.2	6.1
2006				1.9	2.2
2007				1.3	1.6
2008				1.3	1.6
2009				1.3	1.6
Subtotal				416.3	449.5

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 REPRODUCTION, December 31, 2003

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	299.5	297.4	334.1
2002	5	0.4	311.2	277.3	314.6
2003	5	3.0	300.8	267.7	307.6
2004	2	27.2	141.0	197.2	229.8
2005	2		170.1	210.5	249.1
2006	2	6.7	164.5	206.9	249.1
2007	2	8.6	180.3	170.0	208.6
Subtotal	44	80.9	2896.6	3441.0	3855.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	44	80.9	2896.6	3857.3	4304.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	25	25

(U) Percent Total Program Quantities Delivered: 56.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2775.1

(U) Percent Total Program Expended: 64.5%

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
Total Number of Aircraft	65
Total Number of Operating Years	20
Consumption Rate, Gal/Hr	391.0
POL Cost, JP-5, Per Barrel, FY 1997	\$44.52
Date of estimate, February 2003	

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E-2C REPRODUCTION, December 31, 2003

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

The Base Year (BY\$) Operating and Support (O&S) Cost for the Dec 2002 SAR was half as much as this year because they calculated the cost based on 10 squadrons, which include 4 aircraft per squadron. This results is a total of approximately 40 aircraft. The calculation that is used in the Dec 2003 SAR (which is the correct calculation) is based on a total number of 65 aircraft instead of 10 squadrons. Therefore, the SAR for Dec 2002 was short approximately 25 aircraft. Estimating methodology and databases are more accurate today then when the original SAR was done in 1991.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	E-2C HAWKEYE Avg Annual Cost Per Squadron	HAWKEYE Avg Annual Cost Per Squadron
Mission Pay & Allowances	9.1	9.7
Unit Level Consumption	6.3	1.8
Intermediate Maintenance	1.8	N/A
Depot Maintenance	3.1	3.6
Contractor Support	0.0	N/A
Sustaining Support	1.0	1.2
Indirect Costs	6.7	0.4
Total	28.0	16.7

Total O&S Cost	E-2C HAWKEYE	HAWKEYE
BY\$ (In Millions)	9110.7	N/A
TY\$ (In Millions)	14536.6	N/A

Report Creation Date: 03/21/2004 5:28:02 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: CH-47F (ICH)

AS OF DATE: December 31, 2003

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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 Anthony Pelczynski
Cargo Helicopters, ATTN: SFAE-AV-CH	Assigned: May 1, 2003
Building 5678	DSN 897-3396; COMM (256) 313-3396
Redstone Arsenal, AL 35898-5280	anthony.pelczynski@peoavn.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 CH-47D modifications performed after the aircraft are fielded. This does not include RECAP. RECAP is rolled into flyaway cost.

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CH-47F (ICH), December 31, 2003

## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated May 19, 1998.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated March 2, 2004.

## **6. Mission and Description:**

The CH-47F supports the Army's requirement to be strategically responsive across the full spectrum of operations. It will provide continued support, coverage, and sustainment of Maneuver, Fire Support, Air Defense, and Survivability mission areas. Its mission is transportation of ground forces, class III/class V supplies, and other battle critical cargo in support of all future contingencies. The CH-47F enables the Army to support the rapid response capability necessary for forcible and early entry contingency missions, as well as tactical and operational nonlinear, noncontiguous, simultaneous or sequential operations, which will be characteristic of future operations.

The CH-47F is a heavy lift helicopter that will extend the service life of the current cargo helicopter fleet by an additional 20 years. The CH-47F will be an upgraded, remanufactured, CH-47D and will incorporate improvements to airframe reliability and maintainability (rebuild of the airframe incorporates vibration reduction through stiffening structural components); provides an avionics architecture compliant with the applicable Information Technology (IT) standards contained in DoD Joint Technical Architecture, Joint Technical Architecture -Army (JTA-A) and is interoperable with DoD systems (upgrades the cockpit with digital communication/navigation capability); increases operational performance (lift capability and range); complies with emerging Global Air Traffic Management (GATM) (civil airspace interoperability), Air Warrior (aviator ensemble), and Digital Source Collector (DSC) (flight data recorder) requirements. The CH-47F will provide the commander in the field an aircraft which is more reliable, costs less to operate, and is compatible with the emerging future force.

The CH-47F Helicopter is a future force system that supports the Army Vision. 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 97 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.

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CH-47F (ICH), December 31, 2003

**7. Executive Summary:**

Scheduling issues between the Army and the Special Operations Command have been resolved and the overall CH-47F/MH-47G program strategy has been approved by the Defense Acquisition Executive.

The Initial Operational Test & Evaluation is on track to begin in April 2004. The Operational Test Unit, equipment, and location have been identified and scheduled.

The two research and development aircraft have been upgraded for use in the Instructor & Key Personnel Training at Fort Campbell, KY beginning in January 2004.

The Low Rate Initial Production program has made significant advances in the development and refinement of numerous processes to increase production efficiencies. Enhancements include the implementation of the automated Management Execution System and introduction of laser tracking to identify key mounting points. Such tools are geared to improve the manufacturing learning curve and lower total cost. However, the program will lose some of the learning benefits during the break in production of CH-47F in lieu of producing MH-47Gs in Lot II.

The second phase Low Rate Initial Production contract has been awarded for 16 MH-47Gs for the Special Operations Command.

**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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CH-47F (ICH), December 31, 2003

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
Finish	MAR 2002	MAY 2004	MAY 2004
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	MAY 2007	MAY 2007 (Ch-1)

The FUE dates reflect IOT&E Part I. The IOT&E Part II (currently planned for the last quarter of FY 2006) will be included in the documentation leading up to the Milestone III ASARC.

First Unit Equipped will be a Heavy Lift Helicopter Company of 14 aircraft.

Acronym Listing:

ASARC- Army Systems Acquisition Review Council/Committee  
EMD - Engineering Manufacturing Development  
IOT&E - Initial Operating Test and Evaluation.  
LRIP - Low Rate Initial Production  
ORD - Operational Requirements Document

b. Current Change Explanations --

(Ch-1) - Negotiated agreements between Special Operations Command and the CH-47F program office have moved the FUE date from November 2007 to May 2007.

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CH-47F (ICH), December 31, 2003

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

Acronym Listing:

flt - flight

hr - hour

mmh - maintenance man hour

nm - nautical miles

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)	136.3	156.2	157.2
Procurement	2387.3	5413.8	5677.6
Flyaway	(2167.4)		(5323.8)
Other Weapon System Cost			(312.7)
Peculiar Support	(172.0)		(0.6)
Initial Spares	(47.9)		(40.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1997 Base-Year \$	2523.6	5570.0	5834.8
Escalation	591.8	1410.1	1347.7
Development (RDT&E)	(6.5)	(7.1)	(6.3)
Procurement	(585.3)	(1403.0)	(1341.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3115.4	6980.1	7182.5
b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	300	337	337
Total	302	339	339

Two years of Low Rate Initial Production (LRIP) for up to 30 aircraft was approved at Milestone II in December 1997. The President's Budget reflects revised LRIP quantities with 7 in FY03 and 16 in FY04 for a total of 23 aircraft. 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, 2003

12. Unit Cost Summary:

	UCR Baseline (MAR 2004 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	5570.0	5834.8	
(2) Quantity	339	339	
(3) Unit Cost	16.431	17.212	+4.75
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	5413.8	5677.6	
(2) Quantity	337	337	
(3) Unit Cost	16.065	16.847	+4.87

13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	142.8	2972.6	-	3115.4
Previous Changes:				
Economic	-1.9	-108.8	-	-110.7
Quantity	-	+325.3	-	+325.3
Schedule	+3.4	+121.7	-	+125.1
Engineering	-	+1163.7	-	+1163.7
Estimating	+19.9	+1938.9	-	+1958.8
Other	-	-	-	-
Support	-	+599.1	-	+599.1
Subtotal	+21.4	+4039.9	-	+4061.3
Current Changes:				
Economic	-0.7	-139.7	-	-140.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+275.2	-	+275.2
Other	-	-	-	-
Support	-	-129.0	-	-129.0
Subtotal	-0.7	+6.5	-	+5.8
Total Changes	+20.7	+4046.4	-	+4067.1
Current Estimate	163.5	7019.0	-	7182.5

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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	+18.0	+1891.3	-	+1909.3
Other	-	-	-	-
Support	-	+236.0	-	+236.0
Subtotal	+20.9	+3172.1	-	+3193.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+220.3	-	+220.3
Other	-	-	-	-
Support	-	-102.1	-	-102.1
Subtotal	-	+118.2	-	+118.2
Total Changes	+20.9	+3290.3	-	+3311.2
Current Estimate	157.2	5677.6	-	5834.8

b. Current Change Explanations --

(Dollars in Millions)

Base-Year    Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.7
RDT&E Subtotal	0.0	-0.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-145.1
Economic adjustment for negative program change. (Economic)	N/A	+5.4
Adjustment for Current and Prior Inflation. (Estimating)	+12.1	+13.4
Revised cost estimate due to new labor rates. (Estimating)	+114.9	+144.5
Change in Initial Spares due to change in production and delivery mix of CH-47F and MH-47G aircraft. While the total number of aircraft in the program remains the same, more MH-47Gs and less CH-47Fs will be produced. (Support)	-8.5	-11.4
Change in Peculiar Support due to change in production and delivery mix of CH-47F and MH-47G aircraft. (Support)	-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>
Correction to reconcile Flyaway and Support	+93.3 +117.3
Costs. (Estimating)	
(Support)	-93.3 -117.3
Procurement Subtotal	+118.2 +6.5

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	
10.32	-0.741	-0.167	+0.369	+3.43	+6.59	--	+1.39	+10.87	21.19

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	-0.737	-0.115	+0.361	+3.45	+6.57	--	+1.39	+10.92	20.83

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	MAY 2007
Total Cost	N/A	3115.4	N/A	7182.5
Total Quantity	0	302	0	339
Prog Acq Unit Cost	N/A	10.3	N/A	21.2

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CH-47F (ICH), December 31, 2003

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

a. Procurement --			Initial Contract Price		
CH-47F Init. Prod Prep:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BOEING HELICOPTERS, Philadelphia PA					
DAAH23-01-C-0028, CP1F			\$52.2	N/A	0
Award: May 1, 2001					
Definitized: July 2, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$54.9	N/A	0	\$54.9	\$54.9	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$2.5	\$-1.1	
Cumulative Variances To Date (12/18/03)			\$3.0	\$-0.3	
Net Change			\$0.5	\$0.8	

Explanation of Change:

The favorable cost variance is due to the Airframe & Dynamics IPT. Contractor's submittal of December's CPR evaluates the completion of thirty-two months of this fifty-five month contract. The favorable schedule variance is due to the Direct IPT.'

Contract Comments:

The increase in target price is due to increased contract scope. The Initial Production Preparation (IPP) contract reflected above was awarded in two parts. The first part, \$26.8M, was to support low rate initial production quantities. The second award, \$25.4M, was to support full rate production quantities.

LRIP Lot I "G":			Initial Contract Price		
Boeing Helicopters, Philadelphia PA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH23-03-C-0022, CPFF					
Award: December 20, 2002			\$136.1	N/A	6
Definitized: December 20, 2002					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$136.8	N/A	6	\$136.6	\$138.6	

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CH-47F (ICH), December 31, 2003

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/18/03)	\$1.3	\$-4.8
Net Change	\$1.3	\$-4.8

Explanation of Change:

The net favorable cost variance is due to the Build IPT and Support Sys Services IPT. The contractor has completed eleven months of this twenty-eight month contract. The net unfavorable schedule variance is due to the Build IPT and the Material accounts that have several hundred thousand dollars of false negative schedule variance.

The Earned Value management data currently being reported includes the two appropriations for this contract, the CH-47F program and Technology Application Program Office. The CH-47F portion is \$68.5 million

LRIP LOT 2: Boeing Helicopters, Philadelphia PA DAAH23-03-C-0022, CPIF Award: December 5, 2003 Definitized: December 5, 2003	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$245.4	\$245.4	16

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$245.4	\$245.4	16	\$	\$

	<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:

Earned Value Management data will begin June 2004.

Contract Comments:

Two separate appropriations are on this contract for the MH-47G, the CH-47F program and Technology Application Program Office. The CH-47F portion is \$140.6 million.

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CH-47F (ICH), December 31, 2003

15. Contract Information (Cont'd):

<u>LRIP Lot 1 "F":</u>			<u>Initial Contract Price</u>		
Boeing Helicopter, Philadelphia PA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAH23-03-C-0022, FPIF	\$15.5	\$18.6	1		
Award: December 20, 2002					
Definitized: December 20, 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>
\$16.2	\$18.6	1	\$17.8	\$17.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/18/03)	\$-0.4	\$-0.9
Net Change	\$-0.4	\$-0.9

Explanation of Change:

The net unfavorable cost variance is the Airframe & Dynamics IPT. The Contractor's submittal of December's CPR evaluates the completion of twelve months of this twenty-one month contract. The net unfavorable schedule variance is the Build IPT. This month's schedule variance is due to Mission and VMS Material accounts.

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	153.0	10.5	-	-	163.5
Procurement	374.3	341.9	349.6	5953.2	7019.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	527.3	352.4	349.6	5953.2	7182.5

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CH-47F (ICH), December 31, 2003

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

b. Annual Summary -- CH-47F

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

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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	38.5
2002				17.1	18.2
2003				3.0	3.2
2004				9.6	10.5
Subtotal	2			157.2	163.5

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 \$
1996					
1997					
1998					
1999					
2000					
2001		32.0		57.2	60.5
2002		61.7	13.0	86.3	92.4
2003	7	65.8	116.4	204.2	221.4
2004	16	10.8	266.6	310.7	341.9
2005	16	11.3	269.3	313.0	349.6
2006	23	12.0	349.3	368.9	419.2
2007	22	10.5	337.6	367.4	425.4
2008	25	11.7	402.4	426.0	503.0
2009	26	13.2	417.8	447.0	538.3
2010	26	12.9	378.3	417.9	513.4
2011	26	13.3	374.8	407.6	510.7
2012	27	15.7	384.3	425.7	544.1
2013	26	14.0	364.7	397.3	517.9
2014	25	11.6	349.6	385.2	512.2
2015	25	12.6	348.8	382.8	519.2
2016	25	11.6	343.6	374.5	518.1
2017	22	9.3	277.3	305.9	431.7
Subtotal	337	330.0	4993.8	5677.6	7019.0

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CH-47F (ICH), December 31, 2003

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	339	330.0	4993.8	5834.8	7182.5

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): \$ 144.5

Percent Total Program Expended: 2.0%

The expenditures shown above are as of January 31, 2004.

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.

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Thousands)

Cost Element	CH-47F Average Annual Per Aircraft	CH-47D Average Annual Per Aircraft
Mission Pay & Allowances	397.6	397.6
Unit Level Consumption	94.4	110.5
Intermediate Maintenance	78.2	97.5
Depot Maintenance	168.4	637.1
Contractor Support	0.0	0.0
Sustaining Support	170.6	170.6
Indirect Costs	0.0	0.0
Total	909.2	1413.3

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CH-47F (ICH), December 31, 2003

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

Total O&S Cost	CH-47F	CH-47D
BYS (In Millions)	4327.5	6740.4
TYS (In Millions)	6744.9	10505.5

Report Creation Date: 03/19/2004 10:58:58 AM

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

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AS OF DATE: December 31, 2003

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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 Lloyd E. McDaniels
PEO Tactical Missiles	Assigned: June 24, 2003
ATTN: SFAE-MSL-CWS	DSN 746-7194; COMM (256) 876-7194
RSA, AL 35898-5710	Lloyd.McDaniels@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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FOR OPEN PUBLICATION

MAR 20 2004

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

AS AMENDED

Classified by: Javelin, PEO Tactical Missiles, dated 29 March 1999  
Downgrade instructions:  
Declassify On: X3

(THIS PAGE IS UNCLASSIFIED)

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Javelin, December 31, 2003

5. (U) References:

SAR Baseline (Production Estimate):

(U) Army Acquisition Executive (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 December 12, 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 is replacing the Dragon.

7. (U) Executive Summary:

(U) During this reporting period, the Javelin Weapon System continued the production, fielding, and deployment phases of the acquisition cycle, while also continuing efforts in Pre-planned Product Improvements (P3I) and Foreign Military Sales (FMS).

The Javelin Weapon System continues to demonstrate a high reliability of 94% with over 1,100 missiles flown to date in production quality flight verification testing, with Full Rate Production 4 and 5 missiles being at 100% reliability. Javelin first-time gunner hits also remain high at 92%. The CLU continues to show reliability growth with 300+ hour Mean Time Between Operational Mission Failures (MTBOMF) demonstrated with the specification

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

requirement being 129 hours MTBOMF.

Javelin is deployed in support of Operation Enduring Freedom and Operation Iraqi Freedom (OEF/OIF) to both the US Army and Marine Corps. To date, there have been over 420 rounds known to be fired in combat operations with no malfunctions being reported from soldiers or Marines. The Javelin Weapon System has received much positive feedback from both OEF/OIF commanders, with the Javelin being given its greatest accolade in the Battle of Debeka Pass, when 30 Special Operations soldiers defeated a much larger Iraqi armored force with the Javelin Weapon System.

Javelin has become one of the premier systems sought by the foreign military community. In January 2003, the United Kingdom announced their decision to procure the Javelin Weapon System utilizing a hybrid FMS/Direct Commercial Sales (DCS) case totaling approximately \$460 million. Also during CY 03, Javelin was utilized by Australia to support OEF/OIF and a diversion of Javelin assets was approved for Australia, Lithuania, and Ireland for FY 04. Additionally, in CY 03, Norway and New Zealand signed Letters of Acceptance with the US Army to purchase the Javelin system. Procurement action was initiated for Javelin hardware for Jordan, Taiwan, Ireland, Australia, Lithuania, Norway, and New Zealand. In December 2003, Close Combat Weapon Systems (CCWS) Project Office exercised an option to the existing Javelin multiyear contract to meet FY04 hardware requirements for US Army and FMS customers.

The Army completed accelerated fieldings of Javelin to units at Ft. Carson, CO (10th SFG, 43 En Co 3d ACR, and 3d Bde, 4th ID), Ft. Hood, TX (4th ID), the Army National Guard (39th Inf Bde - AR, and 30th Armor Bde - NC), and B Co, 3d U.S. Inf of The Old Guard. Additional fieldings included 1st Bde, 1st Inf Div at Ft. Riley, and the 1st Bn, 4th Inf, and 1st Inf Div located in Germany.

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Javelin, December 31, 2003

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
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

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Javelin, December 31, 2003

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
	OCT 1996	OCT 1996	OCT 1996
LRIP II Delivery			
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
Milestone IIIB (DAB)	N/A	N/A	N/A

(U) ACRONYMS:

ASARC - Army Systems Acquisition Review Council  
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 -- None

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10. ~~(U)~~ Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Min range (m)					
Degraded					
Full					
Max range (m)					
Hit probability (Ph/reliable rnd)					
Kill probability Given a reliable shot (Pk/s)					
Given engagement opportunity (Pk/e)					
(U) System weight (lbs)	35	35	/ 49.5	48.6	48.6
(U) Missile operational reliability	.92	.92	/ .92	.94	.94
(U) Cmd Launch Unit MTBOMF (hrs)	129	129	/ 129	360	339 (Ch-1)
(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.

(U) NOTES:

- 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.

- Full lethality must be met at both minimum and maximum range.

- 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.

- 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).

- Probability of kill given an engagement opportunity P(k/e). Values shown

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

are defined at 1200 meters in fog oil or white phosphorous against a specific threat target.

- Missile Operational Reliability is established at system maturity which is three years after MSIII (May 00).

b. Current Change Explanations --

(U) (Ch-1) Previous estimate and demonstrated performance for CLU MTBOMF changed from 360 hours to 339 hours based on CLU reliability data from both testing and field usage.

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	877.0	872.6	874.7
Procurement	2914.1	3177.3	3156.4
Round Flyaway	(2018.1)		(1981.5)
CLU Flyaway	(516.8)		(704.6)
Non-recurring			(107.3)
Total Flyaway	(2534.9)		(2793.4)
Other Weapon System Cos	(51.1)		(69.6)
Training Devices	(245.5)		(260.6)
Plant Closure	(16.6)		(0.0)
Total Other Wpn Sys	(313.2)		(330.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.0)		(32.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1997 Base-Year \$	3791.1	4049.9	4031.1
Escalation	134.9	61.6	48.8
Development (RDT&E)	(-109.7)	(-106.8)	(-106.6)
Procurement	(244.6)	(168.4)	(155.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3926.0	4111.5	4079.9

(U) Values shown include USMC program.

b. (U) Quantity --

Development (RDT&E)	48	57	57
Procurement	28453	24472	23345
Total	28501	24529	23402

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

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Javelin, December 31, 2003

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

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 for CY2003 include the following:

Country	Round Qty	Total Case
Australia	507	\$58.2M
Ireland	82	\$12.5M
Norway	450	\$65.0M
New Zealand	48	\$8.9M
United Kingdom	DCS	\$161.9M

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	4049.9	4031.1	
(2) Quantity	24529	23402	
(3) Unit Cost	0.165	0.172	+4.24
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	3177.3	3156.4	
(2) Quantity	24472	23345	
(3) Unit Cost	0.130	0.135	+3.85

(U) The PAUC and APUC increases are due to quantity reductions in the round and quantity increases in the CLU. Since the round is the designated unit of measure, the increased CLU quantity and associated funding artificially increases the PAUC and APUC.

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13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	767.3	3158.7	-	3926.0
Previous Changes:				
Economic	+1.5	-84.5	-	-83.0
Quantity	-	-129.4	-	-129.4
Schedule	-	-18.9	-	-18.9
Engineering	+7.0	-	-	+7.0
Estimating	-7.7	+327.3	-	+319.6
Other	-	-	-	-
Support	-	-14.5	-	-14.5
Subtotal	+0.8	+80.0	-	+80.8
Current Changes:				
Economic	-	+2.5	-	+2.5
Quantity	-	+85.0	-	+85.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.2	-	-0.2
Other	-	-	-	-
Support	-	-14.2	-	-14.2
Subtotal	-	+73.1	-	+73.1
Total Changes	+0.8	+153.1	-	+153.9
Current Estimate	768.1	3311.8	-	4079.9

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	877.0	2914.1	-	3791.1
Previous Changes:				
Quantity	-	-61.5	-	-61.5
Schedule	-	-	-	-
Engineering	+7.3	-	-	+7.3
Estimating	-9.6	+247.2	-	+237.6
Other	-	-	-	-
Support	-	-5.3	-	-5.3
Subtotal	-2.3	+180.4	-	+178.1
Current Changes:				
Quantity	-	+73.0	-	+73.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.2	-	-0.2
Other	-	-	-	-
Support	-	-10.9	-	-10.9
Subtotal	-	+61.9	-	+61.9
Total Changes	-2.3	+242.3	-	+240.0
Current Estimate	874.7	3156.4	-	4031.1

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Economic adjustment for negative program change. (Economic)	N/A	+2.6
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
Quantity reduction of 24 rounds from 23,369 to 23,345. (Quantity)	-1.6	-1.3
Quantity increase of 550 Command Launch Units (CLUs) from 4,766 to 5,316. (Quantity)	+74.6	+86.3
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Increase in Initial Spares requirement associated with increase in CLUs. (QR) (Support)	+1.4	+2.0
Increase in Training Devices requirement associated with increase in CLUs. (QR) (Support)	+6.0	+7.7
Deleted Plant Closure requirement. (Support)	-10.4	-13.4
Supplemental to support OEF/OIF. (Support)	+2.8	+3.1
Program support costs previously reported to support fielding after last production lot now included in CLU flyaway cost. (Support)	-10.8	-13.7
 Procurement Subtotal	 +61.9	 +73.1

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	Changes								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.056	-0.009	+0.029	+0.029	+0.002	+0.022	--	+0.008	+0.082	

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.138	-0.003	+0.028	-0.001	--	+0.014	--	-0.001	+0.037	0.174

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	
0.048	-0.006	+0.017	+0.025	+0.001	+0.019	--	+0.007	+0.063	0.111

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	+0.023	-0.001	--	+0.014	--	-0.001	+0.031	0.142

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 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	OCT 1996	OCT 1996
Total Cost	N/A	3936.5	3926.0	4079.9
Total Quantity	N/A	70631	28501	23402
Prog Acq Unit Cost	N/A	0.1	0.1	0.2

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

a. Procurement --  
 (U) Multiyear I:  
 TI/Martin Joint Venture, Tucson AZ  
 DAAH01-97-C-0209, FFP  
 Award: May 31, 1997  
 Definitized: May 31, 1997

Current Contract Price			Initial Contract Price	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
\$762.2	N/A	6745	\$745.0	N/A

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$762.2	\$762.2

Explanation of Change:

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. All years have been delivered, therefore, contract will no longer be reported in the SAR.

(U) Multiyear II:  
 Raytheon/LM Joint Venture, Tucson AZ  
 DAAH01-00-C-0108, FFP  
 Award: August 7, 2000  
 Definitized: August 7, 2000

Current Contract Price			Initial Contract Price	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
\$1439.9	N/A	14123	\$1236.0	N/A

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1500.0	\$1500.0

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
+ 101.8	Options for FMS cases
+ 2.3	Options for Initial Spares
- 6.9	Reduction of FTT IS qty
- 0.8	Cost savings realized
+ 76.8	50% of FY04 US and Australia requirement
-----	
\$ 1439.9	Current Price

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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:

This is a four year firm-fixed-price, multi-service, multi-year contract. Program years 1, 2, 3, and 4 are funded and awarded. FY04 requirements were added in December 2003 via exercise of the remaining options. These were added at not-to-exceed prices, therefore currently funded at 50%.

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

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

<u>Appropriation</u>	<u>Prior Years (FY86-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	766.1	1.0	1.0	-	768.1
Procurement	2931.5	142.9	121.4	116.0	3311.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3697.6	143.9	122.4	116.0	4079.9

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

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

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

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				0.5	0.5
2004				0.9	1.0
2005				0.9	1.0
Subtotal	57			874.7	768.1

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	90.1	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	294.1	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	278.8	328.0	341.5
2000	2392	6.8	231.2	331.1	348.6
2001	2776	2.6	280.6	308.3	328.1
2002	4139	0.8	370.1	383.2	412.5
2003	1478		183.6	206.4	225.1
2004	901		94.8	129.1	142.8
2005	1038		108.9	107.9	121.3
2006			16.4	20.7	23.7
2007			21.8	25.4	29.6
2008			31.8	33.1	39.4

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

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 \$
2009			17.9	19.2	23.3
Subtotal	20792	98.7	2443.5	2862.3	3005.7

(U) Recurring flyaway dollars displayed in years 2006-2009 are associated with CLU production only. Rounds are the designated unit of measure, therefore no quantities are displayed.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	20849	98.7	2443.5	3737.0	3773.8
Navy	2553	8.6	242.6	294.1	306.1
Grand Total	23402	107.3	2686.1	4031.1	4079.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	57	57
Procurement	15309	15958

(U) Percent Total Program Quantities Delivered: 68.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3260.4

(U) Percent Total Program Expended: 79.9%

(U) Procurement deliveries include Army and Marine Corps rounds for FY94 through FY01. Deliveries are currently 1 month ahead of contract. Both plan and actual entries include projections through February 29, 2004.

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 2 level support concept: Field Maintenance and Sustainment Maintenance. Field Maintenance consists of visual inspection, Preventive Maintenance Checks and Services, exterior cleaning, battery replacement, Built In Test (BIT) check, re-verification of BIT/BITE

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

check, and removal/replacement of CLU external components from the ASL. Sustainment Maintenance consists of CLU internal repair, CLU component repair, and CLU overhaul.

(2) Maintenance of the round is a "wooden round" concept.

(3) Life Cycle Contractor Support (LCCS) 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. 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 specific replacement training, costs associated with permanent change of station, and base operations.

Data source: Javelin - Project Office Estimate, updated December 2003, 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	DRAGONII (ANTECEDENT) Avg Annual Cost for DRAGON Program
Mission Pay & Allowances	78.9	104.0
Unit Level Consumption	1.7	26.1
Intermediate Maintenance	0.0	0.4
Depot Maintenance	0.3	24.3
Contractor Support	21.9	0.0
Sustaining Support	1.7	5.6
Indirect Costs	13.6	40.5
Total	118.1	200.9

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

Total O&S Cost	Javelin	DRAGONII (ANTECEDENT)
BY\$ (In Millions)	2362.0	4018.0
TY\$ (In Millions)	4509.0	7670.3

Report Creation Date: 03/17/2004 12:59:35 PM

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N-21 MH-60S

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

PROGRAM: MH-60S

AS OF DATE: December 31, 2003

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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 william.shannon@navy.mil
4. Program Elements/Procurement Line Items:  
RDT&E:  
PE 0604212N Project H1709, H2415, H2772, H2773, H9213  
PE 0604216N Project H3053  
PROCUREMENT:  
APPN 1506 ICN 024000 (Navy)

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## **5. References:**

SAR Baseline (Production Estimate):

Defense Acquisition Executive (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), Maritime Interdiction Operations, 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 (ARGs) 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 block acquisition approach which includes 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 December 30, 2003, 60 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 (Serial No. 596-78-02) and Annex B Airborne Mine Countermeasures (Serial No. 597-75-02) 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

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

Helo. An Interim Requirements Letter (IRL) was approved on June 12, 2003 to further define the Armed Helo (Annex (A)) and to refine the associated performance requirements. These changes will be incorporated in the next revision of the MH-60S ORD, which is currently in process.

Initial Operating Capability (IOC) 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 40,000 hours have been flown to date on the aircraft, and optempo for the MH-60S continues to increase with eleven deployments completed and five 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 was not operationally suitable due to deficiencies in compatibility, availability, and human factors. VCD's have been issued by COMOPTEVFOR for compatibility and human factors based on expansion of shipboard launch & recovery envelopes, and the fielding of Avionics Operating Program (AOP) 11.5.1. As such, COMOPTEVFOR has found the MH-60S to be operationally effective, operationally suitable, and recommended for full fleet introduction (DTG R211305Z Aug 03).

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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
MS-II/LRIP	JUL 1998	JUL 1998	JUL 1998
Common Cockpit Critical Design Review	JUL 1998	JUL 1998	JUL 1998
LRIP First Flight	JAN 2000	JAN 2000	JAN 2000
Technical Evaluation Complete	JAN 2001	JAN 2001	JAN 2001
Operational Evaluation Complete	JAN 2002	JAN 2002	MAR 2002
MS-III (NAV SAE FRP)	AUG 2002	AUG 2002	AUG 2002
IOC	AUG 2002	AUG 2002	AUG 2002
LRIP 3 Contract Award	JUN 2001	JUN 2001	JUN 2001
AMCM Phase I Static Tow Test and OEI Test	DEC 1999	DEC 1999	DEC 1999
AMCM Phase II Dynamic Tow Test	JAN 2000	JAN 2000	JAN 2000
AMCM Phase III AN/AQS-20 Tow Demonstration	OCT 2000	OCT 2000	OCT 2000
AMCM Interim Process Review I	MAY 2000	MAY 2000	MAY 2000
AMCM Interim Process Review II	DEC 2001	DEC 2001	DEC 2001
AMCM Interim Process Review III	APR 2005	APR 2005	AUG 2005 (Ch-1)
AMCM IOC	JUN 2005	JUN 2005	NOV 2005
Armed Helo IOC	MAR 2006	MAR 2006	SEP 2006 (Ch-2)

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) AMCM Interim Process Review III changed from April 2005 to August 2005 based on delays in sensor testing and delivery to the integration effort, as well as Carriage Stream Tow and Recovery System (CSTRS) development and delivery.

(Ch-2) Armed Helo Initial Operational Capability (IOC) changed from March 2006 to September 2006 based on detailed schedule analysis.

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated 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
*VERTREP, External (lbs)	5,500	5,500 / 5,500	6,000	7500
*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)	150	150 / 120	TBD	150
*AMCM Hover Endurance (mins)	90	90 / 75	TBD	75
*AMCM Tow Endurance (mins)	75	75 / 60	TBD	60
*AMCM Hot Temp Tow Endurance (105 deg F)	45	45 / 30	TBD	35
*AMCM Tow Turns (25 knot wind) (deg/sec)	1.5	1.5 / 1.0	3.0	3.0
*AMCM Wind Speed (TOW) (KIAS)	30	30 / 25	25	25
*AMCM Block 2 Information Dissemination (%)	95	95 / 95	TBD	95
*AMCM Block 2 Information Integrity (%)	99	99 / 99	TBD	99
*AMCM Block 2 Interoperability (%)	100	100 / 100	TBD	100

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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>	
*Armed Helo	165	165 / 140	TBD	150	(Ch-1)
Airspeed-VMAX (KIAS)					
*Armed Helo FMC Rate (%)	60	60 / 56	TBD	60	
*Armed Helo MC Rate (%)	75	75 / 69	TBD	75	
*HC Interoperability (%)	100	100 / 100	TBD	100	
*HC Information Integrity (%)	99	99 / 99	TBD	99	
*HC Information Dissemination (%)	95	95 / 95	TBD	95	
*Armed Helo Quality of Service (%)	99	99 / 99	TBD	99	
*AMCM Operational Availability (%)	85	85 / 75	TBD	75	

(\*) Asterisk denotes Key Performance Parameter (KPP).

ACRONYMS:

AMCM - Airborne Mine Countermeasure  
 CSAR - Combat Search and Rescue  
 CV - Carrier  
 deg - Degree  
 F - Fahrenheit  
 FMC - Fully Mission Capable  
 HC - Helicopter Combat Support  
 KIAS - Knots Indicated Airspeed  
 KPPs - Key Performance Parameters  
 MC - Mission Capable  
 MINS - Minutes  
 MTBF - Mean Time Between Failures  
 MTTR - Mean Time to Repair  
 NM - Nautical Miles  
 SAR - Search and Rescue  
 SEC - Seconds  
 SWS - Special Warfare Support  
 VMAX - Velocity Maximum  
 VERTREP - Vertical Replenishment  
 VOD - Vertical On Board Delivery

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --  
(Ch-1) The Armed Helo Airspeed-VMAX (KIAS) has changed from 140 to 150 due to revised engineering estimates.

Note: A revision to the August 15, 2002 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)	390.9	390.9	389.2
Procurement	4879.2	4879.2	4926.2
Flyaway	(3567.2)		(3633.2)
Non-Recurring Flyaway	(463.4)		(479.6)
Total Flyaway	(4030.6)		(4112.8)
Other Weapon Systems	(7.6)		(5.0)
Other Support	(272.7)		(247.0)
Total Other Wpn Sys	(280.3)		(252.0)
Peculiar Support	(420.0)		(387.3)
Initial Spares	(148.3)		(174.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1998 Base-Year \$	5270.1	5270.1	5315.4
Escalation	823.7	823.7	656.5
Development (RDT&E)	(30.5)	(30.5)	(25.2)
Procurement	(793.2)	(793.2)	(631.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6093.8	6093.8	5971.9
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	237	237	237
Total	237	237	237

The Low Rate Initial Production (LRIP) is 37 aircraft which is 15% of the total procurement. The LRIP was appropriate due to the low risk of integrating Navy H-60 Seahawk components into the Army H-60 Blackhawk as well as allowing use of an existing Army multi-year contract for procurement. The initial LRIP decision was made at Milestone II in July 1998.

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (NOV 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1998 BY\$)	5270.1	5315.4	
(2) Quantity	237	237	
(3) Unit Cost	22.237	22.428	+0.86
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	4879.2	4926.2	
(2) Quantity	237	237	
(3) Unit Cost	20.587	20.786	+0.97

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	421.4	5672.4	-	6093.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.9	-42.6	-	-46.5
Other	-	-	-	-
Support	-	-15.3	-	-15.3
Subtotal	-3.9	-57.9	-	-61.8
Current Changes:				
Economic	-3.1	-6.2	-	-9.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+2.0	-	-	+2.0
Estimating	-2.0	-37.0	-	-39.0
Other	-	-	-	-
Support	-	-13.8	-	-13.8
Subtotal	-3.1	-57.0	-	-60.1
Total Changes	-7.0	-114.9	-	-121.9
Current Estimate	414.4	5557.5	-	5971.9

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

Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	390.9	4879.2	-	5270.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.0	+114.9	-	+112.9
Other	-	-	-	-
Support	-	-23.9	-	-23.9
Subtotal	-2.0	+91.0	-	+89.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+1.8	-	-	+1.8
Estimating	-1.5	-32.7	-	-34.2
Other	-	-	-	-
Support	-	-11.3	-	-11.3
Subtotal	+0.3	-44.0	-	-43.7
Total Changes	-1.7	+47.0	-	+45.3
Current Estimate	389.2	4926.2	-	5315.4

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-3.2
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Congressional plus up for AMCM Tow Cable Design. (Engineering)	+1.8	+2.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.3	+1.5
Congressional adjustments (Estimating)	-0.6	-0.7
Reduced engineering and logistics support (Estimating)	-2.2	-2.8
RDT&E Subtotal	+0.3	-3.1
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-6.3
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+1.6
Revised estimate based on Common Cockpit Multiyear contract award. (Estimating)	-33.4	-39.2

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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>
Rephasing of Ancillary Kit quantities to align with Navy Conops. (Estimating)	-0.8	+0.6
Adjustment for Current and Prior Inflation. (Support)	+0.6	+0.6
Increase in Initial Spares due to AMCM and Armed Helo. (Support)	+18.3	+21.0
Increase in Peculiar Support to Trainers. (Support)	+5.5	+8.0
Refinement of Other Weapon Systems cost estimate based on actual data. (Support)	-2.5	-2.8
Refinement of Other Support cost estimate based on actual data. (Support)	-33.2	-40.6
Procurement Subtotal	-44.0	-57.0

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
PAUC	Changes									PAUC
Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Prod Est	
19.00	-0.766	-0.164	-0.001	+2.21	+3.74	--	+1.69	+6.71	25.71	

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	
25.71	-0.039	+0.001	--	+0.008	-0.361	--	-0.123	-0.514	25.20	

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline										PUC
PUC	Changes									PUC
Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Prod Est	
18.68	-0.765	-0.147	-0.001	+1.12	+3.35	--	+1.69	+5.25	23.93	

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

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
23.93	-0.026	--	--	--	-0.336	--	-0.123	-0.485	23.45

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	JUL 1998	JUL 1998
Milestone III	N/A	SEP 2000	AUG 2002	AUG 2002
IOC	N/A	DEC 2001	AUG 2002	AUG 2002
Total Cost	N/A	3154.0	6093.8	5971.9
Total Quantity	0	166	237	237
Prog Acq Unit Cost	N/A	19.0	25.7	25.2

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

a. Procurement --

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

Target	Ceiling	Qty
\$906.4	N/A	82

Current Contract Price

Target	Ceiling	Qty
\$906.4	N/A	82

Estimated Price At Completion

Contractor	Program Manager
\$906.4	\$906.4

Explanation of Change:

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

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15a. Contract Information (Cont'd):

Common Cockpit Multiyear:  
Lockheed Martin Corp, Owego, NY  
N00019-04-C-0028, FFP  
Award: December 29, 2003  
Definitized: December 29, 2003

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$237.5	N/A	141

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$237.5	N/A	141	\$237.5	\$237.5

Explanation of Change:

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

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

a. 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> (FY06-12)	<u>Total</u>
RDT&E	222.4	60.4	81.2	50.4	414.4
Procurement	1487.1	426.2	419.4	3224.8	5557.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1709.5	486.6	500.6	3275.2	5971.9

b. Annual Summary -- MH-60S

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

<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>
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				48.8	51.5
2003				22.8	24.4
2004				55.8	60.4
2005				74.0	81.2
2006				30.8	34.3

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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 \$
2007				7.2	8.2
2008				3.4	3.9
2009				3.4	4.0
Subtotal				389.2	414.4

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	11.3	15.8	29.2	29.7
1999	5		131.0	133.6	137.7
2000	16		333.2	346.5	361.6
2001	15	6.0	201.8	302.9	319.4
2002	13	13.9	176.8	256.0	272.6
2003	15	47.2	241.4	339.5	366.1
2004	13	51.5	239.1	389.7	426.2
2005	15	49.5	253.7	377.6	419.4
2006	26	41.6	454.3	554.9	627.1
2007	30	81.4	457.5	599.7	690.5
2008	30	39.6	532.8	563.1	661.2
2009	40	118.0	453.0	742.2	889.0
2010	18	19.6	142.8	259.1	316.6
2011				17.3	21.5
2012				14.9	18.9
Subtotal	237	479.6	3633.2	4926.2	5557.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	237	479.6	3633.2	5315.4	5971.9

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	57	60

Percent Total Program Quantities Delivered: 25.3%

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

b. Total Expenditures To Date (In Millions of Dollars): \$ 1093.8

Percent Total Program Expended: 18.3%

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 MSII estimate provides the Operating and Support cost to support 237 MH-60S aircraft, with an operational service life period covering 30 years. The estimated costs do not include the AMCM or Armed Helo Missions.

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 for August 2005. Updated O&S estimates for the Armed Helo mission will be developed in support of Armed Helo IPR #2 planned for March 2006.

b. Costs -- (FY 1998 Constant (Base-Year) Dollars in Millions)

Cost Element	MH-60S Average Annual Cost 10 A/C Per Squadron	HH-60H 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
TY\$ (In Millions)	33927.0	36684.0

Report Creation Date: 03/21/2004 6:42:30 PM

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# D.O.D-4 JTRS WAVEFORM

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

**PROGRAM:** JTRS Waveform

**AS OF DATE:** December 31, 2003

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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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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (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, forming the foundation of wireless communications for Joint Vision 2010/2020. 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, Airborne Maritime and Fixed Station (AMF), and 5 have been identified. The Under Secretary of Defense designated Cluster 5 in an Acquisition Decision Memorandum (ADM), dated May 29, 2003.

Cluster 1 will meet Army ground requirements to continue force digitization efforts, Air Force Tactical Air Control Party (TACP) requirements, and rotary-wing 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 Multiband Intra Team Radio (MBITR) handheld requirements (Software Communications Architecture (SCA) compliant). Cluster 3 and 4 have been consolidated into the renamed JTRS AMF program and recognized in the Defense Acquisition Executive (DAE) JTRS ADM dated January 21, 2004. The AMF program addresses all airborne, maritime and fixed station requirements for all services. Cluster 5 will provide Handheld, Manpack, and Small Form Fit (embedded) radio sets. Space communication and air defense requirements will be addressed as the JTRS program evolves. The Assistant Secretary of Defense (Network Information and Integration) memoranda addressing Internet Protocol Version 6 (dated June 9, 2003) and Radio Frequency Equipment Acquisition Policy (JTRS operation above 2 GHz) (dated June 17, 2003) have expanded Waveforms requirements.

The JTRS Waveform Program will define, develop, validate, and evolve the JTRS SCA; acquire waveform software applications; acquire Crypto Equipment Applications (CEA); and perform architecture compliance testing of both Joint Tactical Radio (JTR) sets and waveform software.

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## **7. Executive Summary:**

A JTRS Program Review Defense Acquisition Board (DAB) was held on December 1, 2003. The Airborne/Maritime/Fixed Station (AMF) pre-system design and development request for proposal (RFP), merging Cluster 3 and Cluster 4 requirements, was approved for release, but the contract award can not be made until formal OSD approval of the Acquisition Strategy. The RFP was released on February 5, 2004. The Acquisition Decision Memorandum (ADM), dated January 21, 2004, provides guidance for central management of the JTRS development. The ADM also requested the Services to renew their commitment to the JTRS Joint Program Office (JPO) manpower requirements. A second JTRS Program Review DAB was held on January 22, 2004 to present an initial plan for strengthened, centralized management of the JTRS development program. The JTRS ADM, dated February 8, 2004, documenting this DAB identified the remaining open issues and actions required to further definitize the revised JTRS program management plan. In response to the PL 108-136 Congressional language, the Secretary of Defense provided a report to Congress on February 24, 2004 outlining the DOD JTRS Management Plan.

JTRS Waveform Program has completed all Critical Design Reviews (CDR) for the twenty-one waveforms (based on JTRS ORD, Revision 2.3, April 24, 2002) under the Cluster 1 contract. The JTRS JPO and Boeing are currently reviewing the Over-Target Baseline (OTB) replanning and schedules to assess impacts to waveform deliveries under the Cluster 1 contract. Later waveform delivery dates are being reported due to development design complexity for the Single Channel Ground and Airborne Radio System (Enhanced System Improvement Program) (SINCGARS ESIP), Have Quick II, Enhanced Position Location Reporting System (EPLRS), and Wideband Networking Waveform (WNW) waveforms. The Assistant Secretary of Defense (Network Information and Integration) memoranda addressing Internet Protocol Version 6 (dated June 9, 2003) and Radio Frequency Equipment Acquisition Policy (JTRS operation above 2 Ghz) (dated June 17, 2003) have also expanded WNW requirements.

The JPO continues to assess the programmatic impacts of the JTRS ORD, Version 3.2, dated April 9, 2003, and the JTRS Cluster 5 Acquisition Decision Memorandum (ADM), dated May 29, 2003.

Cryptographic Algorithms Contracts: The AIM contract was awarded December 12, 2002; the SIERRA contract was awarded January 18, 2003. The JTRS Waveform PM has negotiated the first two task orders for required waveforms with General Dynamics for the AIM contract, and Harris Corporation for the SIERRA contract for the cryptographic algorithm implementations required for Cluster 1 and the other Clusters.

The APCO 25 Waveform contract was terminated for convenience of the Government on November 19, 2003. It is anticipated that a draft Request for Proposal for the new APCO 25 waveform contract will be released late in the 2nd Quarter FY04 with an award 4th Quarter FY04.

The Secretary of Defense added \$25M RDT&E in FY04 and \$12M RDT&E in FY05 to the JTRS Waveform Program for the WARNET transition program. WARNET will provide tactical connectivity using JTRS surrogates and existing legacy communications

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

equipment to provide the Services a wideband, wireless, tactical, internet protocol-based network capability.

The Secretary of Defense's Report to Congress, in response to the requirement in the Fiscal Year 2004 National Defense Authorization Act (H.R. 1588, Sec. 213) and Public Law 108-136, addresses the development program for the Joint Tactical Radio System. The report provides a plan for implementing a new management structure for JTRS. A charter defining the roles and responsibilities of all Department of Defense organizations involved in the JTRS program, as well as the scope of the JTRS program related to technical, fiscal, managerial span, will be developed by the Army Acquisition Executive and recommended to the Defense Acquisition Executive by March 30, 2004.

The report to Congress also describes how the JTRS program will transition from the current decentralized structure to a single centralized organization in which the JTRS Cluster/Program Managers report directly to a JTRS Joint Program Executive Officer (JPEO) rather than to their respective Service Program Executive Officers (PEOs) and Acquisition Executives. The JTRS JPEO will report to a Lead Acquisition Executive. The charter will lay out specific authorities and responsibilities, however, the JTRS JPEO will be responsible for and have authority to direct all aspects of the JTRS acquisition management to include systems engineering, product certification, fiscal oversight, future development, and program control and reporting. The objective of this strengthened central authority is to enable integrated program management, which will allow the JTRS program to proceed as a cohesive program, rather than a collection of separate acquisition efforts. Only through a joint program office can JTRS meet its mission of delivering a truly internetworked, interoperable communications system, and develop the functionalities and capabilities to meet current and future needs of our forces in Joint and Coalition operations.

The Joint Staff has developed a single unified concept of operations (CONOPs) for all users of the Joint Tactical Radio System. This CONOPs provides a construct for supporting the information transport and supporting the network services requirements laid out by Joint Vision 2020 and the Global Information Grid (GIG) Capstone Requirements Document. The CONOPs describes a desired long-range outcome that focuses on information transport and network services supporting Net-Centric Operations and Warfare. The JTRS Network CONOPs (Version 4.1), signed on March 2, 2004, is aligned with the JTRS Strategic Plan that has been forwarded to the Defense Acquisition Executive for review and approval. The Joint Staff will provide the JTRS PEO with any new requirements for review and comment prior to validation.

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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
MS B	JUN 2002	JUN 2002	JUN 2002
JTeL IOC	AUG 2003	AUG 2003	JUL 2003 (Ch-1)
SINCGARS ESIP*	AUG 2004	AUG 2004	APR 2004 (Ch-2)
HAVE QUICK II*	AUG 2004	AUG 2004	MAY 2005 (Ch-3)
UHF DAMA SATCOM (181/182/183)*	SEP 2004	SEP 2004	OCT 2005
EPLRS*	MAR 2005	MAR 2005	OCT 2005 (Ch-4)
WNW*	OCT 2005	OCT 2005	DEC 2006 (Ch-5)
Link 16	OCT 2005	OCT 2005	OCT 2005
MS C (PDSS)	OCT 2006	OCT 2006	DEC 2006 (Ch-6)

\* Denotes Key Performance Parameter (KPP) waveforms based on the April 24, 2002 JTRS ORD (Revision 2.3).

## Acronyms:

DAMA - Demand Assigned Multiple Access  
EPLRS - Enhanced Position Location Reporting System  
ESIP - Enhanced System Improvement Program  
SATCOM - Satellite Communications  
SINCGARS - Single Channel Ground and Airborne Radio System  
UHF - Ultra High Frequency  
WNW - Wideband Networking Waveform

JTeL IOC: The JTRS Technology Laboratory (JTeL) Initial Operating Capability (IOC) Milestone was attained on July 31, 2003. The JTeL now has

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JTRS Waveform, December 31, 2003

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

the capability to demonstrate the following evaluations/assessments for any JTRS waveform and radio set: JTRS Software Communications Architecture (SCA) compliance testing, specification performance testing, Joint Interoperability Test Command (JITC) Interoperability Lab Testing and Security assessments. The JTeL Full Operation Capability (FOC) will be reached on October 1, 2004. The JTeL FOC will provide a greater automation capability for compliance and functionality testing, and a greater assessment capacity. These JTRS Testing processes are described in the JTRS Joint Test Evaluation Master Plan.

Milestone C (PDSS): The JTRS Waveform Program will enter Post Deployment Software Support (PDSS) when JTeL IOC has been met and all the threshold waveforms are developed, assessed, and certified IAW the JTRS Joint 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 ORD (Version 2.3, dated April 24, 2002). Changes in subsequent waveform development efforts could change the Milestone C (PDSS).

**b. Current Change Explanations --**

Although waveform deliveries have slipped as indicated, the JTRS JPO provides waveform software engineering releases and interim builds to support the individual Cluster radio hardware and software integration schedules. There are no schedule baseline breaches.

(Ch-1) The JTRS Technology Laboratory (JTeL) Initial Operating Capability (IOC) Milestone was attained on July 31, 2003, one month earlier than required by the Acquisition Program Baseline.

(Ch-2) The JTRS PM predicts that the SINCGARS(ESIP) Waveform delivery will slip by four months (from December 2003 to April 2004) due to changes in test procedures.

(Ch-3) The JTRS Waveform PM predicts that the HAVE QUICK II waveform delivery will slip by 9 months (from August 2004 to May 2005) based on the a 4 month delay in contract award and 5 months slip due to a change in the testing process.

(Ch-4) The JTRS Waveform PM predicts that the EPLRS waveform delivery will slip 7 months (from March 2005 to October 2005) based on Boeing's final subcontract definitization and protracted proprietary data negotiations with Raytheon.

(Ch-5) The JTRS Waveform PM predicts that the WNW waveform delivery will slip 14 months (from October 2005 to December 2006). The WNW waveform is a spiral development delivering operational capabilities first to Cluster 1 starting with Early Operational Assessment in FY05 continuing through to Multi-Service Operational Test and Evaluation in FY07. Spiral development is being driven by waveform technical complexity, security requirements, requirement considerations needed to evaluate the required numbers of

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JTRS Waveform, December 31, 2003

9b. Schedule (Cont'd):

operational nodes and data throughput.

(Ch-6) The JTRS FM predicts MS C(PDSS) will slip by two months (from October 2006 to December 2006) due to slip in WNW waveform delivery. All Threshold waveforms must be delivered to meet MS C exit criteria.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
SINCGARS ESIP*	30-88MHz	30-88MHz/ 30-88MHz	TBD	30-88MHz
	25KHz	25KHz / 25KHz		25KHz
	16Kbps	16Kbps / 16Kbps		16Kbps
HAVE QUICK II*	225-400	225-400 / 225-400	TBD	225-400
	MHz	MHz / MHz		MHz
	25KHz	25KHz / 25KHz		25KHz
	16Kbps	16Kbps / 16Kbps		16Kbps
UHF DAMA SATCOM (181/182/183)*	225-400	225-400 / 225-400	TBD	225-400
	MHz	MHz / MHz		MHz
	5 and	5 and / 5 and		5 and
	25KHz	25KHz / 25KHz		25KHz
	64Kbps	64Kbps / 64Kbps		64Kbps
EPLRS*	420-450	420-450 / 420-450	TBD	420-450
	MHz	MHz / MHz		MHz
	3MHz	3MHz / 3MHz		3MHz
	(57Kbps	(57Kbps / (57Kbps		(57Kbps
	VHSIC	VHSIC / VHSIC		VHSIC
	SIP	SIP / SIP		SIP
	114Kbps	114Kbps / 114Kbps		114Kbps
	VECP)	VECP) /		VECP)
WNW*	2M-2GHz	2M-2GHz / 2M-2GHz	TBD	2M-2GHz
	Scalable	Scalable/ Scalable		Scalable
	BW,BPS	BW,BPS / BW,BPS		BW,BPS
Link 16	(960-121	(960-121/ (960-121	TBD	(960-121
	5MHz)	5MHz) / 5MHz)		5MHz)
	3MHz	3MHz / 3MHz		3MHz
	118/236	118/236 / 118/236		118/236
	Kbps	Kbps / Kbps		Kbps
	w/FEC	w/FEC / w/FEC		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

DAMA - Demand Assigned Multiple Access

EPLRS - Enhanced Position Location Reporting System

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JTRS Waveform, December 31, 2003

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

ESIP - Enhanced System Improvement Program  
 FEC - Forward Error Correction  
 SATCOM - Satellite Communications  
 SINCGARS - Single Channel Ground and Airborne Radio System  
 SIP - System Improvement Program  
 UHF - Ultra High Frequency  
 VECF - Value Engineering Change Proposal  
 VHSIC - Very High Speed Integrated Circuit  
 WNW - Wideband Networking Waveform

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)	812.9	812.9	885.5
Procurement	0.0	0.0	0.0
Total Flyaway			(0.0)
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 2002 Base-Year \$	812.9	812.9	885.5
Escalation	101.5	101.5	96.8
Development (RDT&E)	(101.5)	(101.5)	(96.8)
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 \$	914.4	914.4	982.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	N/A	N/A	0
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 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, 2003

**12. Unit Cost Summary:**

	UCR Baseline (JUN 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	812.9	885.5	
(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 waveform software applications, cryptographic algorithms, and the software communications architecture (SCA).

**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	+64.4	-	-	+64.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+37.0	-	-	+37.0
Estimating	-71.1	-	-	-71.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+30.3	-	-	+30.3
Current Changes:				
Economic	-70.7	-	-	-70.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+41.5	-	-	+41.5
Estimating	+66.8	-	-	+66.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+37.6	-	-	+37.6
Total Changes	+67.9	-	-	+67.9
Current Estimate	982.3	-	-	982.3

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JTRS Waveform, December 31, 2003

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

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	+34.1	-	-	+34.1
Estimating	-50.7	-	-	-50.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-16.6	-	-	-16.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+39.3	-	-	+39.3
Estimating	+49.9	-	-	+49.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+89.2	-	-	+89.2
Total Changes	+72.6	-	-	+72.6
Current Estimate	885.5	-	-	885.5

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-70.7
Adjustment for Current and Prior Inflation. (Estimating)	-4.7	-4.4
Increase JPO Manpower (Engineering)	+5.7	+6.0
New JTRS ORD 3.2 Waveforms (Engineering)	+15.1	+16.1
Network Data Link for Future Combat Systems (Engineering)	+18.5	+19.4
Correction for 2002 Inflation Indices Error (Estimating)	+54.6	+71.2
RDT&E Subtotal	+89.2	+37.6

Note: The 2002 SAR was based on on incorrect 2003 Inflation Indices. The \$71.2M (TY) adjustment compensates for the incorrect 2002 SAR economic variance.

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JTRS Waveform, December 31, 2003

**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

PJC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	N/A

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	DEC 2006
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	914.4	N/A	982.3
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 waveform software applications, cryptographic algorithms, and the software communications architecture (SCA). Each individual Cluster program will field JTRS sets to meet a Cluster Initial Operating Capability (IOC).

Milestone C is Post Deployment Software Support (PDSS) phase of the JTRS program when the JTeL IOC has been met and all the threshold waveforms are developed, assessed, and certified in accordance with the JTRS Joint Test Evaluation Master Plan.

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JTRS Waveform, December 31, 2003

**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 Program Manager (PM) WIN-T Cluster 1 contract which develops the first 21 waveforms. This price represents the development of the first twenty-one (21) JTRS waveforms acquired under the Cluster 1 System Development and Demonstration (SDD) contract with The Boeing Company.

a. RDT&E --	Initial Contract Price		
JTRS Cluster 1:	Target	Ceiling	Qty
The Boeing Company, Anaheim, CA			
DAAB07-02-C-C403, CPAF	\$156.8	\$156.8	0
Award: June 24, 2002			
Definitized: June 24, 2002			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$156.7	\$156.7	0	\$213.7	\$213.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-1.4	\$-3.1
Cumulative Variances To Date (01/29/04)	\$-19.3	\$0.2
Net Change	\$-17.9	\$3.3

Explanation of Change:

The reported unfavorable net cost variance (\$ -17.9M) is only for the JTRS Waveform Program portion of the Cluster 1 SDD contract. The Wideband Networking Waveform (WNW) continued to be the major cost driver as a result of extensive rework in generating waveform specification documentation and design. In addition, the contractor made significant investment in management and engineering resources in an attempt to improve the quality of documentation, as well as curb schedule variances that resulted in increased overall costs.

The favorable net schedule variance (\$ +3.3M) is a result of the contractor's implementation of an Over-Target Baseline (OTB). All work that was originally scheduled for completion by the end of December 2003 that had not been performed by then was replanned into future periods and resulted in the elimination of all previously reported negative schedule variances.

Contract Comments:

An analysis by the JTRS JPO and PM WIN-T of the total Cluster 1 Contract Work Breakdown Structure (CWBS) results in an allocation of contract costs that establishes the current Contract Target and Ceiling Prices of \$156.7M for the JTRS Waveform Program. The Target and Ceiling Prices of \$156.7M are based on a Negotiated Contract Price of \$138.8M plus \$1.1 of Authorized Unpriced Work, \$4.2M Base Fee and \$12.6M Award Fee.

The WIN-T Cluster 1 PM authorized Boeing to implement an OTB for the

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JTRS Waveform, December 31, 2003

15. Contract Information (Cont'd):

Cluster 1 EVMS Performance Measurement Baseline (PMB). Boeing completed implementation of their new OTB PMB in the January 2004 Cost Performance Report (CPR). As part of the OTB process, the Contractor conducted a comprehensive 'grass roots' Estimate at Completion (EAC) analysis. The Government performed an Integrated Baseline Review (IBR) in February 2004 that included an analysis of the contractor's OTB EAC. Boeing and its major subcontractor team members are in the process of addressing the Action Item write-ups from the review. Until completion of the Government's IBR process, the JPO Program manager's 'Current' EAC will be equal to the Contractor's OTB EAC. The addition of the OTB budgets is reflected in the Earned Value Management System performance data above.

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	133.3	121.4	454.3	982.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	273.3	133.3	121.4	454.3	982.3

b. Annual Summary -- Waveforms

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>
1998				11.4	11.0
1999				13.8	13.4
2000				36.0	35.5
2001				59.9	59.8
2002				90.0	90.7
2003				61.6	62.9
2004				128.8	133.3
2005				115.6	121.4
2006				66.7	71.2
2007				52.6	57.2
2008				25.8	28.6
2009				23.9	27.0

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JTRS Waveform, December 31, 2003

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 \$
2010				11.8	13.6
2011				11.8	13.9
2012				11.8	14.1
2013				11.8	14.4
2014				11.8	14.7
2015				11.8	15.0
2016				11.7	15.2
2017				11.7	15.5
2018				11.7	15.8
2019				11.7	16.1
2020				11.7	16.4
2021				11.7	16.8
2022				11.7	17.1
2023				11.7	17.4
2024				11.6	17.7
2025				11.7	18.1
2026				11.7	18.5
Subtotal				885.5	982.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				885.5	982.3

17. Delivery/Expenditure Information:

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

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 232.6

Percent Total Program Expended: 23.7%

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JTRS Waveform, December 31, 2003

**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 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: 03/19/2004 10:26:57 AM

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# 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, 2003

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Program Manager Assembled  
Chemical Weapons Alternatives

1. Designation and Nomenclature (Popular Name): Chemical Demilitarization

2. DoD Component: Army

3. Responsible Office and Telephone Number:

AMSCM-D  
5183 Blackhawk Road  
APG-EA, MD 21010-5424

Mr. Michael A. Parker  
Assigned: February 18, 2003  
DSN 584-4364; COMM 410-436-4364  
michael.a.parker@us.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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04-C-0643

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Chem Demil, December 31, 2003

## **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 Alt's

SAR Baseline (Production Estimate):

DAE Approved APB 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 Acquisition Program Baseline (APB), dated April 2, 2003, contains two end items that reflect the effort to eliminate all declared U.S. lethal chemical warfare materiel (CWM), former chemical weapons production facilities, and recovered CWM: CDP and Assembled Chemical Weapons Assessment [now Alternatives] (ACWA). Under this structure, the CSDP, ATAP, 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 eliminate the unitary stockpile of lethal CWM stored at Deseret Chemical Depot, UT; Anniston Army Depot, AL; Pine Bluff Arsenal, AR; Umatilla Chemical Depot, OR; and formerly at Johnston Island (JI) in the Pacific (all chemical agent at JI has 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

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Chem Demil, December 31, 2003

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

the activities of the various organizations involved in accomplishing this mission. On January 17, 1997, the DAE authorized the U.S. Army to prepare an environmental impact analysis (National Environmental Policy Act 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 (ADMs) 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 (NECD), 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 (DoD) Appropriations Act. NSCMP activities are divided into four categories: binary CWM disposal, destruction of former U.S. chemical weapons production facilities, miscellaneous CWM disposal, and recovered CWM disposal. The Product Manager for Non-Stockpile Chemical Materiel also provides storage and transportation, planning, and disposal support to remediation activities being conducted at active DoD installations and at formerly used defense sites.

**Chemical Stockpile Emergency Preparedness Program (CSEPP)**

The CDP includes funding for CSEPP. CSEPP is an effort that is complementary to CSDP, ATAP, and ACWA to enhance protection of the civilian population, the workers involved in the destruction effort, and the environment during storage activities. 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 ALTERNATIVES (ACWA)**

The Program Manager for ACWA (PMACWA) is performing a portion of the CWM elimination mission. In 1996, 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, DoD 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 CWM elimination mission that PMACWA performs is being reported under the ACWA end item.

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Chem Demil, December 31, 2003

## **7. Executive Summary:**

This Selected Acquisition Report (SAR) details impacts to cost, schedule, and performance since last reported in the December 2002 SAR (submitted April 2003). This report provides a status of the Chemical Demilitarization Program (CDP) and the Assembled Chemical Weapons Alternatives (ACWA) Program. Although the as of date for this report is technically December 31, 2003, where possible, significant events that have occurred since that date 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 CDP from the Assistant Secretary of the Army (Installations and Environment) to the Assistant Secretary of the Army (Acquisition, Logistics and Technology) (ASA(ALT)). In conjunction with this transfer, the U.S. Army Chemical Materials Agency (CMA) was provisionally established under ASA(ALT) and the U.S. Army Materiel Command (AMC) to safely and securely store the chemical stockpile, and safely and effectively destroy all CWM and related material, while ensuring maximum protection for the public, the personnel involved in the destruction effort, and the environment. CMA was formally established in December 2003.

The Director, CMA, is assisted by two Senior Executive Service level deputies: the Program Manager for the Elimination of Chemical Weapons (PM ECW) and the Director, Operations. The PM ECW is responsible for construction and systemization of the Chemical Stockpile Disposal Project (CSDP) and the Alternative Technologies and Approaches Project (ATAP) chemical agent disposal facilities (CDFs), the Non-Stockpile Chemical Materiel Product (NSCMP), and support to the Defense Threat Reduction Agency's Cooperative Threat Reduction Program (which is not funded through the Chemical Agents and Munitions Destruction, Army account). The Director, Operations, is responsible for chemical stockpile storage, operation, and closure of the CSDP and ATAP facilities, as well as the Chemical Stockpile Emergency Preparedness Program (CSEPP) and the Center for Treaty Implementation and Compliance (which is not funded through the Chemical Agents and Munitions Destruction, Army account).

The Acquisition Program Baseline (APB), dated April 2, 2003, divides the program into two end items, CDP (the CMA-managed portion of the chemical demilitarization activities) and ACWA. The APB reflects the current management structure of the program.

Both CMA and ACWA continue to progress toward the elimination of U.S. chemical weapons and materiel, while complying with Chemical Weapons Convention (CWC) requirements.

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 of the public, workers, or the environment. Program improvements that enhance safety and environmental compliance and help to control costs and schedule are routinely incorporated.

The following destruction data reflect both the original stockpile and the

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Chem Demil, December 31, 2003

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

stockpile declared at entry into force (EIF) of the CWC (April 1997). Quantities destroyed since EIF are shown in parentheses. As of February 15, 2004, CMA facilities located in UT, MD, AL, and the Pacific Basin have destroyed 8,539 tons of chemical agent and 1,378,188 munitions, representing 27.1 percent of the U.S. chemical agent stockpile (measured in U.S. tons of chemical agent). This reflects an addition of 456 tons to the quantity reported in the last annual SAR.

Agent destruction operations are complete at the Johnston Atoll Chemical Agent Disposal System (JACADS). At the Tooele Chemical Agent Disposal Facility (TOCDF), elimination of the chemical weapons stockpile stored at Deseret Chemical Depot, (DCD), UT, continues. After meeting all prerequisites, agent destruction operations commenced at the Accelerated Aberdeen Chemical Agent Disposal Facility (Accelerated ABCDF) on April 23, 2003, and at the Anniston Chemical Agent Disposal Facility (ANCDF) on August 9, 2003.

In October 2003, a request was approved by the Organisation for the Prohibition of Chemical Weapons for an extension of the CWC 45 Percent Destruction milestone (April 29, 2004) to December 2007. An administrative change is being made to the APB to adjust the objective and threshold dates for this milestone.

On January 9, 2004, the United States met its CWC Chemical Weapons Production Facility 80 Percent Destruction milestone, 16 months ahead of the April 2005 requirement.

Executive Order (EO) 13148, effective April 2000, requires government facilities to establish and implement an ISO 14001-like Environmental Management System (EMS) by December 2005. ISO 14001 is a structured approach to managing the sites' environmental actions and impacts on the environment. The CMA Environmental Office developed and initiated an EMS program to comply with the EO 13148 requirement, and teamed with the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) to establish an EMS at each of the CDFs. The Environmental Office assists the CDFs in establishing the program and the USACHPPM audits the CDF program to ensure that it is in conformance with the EMS requirements. The CDFs are on schedule to be compliant by the required deadline.

#### CHEMICAL STOCKPILE DISPOSAL PROJECT (CSDP)

##### Johnston Atoll Chemical Agent Disposal System (JACADS)

On November 4 and 5, 2003, final closure ceremonies for the JACADS facility were held in Honolulu, HI, and on JI. These ceremonies marked not only the safe and successful completion of destruction of the total stockpile of lethal chemical weapons stored at Johnston Atoll (including the North Atlantic Treaty Organization deterrent chemical weapons stockpile moved to JI in 1990), but also the first dismantlement, decontamination, and closure of a CDF.

As of December 2003, all CMA and SC personnel have departed JI and the facility closure phase is complete. All systems, structures, and components of the

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demilitarization plant have been decontaminated and dismantled in accordance with the Resource Conservation and Recovery Act (RCRA) permit conditions.

Closure verification sampling has been completed and samples are currently being analyzed. Ecological and human health risk assessments (E/HRA), based on the results of the closure verification sampling, will be performed in Fiscal Year (FY) 2004. Any further remediation, if needed, will be based on the results of E/HRA. The closeout of the JACADS environmental permits and contract continues and is scheduled to be completed by 4Q FY 2004.

**Tooele Chemical Agent Disposal Facility (TOCDF)**

Elimination of the chemical weapons stockpile stored at DCD, UT, continues. As reported in the previous SAR, destruction of all nerve agent GB stored at DCD was completed on March 15, 2002. The VX agent destruction campaign commenced on March 28, 2003, and is ongoing. As of February 15, 2004, TOCDF has destroyed 6,301 tons of chemical agent and 946,782 munitions, representing 46.2 percent of the DCD stockpile and 20 percent of the U.S. chemical agent stockpile (measured in U.S. tons of chemical agent).

On May 3, 2003, the TOCDF Automatic Continuous Air Monitoring System (ACAMS) alarmed, indicating the presence of chemical agent VX in the observation corridors and Unpack Area. Personnel on the site masked, and the observation corridors were declared off limits. Depot Area Air Monitoring System tube analyses confirmed the presence of VX. Rocket processing was suspended while the incident was investigated. After initial actions to contain the contamination, agent level readings returned to and remained at a level below quantification. Results from an investigation of the incident indicated that swing-gate check valves rather than the specified spring-activated check valves were installed in pumps involved in processing spent decontamination solution (SDS). This resulted in agent vapors migrating to various sumps located in the Munitions Processing Bay and entering the SDS room and the observation corridors. No personnel were exposed to agent during the incident, and there was no release outside of engineering controls to the environment. Operations resumed on May 8, 2003.

Despite VX processing having been halted in the past due to quality (attention to detail) issues, the SC has proactively addressed problems and implemented corrective actions, indicating a positive culture change. Toward the end of October 2003, increased moisture in certain Depot Area Air Monitoring System (DAAMS) sampling lines resulted in poor laboratory results from the analyses of VX agent in DAAMS tubes. The disposal process remained intermittent and the Liquid Incinerator (LIC) #2 agent trial burn (ATB) was delayed until necessary corrective actions were completed. The DAAMS sample collection probe was modified to protect the samples from moisture, and processing resumed in early January 2004. The LIC #2 ATB was completed in late January 2004.

A depot-wide Chemical Surety Inspection (CSI) was conducted by the Department of the Army Inspector General (DAIG) in May 2003. TOCDF passed the CSI with no failing deficiencies.

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On September 18, 2003, TOCDF received notification from the Utah Division of Solid and Hazardous Waste (DSHW) that a temporary authorization request (TAR) for modification of the Metal Parts Furnace (MPF) Discharge Airlock (DAL) monitoring requirements was approved. The modification results from lessons learned at JACADS from an incident that occurred in August 2002. (As reported in the last annual SAR, VX readings in excess of the waste control limit for VX in solids were confirmed at JACADS after sludge and other secondary wastes had been processed through the MPF.) The TAR approval letter, included a notification to TOCDF that the DSHW had elevated the original Class 2 permit modification request to a Class 3, based on "significant public concern and the complexity of the modification." This requires an additional 45-day public comment period prior to DSHW rendering a final decision. If the Utah DSHW does not approve the modified monitoring procedures for TOCDF, it is estimated that the overall TOCDF schedule will stretch by a minimum of 6 months due to the extended time required to process waste through the MPF.

During a Deactivation Furnace System (DFS) ATB/Toxic Substances Control Act (TSCA) demonstration burn conducted in July 2003, TOCDF received data that indicated a higher than anticipated level of polychlorinated biphenyls (PCBs) in gas samples collected during the test burn. The SC conducted an investigation regarding potential sources of contamination and discovered that the discrepancies were associated with the tubing material in the sampling line. The TSCA demonstration portion of the ATB was conducted again through a series of mini-burns and a trial burn. The mini-burns were completed on October 28, 2003. The trial burn was successfully completed on November 16, 2003. Processing of 51 VX M56 warheads, packaged in PCB-containing shipping and firing tubes, was completed on November 9, 2003, completing the VX M56 warhead campaign. On November 17, 2003, all remaining M55 rockets were processed, completing the VX M55 rocket campaign.

**Anniston Chemical Agent Disposal Facility (ANCDF)**

After meeting all prerequisites, agent destruction operations commenced at the ANCDF on August 9, 2003. Elimination of the chemical weapons stockpile stored at Anniston Army Depot (ANAD), AL, continues. As of February 15, 2004, ANCDF has destroyed 99 tons of chemical agent and 18,537 munitions, representing 4.4 percent of the ANAD stockpile and 0.31 percent of the U.S. chemical agent stockpile (measured in U.S. tons of chemical agent). Unrestricted operations commenced in October 2003, following installation of collective protection systems in schools and community facilities. The LIC and DFS ATBs for drainable rockets were completed in November 2003, and gelled rocket processing began in December 2003. The gelled rocket DFS ATB is scheduled to begin in March 2004.

A depot-wide CSI was conducted by the DAIG in September 2003. ANCDF passed the CSI with no failing deficiencies.

On February 4, 2004, an Automated Continuous Air Monitoring System (ACAMS) unit detected a minute concentration of agent in the observation corridor. A DAAMS

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unit later confirmed that agent was present in the corridor. Shortly before the alarm, there had been a toxic area egress of Level A entrants in the airlocks adjacent to this corridor. There was no one in the corridor when the ACAMS alarmed. There was no agent outside of engineering controls and no one was harmed or exposed to agent. Once DAAMS confirmation was obtained, the agent detection results were reported to the Anniston Chemical Activity (ANCA) Emergency Operations Center, who reported the information to local and state emergency management agencies. A press release describing the event was released to the local media. An assessment and root cause analysis on how agent migrated into the observation corridor indicated the need to reinforce personnel decontamination techniques, which was then accomplished via a site safety stand-down.

On February 17, 2004, the Headquarters, Department of the Army, Office of the Chief, Public Affairs, Community Relations Division announced its annual award winners for exemplary public affairs community relations programs. The ANCDF public affairs staff was recognized under the heading of "Special Events" and awarded a first place prize for its community relations program in support of the start up of agent operations at the ANCDF in 2003. This award and event reflect favorably on Anniston, the Chemical Demilitarization Program, and Army public affairs operations.

An ACAMS unit detected agent in the heated discharge conveyor (HDC) bin enclosure on February 27, 2004. This enclosure, part of the DFS, is within engineering controls. A near-by DAAMS unit confirmed the presence of agent. ACAMS low-level detections continued throughout the weekend until February 29, 2004, when ACAMS indications dropped below the level of quantification, after which, the HDC bin was successfully changed out. The HDC bin was placed in the Toxic Maintenance Area, where additional monitoring and composite samples were extracted for further analyses. The ANCA Commander declared the occurrence a chemical event and the Emergency Operations Center reported it as such. There was no agent outside engineering controls and no harm to facility employees or the community. The event and ACAMS information were reported to the local and state emergency management agencies.

**Umatilla Chemical Agent Disposal Facility (UMCDF)**

Systemization of all equipment required for sarin (GB) operations continues. The DFS surrogate trial burn (STB) began on September 27, 2003, and was completed on October 13, 2003. Results indicate that the Pollution Abatement Filter System (PFS) must be used to ensure compliance with RCRA and Maximum Achievable Control Technology Rule emissions standards. The Oregon Department of Environmental Quality (ODEQ) had required that UMCDF repeat the DFS STB; however, an agreement has been reached to not require a repeat if an adequate demonstration of system performance and repairs are completed during the integrated plant run.

The first public comment period ended on November 17, 2003, for the permit modification request (PMR) submission to change the RCRA emission point of compliance for all furnaces from upstream to downstream of the PFS (which would

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enable UMCDF to take credit for utilization of the PFS in metals removal). The second comment period began on January 14, 2004. The extra time required to obtain approval of the PMR may impact the UMCDF schedule.

The MPF STB was completed in February 2004.

The UMCDF schedule has been revised to reflect the PM's estimate of July 2004 for the start of agent operations. This is due to issues encountered with systemization and a recently defined requirement from the State of Oregon. The State will need approximately 120 days after the SC declares operational readiness to independently assess readiness and satisfaction of permit requirements. The ODEQ has indicated it does not plan to conduct the 120-day period in conjunction with the SC's operational readiness review process.

A decision in the previously reported lawsuit filed by three anti-incineration groups, along with residents of Umatilla and Morrow Counties, OR, against the ODEQ (with the Army and the Washington Demilitarization Company [the SC] intervening) was expected by December 31, 2003; however, this was postponed due to the plaintiffs' filing a Motion for Sanctions against a Department of Justice attorney, claiming intimidation of a witness. Oral arguments on the Motion were held on February 26, 2004. The judge ruled in favor of the Army and no sanctions were assigned. Closing briefs are due in 3Q FY 2004. An adverse decision on this lawsuit could potentially result in a delay in starting agent disposal operations at UMCDF.

#### Pine Bluff Chemical Agent Disposal Facility (PBCDF)

On October 30, 2003, the Arkansas Supreme Court delivered a unanimous opinion confirming the Jefferson County Court's April 2002 decision to uphold the issuance of the PBCDF RCRA and Air permits. Opponents had appealed the April 2002 decision in May 2002.

Systemization activities are ongoing. The DFS STB was successfully completed on November 5, 2003. Shakedown of the MPF began on December 13, 2003. The MPF STB was conducted from January 5 to 7, 2004.

The PBCDF start of agent operations date has slipped from 3Q FY 2004 to 4Q FY 2004 due to an aggressive systemization schedule, higher than expected maintenance requirements, and a long-term staffing shortage in key operations and maintenance positions.

#### ALTERNATIVE TECHNOLOGIES AND APPROACHES (ATAP)

#### Accelerated Aberdeen Chemical Agent Disposal Facility (Accelerated ABCDF)

After meeting all prerequisites, agent destruction operations commenced at the ABCDF on April 23, 2003. Elimination of the chemical weapons stockpile stored at the Edgewood Area of Aberdeen Proving Ground (APG-EA), MD, continues. As of February 15, 2004, the Accelerated ABCDF has drained 137 ton containers (TCs) and neutralized 107 tons of chemical agent, representing 6.6 percent of the

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APG-EA stockpile and 0.34 percent of the U.S. chemical agent stockpile (measured in U.S. tons of chemical agent).

TC draining operations began on April 23, 2003. The first low-volume agent reactor batch was processed and verified destroyed on May 1, 2003. Shipment of hydrolysate to the DuPont treatment, storage, and disposal facility (TSDF) began on June 17, 2003.

Use of manual gloveboxes to drain agent from the TCs was successful; however, exterior decontamination and clearing the drained TCs proved to be very difficult. Various approaches and techniques were instituted, but did not significantly improve production rates.

In addition to TC clearing, other process-related challenges were encountered during the system startup phase of this first-of-a-kind facility. To address these issues, the SC instituted a production outage on September 19, 2003. This action was taken to enable the SC to design, construct, and test monitoring annexes to alleviate the TC clearing problems. Modifications were also made to the plant to address other process-related issues identified during startup.

On January 15, 2004, the plant restarted and demonstrated the effectiveness of the plant modifications.

On February 24, 2004, TC operations were suspended due to problems with agent feed pumps. The SC is working to resolve the issue by replacing the pumps and expects to resume agent neutralization operations by mid to late March 2004.

These problems have caused schedule delays and increases in project cost.

Construction of the TC Cleanout (TCC) building was completed on June 19, 2003. Systemization was concluded with a successful integrated operations demonstration on January 9, 2004.

A depot-wide CSI was conducted by the DAIG in June 2003. Issues were identified in two of five areas inspected: surety management and external support. On June 6, 2003, agent operations were suspended until the concerns were resolved. Operations resumed on June 18, 2003, after corrective actions were completed to the satisfaction of the DAIG. A limited re-inspection was conducted in September 2003. There were no failing deficiencies in the re-inspection.

**Accelerated Newport Chemical Agent Disposal Facility (Accelerated NECDF)**

In October 2003, Parsons, the NECDF SC, issued a stop work order to Perma-Fix, the commercial TSDF that Parsons initially selected to destroy hydrolysate resulting from the Accelerated NECDF VX neutralization process, and began efforts to terminate the contract for convenience because of potential permitting issues with the Perma-Fix facility. The Army and Parsons are evaluating other options for hydrolysate disposal.

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In December 2003, the Project Manager for Alternative Technologies and Approaches announced that commercial disposal is still the recommended approach for the disposal of hydrolysate at Newport. The public comment period on National Environmental Policy Act documentation for a prospective TSDF is scheduled to end on March 19, 2004.

As of January 2004, the SC turned over the final system from construction to systemization. Plant systemization is progressing. Parsons is working to turn over systems to operations and begin agent operations in 3Q FY 2004 (Apr-Jun). However, if the planned use of a commercial TSDF to dispose of the hydrolysate falls through, destruction operations would be delayed a minimum of 8 months, potentially resulting in a Selected Acquisition Report breach.

### NON-STOCKPILE CHEMICAL MATERIEL PRODUCT (NSCMP)

The Product Manager for Non-Stockpile Chemical Materiel (PMNSCM) 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 PMNSCM continues to meet all of its performance requirements, and the test and evaluation program is on track.

### Mobile Munitions Assessment System (MMAS)

Three MMAS units are available(at Aberdeen Proving Ground [APG], MD; Pine Bluff Arsenal [PBA], AR; and Dugway Proving Ground [DPG], UT) to assess suspect CWM. In October 2003, the MMAS was deployed to the Wendover Bombing Range at Hill Air Force Base, UT, to assist in assessing a large scrap pile of munitions. None of the munitions assessed contained CWM. The MMAS also deployed to the former Fort McClellan, AL, in December 2003 to assess recovered munitions. None of the items assessed contained CWM.

### Rapid Response System (RRS)

Environmental documentation updates required for RRS operations at Fort Richardson, AK, were completed in a coordinated effort among installation, state, and federal environmental agencies. The RRS safely conducted Chemical Agent Identification Set (CAIS) disposal operations at Fort Richardson from July 1 to 24, 2003.

In preparation for RRS operations at PBA, AR, the Air permit application was submitted to the Arkansas Department of Environmental Quality (ADEQ) on July 31, 2003. The ADEQ set aside the permit application until after the PBA Title V permit is issued. The ADEQ will then use the permit application to prepare and process a Title V permit modification.

### Explosive Destruction System (EDS)

Three EDS units are approved to conduct CWM destruction operations (EDS Phase 1 Units 1, 2, and 3 [P1/U1, P1/U2, P1/U3]). Follow-on test and evaluation for

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EDS P1/U2 and EDS P1/U3 was completed at APG, MD, with the successful destruction of a 4.2-inch phosgene mortar in the EDS P1/U3 at N-Field on April 23, 2003. Modifications to the EDS P1/U3 to incorporate an 'add on' pressure venting system (lewisite processing kit) are complete. EDS Phase 2 Unit 1 (EDS P2/U1) completed developmental testing in the United Kingdom in July 2003, and began operational testing at APG, MD, in December 2003. EDS P1/U2 was deployed to Spring Valley, Washington, D.C., where it destroyed 15 recovered 75mm projectiles in May and June 2003.

### Munitions Assessment and Processing System (MAPS)

MAPS principal construction at APG, MD, was completed in January 2004. The facility dedication and ribbon-cutting ceremony is planned for May 2004. Explosive testing began on February 27, 2004. Operations at the MAPS will begin in 1Q FY 2005 (Oct-Dec) with the introduction of agent-filled munitions during developmental testing.

### Pine Bluff Munitions Assessment System (PBMAS)

Building modifications were completed in September 2003. A pre-operational survey was completed on January 15, 2004. CAIS operations are scheduled to begin in 2Q FY 2004 (Jan-Mar).

### Pine Bluff Non-Stockpile Facility (PBNSF)

PMNSCM completed an Analysis of Alternatives (AoA) of two technical approaches for destruction of approximately 1,200 recovered CWM items stored at PBA. The AoA was initiated to address increasing cost and schedule risk of PBNSF construction, and to leverage technological advances from the EDS effort. The AoA evaluated (1) continuing design, construction, and operation of the PBNSF and (2) a multiple EDS deployment scenario. The EDS alternative was selected on the basis of its potential to provide significant reductions in schedule risk, cost, and complexity, without compromising safety or environmental protection.

The PBNSF systems design contractor, Shaw Environmental and Infrastructure, was issued a stop work notice for the process equipment design effort on November 3, 2003. A similar notification was provided to the U.S. Army Corps of Engineers, Little Rock District, to stop design work on the PBNSF building design. PBA has notified the ADEQ of this decision and the respective PBNSF Air and RCRA permit applications have been withdrawn. A revised permitting strategy has been finalized with ADEQ for the Pine Bluff EDS (PBEDS) solution, and work has begun on the environmental assessment.

On all future acquisition reports, PBEDS will replace PBNSF to reflect the approved strategy for destruction of recovered CWM stored at PBA.

### Binary Munitions

The transition agreement for temporary conversion of a portion of the

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Integrated Binary Production Facility at PBA, AR, for use in the disposal of the binary chemical components in storage at the Arsenal, was completed on April 21, 2003. On June 20, 2003, the task for completion of design, construction, systemization, and operation of the Binary Destruction Facility was awarded to Teledyne Brown Engineering (TBE). The public comment period for the Environmental Assessment ended on October 29, 2003; there were no public comments to the subject document. A 60 percent design review for the Binary Destruction Facility was held on December 17 and 18, 2003, at the TBE facilities in Huntsville, AL. The revised De Minimus Air permit application was approved by ADEQ on January 9, 2004. With the approval of the De Minimus Air permit, construction can now begin. Destruction of the binary materiel is scheduled for completion in 2006.

### **Former Production Facilities (FPFs)**

On January 9, 2004, the United States met its CWC Chemical Weapons Production Facility 80 Percent Destruction milestone, 16 months ahead of the April 2005 requirement.

At Newport Chemical Depot, demolition of FPF Steps 0, I, and II has been completed except for the settling basins. Demolition of the settling basins began on July 8, 2003, and is due to be completed in 3Q FY 2004. Sediment sampling is complete; no agent was detected. Demolition work has begun on the piping lines from the Step II to Step III areas. Step III demolition operations began in August 2003. The demolition of the Flare Tower was completed on August 5, 2003. Construction of the environmental enclosure (a protective structure/membrane) began on November 8, 2003, and will be completed in January 2005.

### **Integrated Binary Production Facility (IBPF)**

The contract for the destruction of the IBPF was awarded to Stone and Webster Engineering Corporation on April 18, 2003. Destruction operations began on October 29, 2003. Destruction of all standard equipment items in the Binary QL Laydown Yard (43 items, 110 tons) was completed in November 2003. Treaty personnel prepared Certificates of Destruction, allowing the shipment, in November 2003, of the destroyed equipment for recycling. Destruction of the 54 specialized, 13 multi-component, and 10 disputed items was completed in December 2003. These items were also located in the Binary QL Laydown Yard.

### **Pine Bluff Ton Container (TC) Decontamination Facility (TCDF)**

TC decontamination operations commenced on September 8, 2003. Operations were suspended on September 24, 2003, because some of the TCs tested positive for residual Lewisite. PMNSCM is developing a path forward for decontamination of residual Lewisite in the TCs. The bench scale pilot testing was completed on January 5, 2004. A revised SOP was signed on November 19, 2003, which allows for the processing of TCs that contain CNB (a riot control agent compound). TCs containing CNB can be processed due to the absence of the risk of testing positive for residual Lewisite. Processing of the TCs containing CNB began on

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November 20, 2003, and will continue while testing is being conducted to address the residual Lewisite contamination issue.

A commercial TSDF in Lake Charles, LA, has been selected for disposal of the waste decontamination solution.

#### Chemical Sample Destruction (Miscellaneous Chemical Warfare Materiel)

The APG Chemical Transfer Facility destroyed 13 VX bottles in September 2003. As reported previously, 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 CDFs are located, will be disposed of in those facilities.

#### Category 3 Chemical Weapons

Approximately 44 M441 shipping and firing tubes, four M60 training rockets, and one dummy rocket motor were recovered on July 22, 2003, at the Umatilla Chemical Depot (UMCD). The M441 shipping and firing tubes will be declared and destroyed as Category 3 CWM. Because the CWC Category 3 destruction deadline (April 2002) has already passed, the OPCW will be notified of the Army's specific plans. PMNSCM personnel will be coordinating the on-site destruction approach with UMCD representatives. Destruction of the shipping and firing tubes is scheduled for 4Q FY 2004 (Jul-Sep).

#### Single CAIS Access and Neutralization System (SCANS)

After successfully completing developmental and operational testing, including 150 days of cyclic high-temperature storage (representing a worst-case scenario of 90 days at the CAIS site and 60 days at a TSDF), the completion of the full operational release was received on December 9, 2003.

On December 17, 2003, the SCANS successfully accomplished its first operational deployment by neutralizing a K951 CAIS vial filled with mustard or lewisite that was recovered on November 21, 2003, at Fort McClellan, AL. Final disposition of the resultant hazardous waste occurred at the ONYX Environmental Services TSDF in Port Arthur, Texas.

#### Technology Test Program

A technology evaluation panel, including technical experts and members of the general public, met on October 16, 2002, to evaluate alternatives to incineration for treatment of EDS and RRS neutralent wastes, as well as the binary munition components DF and QL. The panel's recommendation on technologies for waste treatment was included in a "partnering with industry" request for proposal. A contract was awarded to Shaw Environmental, Inc., on July 25, 2003, as part of the "partnering with industry" approach, to establish a partnership with one or more TSDFs to transport and dispose of NSCMP secondary wastes using non-incineration treatment technologies. Technologies

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that continue to be tested and evaluated include persulfate oxidation and wet air oxidation.

### Aberdeen Proving Ground (APG) Ton Container (TC) Disposal

Efforts to prepare building E3934 for 'cut and clean' operations for TCs previously decontaminated to the 5X level are underway, and procurement efforts have begun for long lead-time items. After the 'cut and clean' process, the TCs will be shipped to Rock Island Arsenal, IL, for smelting and metal recycling. The entire process should be completed during or before 2Q FY 2005 (Jan-Mar).

### Remediation Coordination and Support

Three CAIS vials were discovered in Coffeyville, Kansas, in late April 2003. One K951 vial contained mustard agent HD and was transported to APG-EA, MD, on June 2, 2003. It was destroyed on June 17, 2003, during SCANS follow-on testing. The other two vials, which contained industrial compounds, were sent to Fort Riley, Kansas, for final disposition.

On May 19, 2003, a plastic canister was found on a previously inaccessible area of the "New O Field" APG-EA. It was found to have probable traces of GB. It was a 90 percent fill, made up of 40 percent liquid and 50 percent solid. The Edgewood Chemical Biological Center (ECBC) is analyzing the solid fill. The canister is being stored in a storage bunker; a decision on final disposition is pending the outcome of the analysis.

The U.S. Army Corps of Engineers (USACE) NSCMP-supported remediation continues at additional locations at the former Camp American University, Spring Valley, Washington, DC (formerly used defense site). So far, of the items recovered, 148 were determined to be scrap, 118 were returned to USACE for disposal as non-CWM, and 18 were confirmed or suspect CWM that have been destroyed without incident. Excavation continues at two properties located on the site.

### ASSEMBLED CHEMICAL WEAPONS ALTERNATIVES (ACWA) PROGRAM

Alternative technologies assessed under the ACWA Program will be employed for assembled chemical weapons at Pueblo Chemical Depot, CO, and Blue Grass Army Depot, KY. In accordance with Public Law 107-248, Section 8122, the Pueblo and Blue Grass facilities are the responsibility of PMACWA.

### Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP)

PMACWA met the first PCAPP milestone in the APB to "Submit RCRA/Clean Air Act (CAA) Permit Applications." The initial CAA application was submitted to the State of Colorado in November 2003, and the RCRA application was submitted to the State of Colorado in December 2003.

Design efforts continue. The design effort involves experts from all disciplines and phases of the program to ensure issues associated with

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construction, systemization, maintenance, operations, and closure of the destruction facility are considered. This approach has identified many innovations that will reduce the risks associated with these phases of the program.

The Department of Defense is conducting an analysis to evaluate the affordability and cost and schedule effectiveness of the design for the PCAPP. Based on this analysis, the Deputy Assistant to the Secretary of Defense (Chemical Demilitarization and Threat Reduction) will recommend a path forward for Pueblo to the Under Secretary of Defense (Acquisition, Technology and Logistics).

The Pueblo County Commissioners adopted the final Pueblo County Certificate of Designation (CD) regulations in May 2003 with input from Army attorneys representing the offices of DoD Regional Environmental Coordinator Counsel Region VIII, Army Environmental Center-Western Regional Office, and the U.S. Army Soldier and Biological Chemical Command (now Research, Development and Engineering Command). The CD requires the holder to pay the County an annual fee for the impacts caused by the hazardous waste processor. The maximum amount of that fee is the greater of 2 percent of the annual estimated gross revenue or annual estimated operating costs.

**Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP)**

On June 13, 2003, PMACWA awarded the systems contract for the initial phase of the BGCAPP to Bechtel National, Inc., who is partnered with Parsons Infrastructure and Technology Group, Inc. In September 2003, the Blue Grass SC met the first major deliverable ahead of schedule with submission and acceptance of the Design-Build Plan.

A Chemical Destruction Community Advisory Board has been established at Blue Grass. This board, which includes approximately 20 citizens, will act as the primary forum for community interaction with PMACWA and the SC. Membership includes elected officials, depot and activity commanders, Citizens' Advisory Commission members, Chemical Stockpile Emergency Preparedness Program (CSEPP) representatives, and business, civic, and religious leaders. Communication with the Blue Grass community and the Kentucky Department for Environmental Protection has resulted in the initiation of discussions on the use of a Research Development and Design permit for BGCAPP that will lead to a RCRA part B permit. Response to this effort has been positive, and the process continues as scheduled.

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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

Assembled Chem Wpns Alt's

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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Chem Demil, December 31, 2003

9. Schedule:

Chem Demil Program

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CWC Compliance (Entry into Force 29 APR 97)			
1% U.S. Category 1 Chemical Weapons Destroyed	JAN 1994	SEP 1998	SEP 1997
20% U.S. Category 1 Chemical Weapons Destroyed	MAY 2002	JUL 2001	JUL 2001
45% U.S. Category 1 Chemical Weapons Destroyed	MAY 2004	DEC 2007	DEC 2007 (Ch-1)
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 2002	MAR 2002
Initially Declared Schedule 1 Chemical Weapon Production Facilities			
40% Destroyed (EIF + 5 Yrs)	N/A	MAR 2000	MAR 2000
80% Destroyed (EIF + 8 Yrs)	N/A	APR 2005	JAN 2004 (Ch-2)
100% Destroyed (EIF + 10 Yrs)	N/A	APR 2007	APR 2007
Initially Declared Schedule 2 Chemical Weapon Production Facilities			
100% Destroyed (EIF + 5 Yrs)	N/A	AUG 1999	AUG 1999
Disposal of CWM (non CWC)	N/A	SEP 2009	SEP 2009
Storage, Transportation, Disposal of CWM in Support of Remediation/ Emergency Operations	N/A	SEP 2009	SEP 2009
CHEMICAL STOCKPILE DISPOSAL PROJECT			
CAMDS Testing	SEP 1979	SEP 1979	SEP 1979
DAB Program Review	MAR 1995	SEP 2001	SEP 2001
JOHNSTON ATOLL (JACADS)			
JACADS Construction	SEP 1985	SEP 1985	SEP 1985
Begin Operations	JUL 1990	JUL 1990	JUL 1990
Complete Operations	N/A	NOV 2000	NOV 2000
Begin Closure	SEP 2000	JAN 2001	JAN 2001
Complete Closure	N/A	JAN 2004	DEC 2003 (Ch-3)
TOOELE (TOCDF)			
Submit RCRA/CAA Permit Applications	OCT 1988	OCT 1988	OCT 1988
Begin Construction	OCT 1989	OCT 1989	OCT 1989
Begin Systemization	SEP 1993	SEP 1993	SEP 1993
Begin Operations	AUG 1996	AUG 1996	AUG 1996
Complete Operations	N/A	FEB 2008	FEB 2008
Begin Closure	OCT 2003	FEB 2008	FEB 2008
Complete Closure	N/A	SEP 2010	SEP 2010
ANNISTON (ANCDF)			

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Chem Demil, December 31, 2003

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

Chem Demil Program

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Submit RCRA/CAA Permit Applications	FEB 1995	FEB 1995	FEB 1995
Begin Construction	FEB 1996	FEB 1996	FEB 1996
Begin Operations	JAN 2002	JAN 2003	AUG 2003 (Ch-4)
Complete Operations	N/A	MAY 2011	MAY 2011
Begin Closure	NOV 2005	MAY 2011	MAY 2011
Complete Closure	N/A	DEC 2013	DEC 2013
UMATILLA (UMCDF)			
Submit RCRA/CAA Permit Applications	SEP 1995	SEP 1995	SEP 1995
Begin Construction	FEB 1997	FEB 1997	FEB 1997
Begin Operations	FEB 2002	AUG 2003	JUL 2004 (Ch-5)
Complete Operations	N/A	JAN 2011	JAN 2011
Begin Closure	JUN 2005	JAN 2011	JAN 2011
Complete Closure	N/A	JUN 2014	JUN 2014
PINE BLUFF (PBCDF)			
Submit RCRA/CAA Permit Applications	JUL 1995	JUL 1995	JUN 1995
Begin Construction	TBD	FEB 1999	FEB 1999
Begin Operations	TBD	APR 2004	JUL 2004 (Ch-6)
Complete Operations	N/A	NOV 2009	NOV 2009
Begin Closure	TBD	NOV 2009	NOV 2009
Complete Closure	N/A	DEC 2011	DEC 2011
ALTERNATIVE TECHNOLOGIES & APPROACHES			
ABERDEEN (Accelerated ABCDF)			
Milestone 0	AUG 1994	AUG 1994	AUG 1994
Milestone I/II	DEC 1996	DEC 1996	DEC 1996
Milestone III	JAN 2004	FEB 2002	FEB 2002
Submit RCRA/CAA Permit Applications	N/A	MAY 1997	MAY 1997
Begin Construction	N/A	JUL 2000	JUL 2000
Begin Operations	N/A	JUN 2003	APR 2003 (Ch-7)
100% Chemical Agent Destroyed	N/A	MAR 2004	DEC 2004 (Ch-8)
Complete Operations	N/A	JUL 2005	JUL 2005
Begin Closure	N/A	JUL 2005	JUL 2005
Complete Closure	N/A	DEC 2006	DEC 2006
NEWPORT (Accelerated NECDF)			
Milestone 0	AUG 1994	AUG 1994	AUG 1994
Milestone I/II	DEC 1996	DEC 1996	DEC 1996
Milestone III	MAY 2004	MAY 2002	MAY 2002
Submit RCRA/CAA Permit Applications	N/A	APR 1998	APR 1998
Begin Construction	N/A	NOV 2000	NOV 2000
Begin Operations	N/A	FEB 2005	JUN 2004 (Ch-9)
100% Chemical Agent Destroyed	N/A	JAN 2006	JAN 2006
Complete Operations	N/A	NOV 2007	NOV 2007
Begin Closure	N/A	NOV 2007	NOV 2007
Complete Closure	N/A	APR 2009	APR 2009
NON-STOCKPILE CHEMICAL MATERIEL PRODUCT			
PBNSF (Pine Bluff, AR)			
Submit RCRA Permit Applications	N/A	DEC 2002	DEC 2002

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Chem Demil, December 31, 2003

9a. Schedule (Cont'd):

Chem Demil Program

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Begin Construction	N/A	JAN 2004	JAN 2004
Begin Operations	N/A	MAY 2006	MAY 2006
Complete Operations	N/A	APR 2007	APR 2007
Complete Closure	N/A	SEP 2008	SEP 2008
MAPS (Aberdeen, MD)			
Submit RCRA Permit Applications	N/A	MAY 2000	MAY 2000
Begin Construction	N/A	JUL 2001	JUL 2001
Begin Operations	N/A	DEC 2004	DEC 2004

b. Current Change Explanations --

(Ch-1) In October 2003, a request was approved by the Organisation for the Prohibition of Chemical Weapons (OPCW) for an extension of the Chemical Weapons Convention 45 Percent Destruction milestone (April 29, 2004) to December 2007. The Approved Acquisition Program Baseline (APB) also reflects this extension.

MILESTONE	FROM	TO
45% U.S. Category 1 Chemical Weapons Destroyed	TBD	DEC 07

(Ch-2) The United States met its Chemical Weapons Convention (CWC) Chemical Weapons Production Facility 80 Percent Destruction milestone on January 9, 2004, 16 months ahead of the April 2005 requirement.

MILESTONE	FROM	TO
Initially Declared Schedule 1 Chemical Weapon Production Facilities 80% Destroyed	APR 05	JAN 04

(Ch-3) The Johnston Atoll Chemical Agent Disposal System (JACADS) completed closure in December 2003, 1 month ahead of the Acquisition Program Baseline (APB) objective date.

MILESTONE	FROM	TO
JOHNSTON ATOLL (JACADS) Complete Closure	JAN 04	DEC 03

(Ch-4) The Anniston Chemical Agent Disposal Facility (ANCDF) began agent operations on August 9, 2003.

MILESTONE	FROM	TO
ANNISTON (ANCDF) Begin Operations	JUN 03	AUG 03

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Chem Demil, December 31, 2003

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

**Chem Demil Program**

(Ch-5) The Program Manager's Current Estimate (PMCE) for meeting the Umatilla Chemical Agent Disposal Facility (UMCDF) Begin Operations milestone has changed from August 2003 to July 2004 due to delays in systemization/readiness, including the incorporation of a 120-day period for the Oregon Department of Environmental Quality to assess readiness prior to the commencement of agent operations.

MILESTONE	FROM	TO
UMATILLA (UMCDF)		
Begin Operations	AUG 03	JUL 04

(Ch-6) The PMCE for meeting the PBCDF Begin Operations milestone has changed from April 2004 to July 2004 due to an aggressive systemization schedule, higher than expected maintenance requirements, and a long-term staffing shortage in key operations and maintenance positions.

MILESTONE	FROM	TO
PINE BLUFF (PBCDF)		
Begin Operations	APR 04	JUL 04

(Ch-7) The Accelerated Aberdeen Chemical Agent Disposal Facility (ABCDF) began agent operations on April 23, 2003.

MILESTONE	FROM	TO
ABERDEEN (Accelerated ABCDF)		
Begin Operations	JUN 03	APR 03

(Ch-8) The 100 Percent Chemical Agent Destroyed milestone represents the point at which all of the mustard agent has been drained from the ton containers and neutralized, thus eliminating the risk to the public. From a CWC perspective, the ABCDF will have achieved approximately 95 percent destruction credit; the balance of the destruction credit is achieved with the destruction of the previously drained ton containers through the ton container cleanout system. The PMCE for meeting the Accelerated ABCDF 100 Percent Chemical Agent Destroyed milestone has changed from March 2004 to December 2004 due to difficulties related to draining ton containers.

MILESTONE	FROM	TO
ABERDEEN (Accelerated ABCDF)		
100% Chemical Agent Destroyed	MAR 04	DEC 04

(Ch-9) The PMCE for meeting the Accelerated Newport Chemical Agent Disposal Facility (NECDF) Begin Operations milestone has changed from the APB Objective date of February 2005 to the current estimate of June 2004 to reflect the accelerated start of agent operations.

MILESTONE	FROM	TO
NEWPORT (Accelerated NECDF)		
Begin Operations	FEB 05	JUN 04

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Chem Demil, December 31, 2003

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

Assembled Chem Wpns Alt's

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CWC Compliance (Entry into Force 29 APR 97)			
100% U.S. Category 1 Chemical Weapons Destroyed	MAY 2007	APR 2012	TBD
ASSEMBLED CHEMICAL WEAPONS ASSESSMENT PROGRAM			
PUEBLO (PCAPP)			
Submit RCRA/CAA Permit Applications	OCT 1995	MAR 2003	DEC 2003 (Ch-1)
Begin Construction	TBD	AUG 2003	AUG 2004 (Ch-2)
Begin Pilot Testing	N/A	MAR 2008	OCT 2008 (Ch-2)
Begin Operations	TBD	APR 2009	OCT 2009 (Ch-2)
Complete Operations	N/A	APR 2010	JUL 2010 (Ch-2)
Begin Closure	TBD	APR 2010	JUL 2010 (Ch-2)
Complete Closure	N/A	DEC 2013	DEC 2013
BLUE GRASS (BCAPP)			
Submit RCRA/CAA Permit Applications	DEC 1995	DEC 2003	JUN 2004
Begin Construction	TBD	SEP 2004	JAN 2005
Begin Operations	TBD	TBD	TBD
Complete Operations	N/A	TBD	TBD
Begin Closure	TBD	TBD	TBD
Complete Closure	N/A	TBD	TBD

b. Current Change Explanations --

(Ch-1) The Submit Resource Conservation and Recovery Act (RCRA)/Clean Air Act (CAA) Permit Applications milestone was met in December 2003; the initial CAA and RCRA application were submitted to the State of Colorado in November 2003 and December 2003, respectively.

MILESTONE	FROM	TO
PUEBLO (PCAPP)		
Submit RCRA/CAA Permit Applications	JAN 04	DEC 03

(Ch-2) The PMCEs for the Begin Construction, Begin Pilot Testing, Begin Operations, Complete Operations, and Begin Closure milestones have been changed to reflect the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) systems contractor's estimate based on the current status of the design process. The current estimates may change again once the analysis of the design concept is completed.

MILESTONE	FROM	TO
PUEBLO (PCAPP)		
Begin Construction	JUL 04	AUG 04
Begin Pilot Testing	MAR 08	OCT 08
Begin Operations	APR 09	OCT 09
Complete Operations	APR 10	JUL 10

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Chem Demil, December 31, 2003

9b. Schedule (Cont'd):

Assembled Chem Wpns Alt's

Begin Closure

APR 10 JUL 10

10. Performance Characteristics:

Chem Demil Program

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Environmental Laws and Regulations	Meets Army, State, and/or Federal Rqmts	Meets / Meets Army, / Army, State, / State, and/or / and/or Federal / Federal Rqmts / Rqmts	TBD	Meets Army, State, and/or Federal Rqmts (Note 1)
Safety and Occupa- tional Health Laws and Regulations	Meets Army, State, and/or Federal Rqmts	Meets / Meets Army, / Army, State, / State, and/or / and/or Federal / Federal Rqmts / Rqmts	TBD	Meets Army, State, and/or Federal Rqmts (Note 2)
International Obligations	N/A	Is / Is Compli- / Compli- ant w/ / ant w/ Inter- / Inter- national/ national Obliga- / Obliga- tions / tions	TBD	Is Compli- ant with Inter- national Obliga- tions (Note 3)
Chemical Agent Release	0	0 / 0	TBD	(Note 4&6)
Chemical Agent Exposure	0	0 / 0	TBD	(Note 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 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

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Chem Demil, December 31, 2003

**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/m3  
VX - 0.000003 mg/m3  
H/HD/HT - 0.0001 mg/m3

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/m3  
VX - 0.0003 mg/m3  
H/HD/HT - 0.03 mg/m3

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/m3  
VX - 0.00001 mg/m3  
H/HD/HT - 0.003 mg/m3

Non-Stockpile Mobile Treatment Systems

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**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.

b. Current Change Explanations -- None

**Assembled Chem Wpns Alt's**

**a. Performance --**

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Environmental Laws and Regulations	Meets DoD, State, and/or Federal Reqmts	Meets / Meets DoD, / DoD, State, / State, and/or / and/or Federal / Federal Reqmts / Reqmts	TBD	Meets DoD, State, and/or Federal Reqmts (Note 1)
Safety and Occupa- tional Health Laws and Regulations	Meets DoD, State, and/or Federal Reqmts	Meets / Meets DoD, / DoD, State, / State, and/or / and/or Federal / Federal Reqmts / Reqmts	TBD	Meets DoD, State, and/or Federal Reqmts (Note 2)
International Obligations	N/A	Is / Is Complian/ Complian t with / t with Internat/ Internat ional / ional Obligati/ Obligati ons / ons	TBD	Is Complian t with Internat ional Obligati ons (Note 3)
Chemical Agent Release	0	0 / 0	TBD	(Notes 4&6)
Chemical Agent Exposure	0	0 / 0	TBD	(Notes 5&6)

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Chem Demil, December 31, 2003

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

**Assembled Chem Wpns Alt's**

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/HD/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:

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.

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Chem Demil, December 31, 2003

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

Assembled Chem Wpns Alt's

6. Number of events.

b. Current Change Explanations -- None

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

Chem Demil Program

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	961.2	1227.9	1219.5
Procurement	1933.4	2366.6	2542.9
Flyaway	(1933.4)		(2542.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	1165.7	1333.1	1333.1
Acquisition O&M	7453.4	12342.6	12823.1
Total FY 1994 Base-Year \$	11513.7	17270.2	17918.6
Escalation	1366.2	2363.4	2407.8
Development (RDT&E)	(129.6)	(133.6)	(131.9)
Procurement	(84.5)	(133.3)	(177.4)
Construction (MILCON)	(81.7)	(94.8)	(94.7)
Acquisition O&M	(1070.4)	(2001.7)	(2003.8)
Total Then Year \$	12879.9	19633.6	20326.4
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 JACADS, TOCDF, ANCDF, JMCDF, PBCDF, 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.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Chem Demil, December 31, 2003

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

Assembled Chem Wpns Alt's

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0.0	3027.8	2900.7
Procurement	579.1	0.0	0.0
Flyaway	(579.1)		(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	355.7	302.8	302.1
Acquisition O&M	1022.6	0.0	0.0
Total FY 1994 Base-Year \$	1957.4	3330.6	3202.8
Escalation	473.0	856.4	833.8
Development (RDT&E)	(0.0)	(795.4)	(772.1)
Procurement	(102.2)	(0.0)	(0.0)
Construction (MILCON)	(62.9)	(61.0)	(61.7)
Acquisition O&M	(307.9)	(0.0)	(0.0)
Total Then Year \$	2430.4	4187.0	4036.6
b. Quantity --			
Development (RDT&E)	0	3134	3136
Procurement	3134	N/A	0
Total	3134	3134	3136

The development quantity reflects tons of chemical agent to be disposed by ACWA. This number is 3,136 U.S. tons and is composed of 2,613 U.S. tons in the Pueblo stockpile and 523 U.S. tons in the Blue Grass stockpile. The two additional tons in the Pueblo stockpile are due to recalculated munition fill weights.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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**12. Unit Cost Summary:**

Chem Demil Program

	UCR Baseline (APR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	17270.2	17918.6	
(2) Quantity	29060	29060	
(3) Unit Cost	0.594	0.617	+3.87
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	2366.6	2542.9	
(2) Quantity	29060	29060	
(3) Unit Cost	0.081	0.088	+8.64

Assembled Chem Wpns Alt's

	UCR Baseline (APR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	3330.6	3202.8	
(2) Quantity	3134	3136	
(3) Unit Cost	1.063	1.021	-3.95
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

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**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	-53.6	-22.9	-26.1	-327.9	-430.5
Quantity	-	-	-	-	-
Schedule	+454.4	+250.6	+92.5	+3078.1	+3875.6
Engineering	-	-	-	-	-
Estimating	-130.4	+254.3	+114.0	+3061.7	+3299.6
Other	-	-	-	+8.7	+8.7
Support	-	-	-	-	-
Subtotal	+270.4	+482.0	+180.4	+5820.6	+6753.4
Current Changes:					
Economic	-0.1	-0.3	-	-3.1	-3.5
Quantity	-	-	-	-	-
Schedule	-	-	-	+409.5	+409.5
Engineering	-	-	-	-	-
Estimating	-9.7	+220.7	-	+76.1	+287.1
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-9.8	+220.4	-	+482.5	+693.1
Total Changes	+260.6	+702.4	+180.4	+6303.1	+7446.5
Current Estimate	1351.4	2720.3	1427.8	14826.9	20326.4

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	-121.6	+228.2	+89.3	+2522.6	+2718.5
Other	-	-	-	+7.6	+7.6
Support	-	-	-	-	-
Subtotal	+266.7	+433.2	+167.4	+4973.7	+5841.0
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	+246.5	+246.5
Engineering	-	-	-	-	-
Estimating	-8.4	+176.3	-	+149.5	+317.4
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-8.4	+176.3	-	+396.0	+563.9
Total Changes	+258.3	+609.5	+167.4	+5369.7	+6404.9
Current Estimate	1219.5	2542.9	1333.1	12823.1	17918.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Economic Adjustment for Negative Program Change (Economic)	N/A	-0.1
Adjustment for Current and Prior Inflation (Estimating)	-0.2	-0.2
Revision to Reflect Prior Year Actuals (Estimating)	+0.5	+0.5
Realignment of Funds from R&D to O&M - Non-Stockpile Chemical Materiel Product (NSCMP) (Estimating)	-8.7	-10.0
RDT&E Subtotal	<u>-8.4</u>	<u>-9.8</u>
(2) <u>Procurement</u>		
Increased Cost Associated with Automatic Continuous Air Monitoring System (Estimating)	+15.2	+20.1
Revised Escalation Indices (Economic)	N/A	-0.3
Increased Cost Associated with Risk Analysis Mitigation Program (RAMP) (Estimating)	+25.8	+33.0
Revision to Reflect Prior Year Actuals (Estimating)	-0.8	-0.8
Replacement of Equipment and Additional Collective Protection Projects - Chemical Stockpile Emergency Preparedness Program (CSEPP) (Estimating)	+38.7	+49.5
Reduced Army Automated Data Processing Development Systems Support - CSEPP (Estimating)	-3.6	-4.4
Shortening of Operations at Blue Grass by Two Years - CSEPP (Estimating)	-2.0	-2.9
Revision of Program Estimate (Estimating)	-0.7	-0.9
Reprogramming of Funds from Assembled Chemical Weapons Alternatives (ACWA) to Chemical Demilitarization Program (CDP) to cover program shortfalls. (Estimating)	+35.5	+40.6
Increased Cost Associated with Schedule Extension (Estimating)	+68.2	+86.5
Procurement Subtotal	<u>+176.3</u>	<u>+220.4</u>
(3) <u>O&amp;M</u>		
Revision to Reflect Prior Year Actuals (Estimating)	-4.3	-4.6

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Chem Demil, December 31, 2003

**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 from R&D to O&M - NSCMP (Estimating)	+8.7	+10.0
Adjustments for Current and Prior Inflation (Estimating)	+4.4	-5.3
Shortening of Operations at Blue Grass by Two Years - CSEPP (Estimating)	+43.1	-68.0
Increased O&M Cost at All Sites - CSEPP (Estimating)	+106.1	+132.2
Reduction of CDP Programmatic Cost Resulting from Realignment of Pueblo/Blue Grass Mission to ACWA (Estimating)	-176.9	-255.2
Congressional Cuts at Aberdeen and CSDP (Estimating)	-60.4	-69.7
Reprogramming of Funds from ACWA to CDP to cover program shortfalls. (Estimating)	+90.3	+106.7
Revised Escalation Indices (Economic)	N/A	-3.1
Increased Cost Associated with Schedule Extension (CDP) (Schedule)	+246.5	+409.5
Increased Cost Extension Associated with the RAMP (Estimating)	+31.3	+52.0
Increased Cost Associated with the Safety Improvement Program (Estimating)	+18.7	+31.0
Increased Cost Associated with Wages (Estimating)	+55.4	+92.0
Increased Cost Associated with Staffing (Estimating)	+33.1	+55.0
O&M Subtotal	+396.0	+482.5

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Chem Demil, December 31, 2003

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

Assembled Chem Wpns Alt's

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	-	681.3	418.6	1330.5	2430.4
Previous Changes:					
Economic	-	-7.7	-8.8	-51.2	-67.7
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+3823.5	-673.6	-46.0	-1279.3	+1824.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+3823.5	-681.3	-54.8	-1330.5	+1756.9
Current Changes:					
Economic	-1.7	-	+0.7	-	-1.0
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-149.0	-	-0.7	-	-149.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-150.7	-	-	-	-150.7
Total Changes	+3672.8	-681.3	-54.8	-1330.5	+1606.2
Current Estimate	3672.8	-	363.8	-	4036.6

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Chem Demil, December 31, 2003

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

Assembled Chem Wpns Alt's

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	+3027.9	-579.1	-53.0	-1022.6	+1373.2
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+3027.9	-579.1	-53.0	-1022.6	+1373.2
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-127.2	-	-0.6	-	-127.8
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-127.2	-	-0.6	-	-127.8
Total Changes	+2900.7	-579.1	-53.6	-1022.6	+1245.4
Current Estimate	2900.7	-	302.1	-	3202.8

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised Escalation Indices (Economic)	N/A	-1.7
Revision to Reflect Prior Year Actuals (Estimating)	-0.8	-0.9
Reprogramming of Funds from ACWA to CDP (Estimating)	-125.8	-147.3
Revision of Program Estimate (Estimating)	-0.6	-0.8
RDT&E Subtotal	-127.2	-150.7
(2) <u>MILCON</u>		
Revised Escalation Indices (Economic)	N/A	+0.7
Revision of Program Estimate (Estimating)	-0.6	-0.7
MILCON Subtotal	-0.6	0.0

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Chem Demil, December 31, 2003

**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 Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.443	-0.015	+0.001	+0.147	--	+0.123	--	--	+0.256	0.699

**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	
0.069	-0.001	--	+0.009	--	+0.016	--	--	+0.024	0.094

**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	MAY 2007	TBD
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	11903.0	12879.9	20326.4
Total Quantity	N/A	9	29060	29060
Prog Acq Unit Cost	N/A	1322.6	0.4	0.7

Assembled Chem Wpns Alt's

**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	
0.775	-0.022	--	--	--	+0.534	--	--	+0.512	1.29

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Chem Demil, December 31, 2003

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

Assembled Chem Wpns Alt's

**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	
0.217	--	--	--	--	--	--	--	--	N/A

**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	MAY 2007	TBD
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	N/A	2430.4	4036.6
Total Quantity	N/A	N/A	3134	3136
Prog Acq Unit Cost	N/A	N/A	0.8	1.3

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

**a. RDT&E --**

NECDF System Contract:

Parsons Infra & Tech Grp, Pasadena, CA

DAAA09-99-C-0016, CPAF

Award: February 18, 1999

Definitized: February 18, 1999

Initial Contract Price

Target	Ceiling	Qty
\$295.5	N/A	1

Current Contract Price

Target	Ceiling	Qty
\$591.8	N/A	1

Estimated Price At Completion

Contractor	Program Manager
\$845.5	\$1116.7

Cost Variance	Schedule Variance
\$-10.6	\$-11.8
\$-62.3	\$-15.4
\$-51.7	\$-3.6

Previous Cumulative Variances

Cumulative Variances To Date (12/26/03)

Net Change

**Explanation of Change:**

The unfavorable net change in the cost and schedule variance is primarily due to the use of additional resources to complete construction and the delays in completing systemization. In addition, delays in system turnovers, plus modification of the Utility Building fire protection system, have delayed the start date for VX agent destruction beyond October 1, 2003. The systems contractor (SC) forecasts that start of VX

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Chem Demil, December 31, 2003

15. Contract Information (Cont'd):

destruction will be May 15, 2004.

Contract Comments:

The target price is the current contract value through MOD P00079. The current contract price of \$591.8M does not include authorized unpriced work (AUW) that is pending negotiation. AUW in the amount of \$97.5M is included in the SC's estimated price at completion (EPC).

The contract has a net increase of \$295.3M since the original contract award. The project had significant cost growth and was rebaselined before the change in technical approach initiated in 2002. Recent increases are due to SC inefficiencies resulting in a delay in the start of operations and challenges in securing a contract for off-site disposal of the caustic hydrolysate. The SC's EPC includes schedule growth, additional staff, additional shifts, cost growth during construction, increased costs associated with the treatment, storage, and disposal facility (TSDF) proposal, and work that has been authorized but not yet negotiated (ton container cleanout, third party closure costs). The Program Manager's (PM's) EPC contains additional time for agent destruction operations and closure, and 28 months for programmatic risk.

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 Defense Acquisition Executive (DAE) issued an Acquisition Decision Memorandum (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 --  
TOCDF Sys Contractor:  
EG&G Defense Matl's, Tooele, UT  
DACA87-89-C-0076, CPAF  
Award: July 21, 1989  
Definitized: July 21, 1989

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$211.0	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>
\$1458.6	N/A	1	\$1560.3	\$1952.1

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-17.2	\$-5.3
Cumulative Variances To Date (12/28/03)	\$-29.3	\$-10.0
Net Change	\$-12.1	\$-4.7

Explanation of Change:

The unfavorable net change in the schedule variance is due to delays in VX destruction. The unfavorable net change in the cost variance is the collateral impact of the delays in VX destruction and increased overhead rates.

Contract Comments:

The target price is the current contract negotiated cost through MOD P00265, including fee. The current contract price of \$1,458.6M does not include AUW that is pending negotiation. AUW in the amount of \$0.1M is included in the SC's EPC.

The contract has increased \$1,247.6M since the original award. During the construction and equipment installation phase (Cost Plus Award Fee [CPAF]), the contract increased \$160M and 6 months due to design deficiencies, directed regulatory permitting and compliance conditions, incorporation of lessons learned from the Johnston Atoll Chemical Agent Disposal System (JACADS), and government-furnished equipment (GFE) issues. (The original subcontractor for construction was replaced during this phase.) During the systemization phase, the contract price increased \$182M and 18 months due to the effects of lessons learned from Operations Verification Testing (OVT) at JACADS (public law extended the TOCDF systemization phase by 14 months until JACADS OVT was completed and approved), safety enhancements, issues associated with GFE, and directed regulatory permitting and compliance conditions. During the operations phase, the contract price has increased approximately \$903M and 68 months, due to irregularities in the munition stockpile, operational lessons learned from JACADS, safety concerns that caused delays and enhancements to safety, and increasingly stringent environmental regulation. The SC's EPC reflects the impact of revised operations assumptions for the remaining campaigns (from 119 to 122 months). The SC's EPC is based on a 6 month closure period. The PM's EPC includes 4 months of additional programmatic risk plus additional closure requirements and assumptions estimated to add 23 additional months).

<u>ANCDF Systems Contract:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Westinghouse (WGES), Anniston, AL					
DAA-09-96-C-0018, FFP/CPAF	\$575.8	N/A	1		
Award: February 29, 1996					
Definitized: February 29, 1996					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$771.1	N/A	1	\$1565.5	\$1661.9

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Chem Demil, December 31, 2003

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.4	\$-1.8
Cumulative Variances To Date (01/02/04)	\$5.0	\$0.3
Net Change	\$2.6	\$2.1

Explanation of Change:

The favorable net change in the schedule variance is the result of efficient processing of the M55 rockets, which began in August 2003. The start of agent operations was delayed from January 2003 due to Chemical Stockpile Emergency Preparedness Program (CSEPP) and local government issues.

The favorable net change in the cost variance is the result of using fewer resources while awaiting start of operations and a lower than planned project management staffing.

Contract Comments:

This is a CPAF contract with a Firm Fixed Price (FFP) element for construction. The target price is the current contract value through FFP MOD A00380 and CPAF MOD P0099. The current contract price of \$771.1M does not include AUW that is pending negotiation. AUW in the amount of \$743.5M is included in the SC's EPC.

The contract has increased \$201.3M since the original contract award. During the construction phase (FFP) the contract increased \$113.5M due primarily to incorporation of design changes resulting from Programmatic Lessons Learned, which resulted in significant schedule delays. During the systemization phase, the contract has increased \$81.8M due to the impact of construction delays, incorporation of lessons learned from JACADS and TOCDF, increases in contract scope (Engineering Change Proposals, Design Agent Authority, regulatory requirements) and schedule delays associated with the incorporation of CSEPP community protection measures. The SC's EPC reflects the impact of revised operations (from 44 to 79 months) and closure assumptions (from 12 to 28 months), which have been authorized but are not as yet fully negotiated. The PM's EPC contains an additional 22 months of programmatic risk.

Note: Westinghouse Government Environmental Services (WGES) is also known as Westinghouse-Anniston.

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Chem Demil, December 31, 2003

15. Contract Information (Cont'd):

UMCDF Systems Contract:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Washington Demil Co., Umatilla, OR	\$566.8	N/A	1	
DAAA09-97-C-0025, FFP/CPAF				
Award: February 10, 1997				
Definitized: February 10, 1997				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1012.3	N/A	1	\$1985.0	\$2042.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.0	\$-4.5
Cumulative Variances To Date (01/02/04)	\$-8.0	\$-6.4
Net Change	\$-4.0	\$-1.9

Explanation of Change:

The unfavorable net change in the schedule variance is primarily due to trial burn delays and a longer than expected time to comply with the permits. The slightly unfavorable net change in the cost variance is the collateral impact of the schedule variance.

Contract Comments:

This is a CPAF contract with a FFP element for construction. The target price is the current contract value through FFP MOD A00208 and CPAF MOD P0137. The current contract price of \$1,012.3M does not include AUW that is pending negotiation. AUW in the amount of \$506.9M is included in the SC's EPC for operations beyond TY 2005. Both the SC and PM EPCs contain estimates (\$465.8M) for incorporation of revised closure scope, which has not yet been placed on contract.

The contract has increased \$446.2M (from \$566.8M to \$1,012.3M) since the original award. During the construction phase (FFP) the contract increased \$137.9M (from 35 to 49 months) due to directed regulatory permitting and compliance conditions, design deficiencies, incorporation of lessons learned from TOCDF and JACADS, and GFE issues. During the systemization phase the contract price has increased \$308.3M (from \$304.0M to \$612.3M) due to the impact of construction delays, safety enhancements, issues associated with GFE, and directed regulatory permitting and compliance conditions. The SC's EPC reflects the impact of revised operations (from 40 to 67 months) and closure assumptions (from 12 to 33 months) which have been authorized but are not as yet fully negotiated. These revised assumptions are based on lessons learned from JACADS and TOCDF. The PM's EPC includes additional programmatic risk (3 months).

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15. Contract Information (Cont'd):

<u>PBCDF Systems Contract:</u>			<u>Initial Contract Price</u>		
Washington Demil Co., Pine Bluff, AR	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAA09-97-C0098, FFP/CPAF	\$511.6	N/A	1		
Award: July 25, 1997					
Definitized: July 25, 1997					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$601.3	N/A	1	\$1232.0	\$1262.3

<u>Previous Cumulative Variances</u>	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$5.8	\$-2.7
<u>Cumulative Variances To Date (01/02/04)</u>	<u>\$-6.7</u>	<u>\$-2.9</u>
<u>Net Change</u>	<u>\$-12.5</u>	<u>\$-0.2</u>

Explanation of Change:

The unfavorable net change in the cost variance shows the impact of using additional resources to maintain the systemization schedule. The net change in schedule variance is below the required reporting threshold.

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 P0185. The current contract price of \$601.3M does not include AUW that is pending negotiation. AUW in the amount of \$606.4M is included in the SC's EPC.

The contract has increased \$89.7M since the original contract award. These increases are for construction and systemization only. Operations has not yet begun; foreseen increases in operations are currently authorized but unpriced and reflected in EPCs.

The contract price for construction increased by \$95.1M, and the schedule for the construction phase increased by 9 months from the original contract. The major reasons for this increase were design changes, weather delays, and revisions to integrate construction with systemization activities.

During the systemization phase, the contract has increased by \$51.6M due to efforts to maintain the schedule to ready the facility for demilitarization operations. Drivers for this increase included lessons learned from JACADS and TOCDF, regulatory impacts as well as the impact of the FY02 funding deferral (9 months). This increase was offset in the contract price by the transfer of \$57M for operations and closure to authorized unpriced categories, which await further contract negotiation, resulting in a net change to the contract price of \$5.4M.

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Chem Demil, December 31, 2003

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

The SC's current EPC reflects the impact of revised operations (from 40 to 57 months) and closure assumptions (from 12 to 22 months) which have been authorized but are not fully negotiated. The PM's EPC contains an additional 13 months of programmatic risk.

<u>Accelerated ABCDF Sys Co:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Bechtel National Inc., San Francisco, CA	\$291.9	N/A	1	
DAAA09-02-G-0005, CPAF				
Award: February 1, 2002				
Definitized: October 31, 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>
\$293.8	N/A	1	\$323.8	\$413.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.1	\$-1.3
Cumulative Variances To Date (12/21/03)	\$5.3	\$-20.2
Net Change	\$4.2	\$-18.9

Explanation of Change:

The favorable net change in the cost variance is the result of the delayed start of agent operations, which further impacted resources not being used as planned, and slower than anticipated progress for agent destruction.

The unfavorable net change in the schedule variance is primarily due to delays in agent destruction, resulting in minimal hydrolysate disposal.

Contract Comments:

The target price is the current contract value.

The contract has increased \$1.9M since the original award. The increase is due to increased scope to address treaty requirements. The SC's EPC reflects the impact of problems related to agent destruction and an increase from the current contract price of \$293.8M to the contractor's estimated price of \$323.8M to complete agent destruction, ton container processing, and hydrolysate removal. The PM's EPC includes an additional 3 months for programmatic risk as well as resources to address technical risk. Closure is an unpriced option on this contract and is therefore not included in the contract price, the SC's EPC, or the PM's EPC.

The DAE issued an ADM 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).

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

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.

**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	1574.0	251.9	154.2	3044.1	5024.2
Procurement	2143.2	79.2	79.0	418.9	2720.3
MILCON	1450.6	119.8	81.9	139.3	1791.6
O&M	6232.7	1169.2	1138.8	6286.2	14826.9
Total	11400.5	1620.1	1453.9	9888.5	24363.0

**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 (FY06-15)</u>	<u>Total</u>
RDT&E	1188.9	82.0	29.2	51.3	1351.4
Procurement	2143.2	79.2	79.0	418.9	2720.3
MILCON	1412.6	15.2	-	-	1427.8
O&M	6232.7	1169.2	1138.8	6286.2	14826.9
Total	10977.4	1345.6	1247.0	6756.4	20326.4

**Assembled Chem Wpns Alt's**

**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	385.1	169.9	125.0	2992.8	3672.8
Procurement	-	-	-	-	-
MILCON	38.0	104.6	81.9	139.3	363.8
O&M	-	-	-	-	-
Total	423.1	274.5	206.9	3132.1	4036.6

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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				56.7	62.1
1999				124.9	138.1
2000				165.1	183.4
2001				173.6	194.7
2002				158.8	180.0
2003				190.1	216.0
2004				71.1	82.0
2005				24.9	29.2
2006				20.2	24.0
2007				9.7	11.8
2008				8.0	9.9
2009				4.5	5.6
Subtotal				1219.5	1351.4

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	12		78.3	78.3	72.1
1991	28		120.7	120.7	114.8
1992	128		154.3	154.3	150.9
1993	67		237.8	237.8	237.7
1994	119		49.7	49.7	50.6
1995	297		191.1	191.1	198.1
1996	517		226.6	226.6	237.8
1997	890		157.2	157.2	168.5
1998	1754		65.9	65.9	72.2
1999	1801		103.5	103.5	114.4

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**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	1577		170.3	170.3	189.2
2001	713		93.8	93.8	105.2
2002	681		144.9	144.9	164.2
2003	127		111.8	111.8	127.0
2004	3570		68.7	68.7	79.2
2005	3041		67.5	67.5	79.0
2006	2919		44.5	44.5	52.9
2007	3275		45.2	45.2	54.7
2008	2488		35.7	35.7	44.0
2009	1898		25.3	25.3	31.7
2010	2389		136.9	136.9	174.9
2011	769		29.4	29.4	38.2
2012			14.1	14.1	18.6
2013			1.8	1.8	2.4
2014			1.1	1.1	1.5
2015					
2016					
Subtotal	29060		2542.9	2542.9	2720.3

No quantities applicable for FYs 1988 and 1989. Expenditures in these years were for testing and systemization at the Johnston Atoll Chemical Agent Disposal System prior to start of agent destruction operations.

No quantities applicable for FYs 2012-2014. 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				103.1	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				118.1	97.0
1989				131.5	117.3
1990				188.0	173.1
1991				183.0	174.0
1992				218.9	214.1
1993				256.3	256.1
1994				279.9	285.0
1995				337.2	349.6
1996				321.1	337.0
1997				419.3	449.5
1998				368.5	403.8
1999				436.5	482.6
2000				486.1	540.0
2001				533.4	598.3
2002				660.1	748.0
2003				886.4	1007.3
2004				1013.7	1169.2
2005				972.8	1138.8
2006				849.8	1011.3

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**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				824.2	997.9
2008				735.9	907.0
2009				666.9	836.8
2010				703.0	897.9
2011				442.7	575.7
2012				364.6	482.6
2013				264.7	356.7
2014				158.6	217.6
2015				1.9	2.7
2016					
2017					
2018					
2019					
Subtotal				12823.1	14826.9

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	29060		2542.9	17452.2	19867.1
Army				466.4	459.3
Grand Total	29060		2542.9	17918.6	20326.4

**b. Annual Summary -- Assembled Chem Wpns Alt's**

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				69.7	78.2
2002				19.8	22.4
2003				86.9	98.8
2004				147.3	169.9
2005				106.8	125.0
2006				214.5	255.2
2007				224.1	271.3
2008				247.5	305.0

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

Assembled Chem Wpns Alt's

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				255.2	320.2
2010				259.0	330.8
2011				196.3	255.3
2012				194.2	257.0
2013				177.2	238.8
2014				135.2	185.4
2015				112.8	157.5
2016				94.0	133.7
2017				77.2	111.7
2018				53.0	78.1
2019				36.4	54.6
2020				25.0	38.2
Subtotal	3136			2900.7	3672.8

The quantity, 3,136, reflects total tons of agent to be destroyed by the Assembled Chemical Weapons Alternatives (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				68.1	81.9
2006				56.3	68.9
2007				45.2	56.3
2008				10.3	13.1
2009				0.8	1.0
Subtotal				302.1	363.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3136			3202.8	4036.6

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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	8876	8876

Percent Total Program Quantities Delivered: 30.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 10896.5

Percent Total Program Expended: 53.6%

Assembled Chem Wpns Alt's

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): \$ 323

Percent Total Program Expended: 8.0%

**18. Operating and Support Costs:**

Chem Demil Program

a. Assumptions and Ground Rules --  
Operating and Support costs are an integral part of the Chemical Demilitarization Program (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

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

Chem Demil Program

Total O&S Cost	Chem Demil Program	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

**Assembled Chem Wpns Alt's**

**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 Alt's	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	Assembled Chem Wpns Alt's	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 3/19/2004 12:37:32 PM

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# A-15 LAND WARRIOR

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM:** Land Warrior

**AS OF DATE:** December 31, 2003

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Popular Name): Land Warrior (LW)

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, BLDG 317	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 Project D667  
PROCUREMENT:  
APPN 2035 ICN M80500 (Army)  
APPN 2035 ICN MS3610 (Army)

5. References:

SAR Baseline (Development Estimate):  
FY 2004 President's Budget, dated February 3, 2003.

Approved Program:  
AAE Approved Acquisition Program Baseline (APB) dated October 2, 2003.

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## **6. Mission and Description:**

The Land Warrior (LW) is a first generation, modular, integrated fighting system focused on the needs of the individual infantry Soldier and Soldiers in support of the close fight. LW combines state-of-the-art commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) technologies with newly developed components and technologies to create a lethal, survivable Soldier system linked into the digitized battlefield. It will achieve the Army's Vision of enhancing the individual Soldier's close combat tactical awareness, lethality, and survivability. 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 integrates the man-worn ensemble to meet specific Stryker Brigade requirements, such as on-board power recharging from the Stryker vehicle, mounted to dismounted communications, and expanded situational awareness.

The LW system will be fielded to Army Airborne, Air Assault, Light, Long Range Surveillance, Ranger, Stryker Brigade Combat Team (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. and allied military systems, and supports the Future Force transition path of the Army Campaign Plan.

## **7. Executive Summary:**

On June 27, 2003, the Under Secretary of Defense for Acquisition, Technology, and Logistics conducted a Defense Acquisition Executive Summary Review of the LW program at which time two actions were identified:

- (1) Submit a quarterly exception Selected Acquisition Report (SAR) based on the program's two-year slip of Milestone C. The quarterly exception SAR was submitted as of the June 2003 reporting period.
- (2) Conduct an "Overarching Integrated Product Team (OIPT)-like" review of the restructured program following the September 2003 Army System Acquisition Review Council (ASARC) In-Progress Review (IPR). The "OIPT-like" review was successfully completed on November 21, 2003.

On September 30, 2003, the Army Acquisition Executive conducted an ASARC IPR of the LW program for the purpose of LW Acquisition Program Baseline and LW Acquisition Strategy approval.

The LW Test and Evaluation Master Plan (TEMP) was approved and signed by the Director, Operational Test and Evaluation on December 8, 2003.

The LW program is focusing on the development of the Land Warrior-Stryker Interoperable system, which will meet the Operational Requirement Document (ORD) Block I and Block II requirements.

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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	AUG 1994	AUG 1994
Milestone C	DEC 2003	JUN 2006	JUN 2006 (Ch-1)
First Unit Equipped	SEP 2005	JUN 2007	JUN 2007 (Ch-1)
Full Rate Production Decision Review	N/A	NOV 2007	NOV 2007 (Ch-1)
Initial Operational Capability	SEP 2006	JUN 2008	JUN 2008 (Ch-1)

b. Current Change Explanations --

(Ch-1) The Army Acquisition Executive approved the LW Acquisition Program Baseline on October 2, 2003. The current estimates for the following milestones have changed to incorporate additional testing time:

	From	To
Milestone C	DEC 2005	JUN 2006
First Unit Equipped	SEP 2006	JUN 2007
Full Rate Production Decision Review	SEP 2006	NOV 2007
Initial Operational Capability	SEP 2007	JUN 2008

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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>	
Capability Improvement					
Interoperability					
(Common Picture)					
Provide ABCS Interoperability	Yes	Yes / Yes	TBD	Yes	(Ch-1)
Situational Awareness					
Provide data exchange (situa- tional awareness, orders, & overlay info) from the interim force vehicles to the LW	Yes	Yes / Yes	TBD	Yes	(Ch-1)
Provide the capa- bility for the LW System on one ICV to communi- cate w/LW Systems on other vehicles	Yes	Yes / Yes	TBD	Yes	(Ch-1)
Mobility - Combat Load					
Integrate GFE and LW capability rqmts such that the total wt of the Soldier's combat load is <= to stated wt (lbs)	<=72	<=72 / <=77	TBD	<=72	
Sustainability					
Provide a system power source & integrate power mgmt to achieve a system runtime of stated mhrs w/ disposable power source (msn hrs)	72	72 / 24	TBD	72	
Provide on-board power recharging capability in the interim force vehicle for LW equipped Soldier	Yes	Yes / Yes	TBD	Yes	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
LW CFE Soldier and leader ensem- ble shall operate for 12 hrs w/o incurring a msn affecting failure at the stated probability				
Leader System (%)	>=.93	>=.93 / >=.92	TBD	>=.93
Soldier System (%)	>=.94	>=.94 / >=.92	TBD	>=.94

Acronyms:

ABCS	Army Battle Command System
CFE	Contractor Furnished Equipment
GFE	Government Furnished Equipment
hrs	Hours
ICV	Infantry Combat Vehicle
lbs	Pounds
msn	Mission
%	Percent
TBD	To Be Determined
wt	Weight
w/	With
w/o	Without

b. Current Change Explanations --

(Ch-1) These performance parameters were reformatted to improve readability.

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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)	734.4	949.8	952.1
Procurement	1717.1	8212.8	8010.5
			(0.0)
Recurring Walkaway Cost	(623.4)		(1999.0)
Component Replacement	(950.0)		(5285.0)
Total Flyaway	(1573.4)		(7284.0)
Training	(49.2)		(389.0)
Data	(0.4)		(8.9)
Total Other Wpn Sys	(49.6)		(397.9)
Peculiar Support	(69.6)		(182.7)
Initial Spares	(24.5)		(145.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	2451.5	9162.6	8962.6
Escalation	392.9	3150.4	3350.6
Development (RDT&E)	(32.3)	(30.9)	(28.6)
Procurement	(360.6)	(3119.5)	(3322.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2844.4	12313.0	12313.2
b. Quantity --			
Development (RDT&E)	372	138	138
Procurement	15613	58900	58900
Total	15985	59038	59038

The Army Acquisition Executive will validate the LW Low Rate Initial Production quantity and long-lead items at the Fiscal Year 2005 ASARC IPR.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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**12. Unit Cost Summary:**

	UCR Baseline (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	9162.6	8962.6	
(2) Quantity	59038	59038	
(3) Unit Cost	0.155	0.152	-1.94
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	8212.8	8010.5	
(2) Quantity	58900	58900	
(3) Unit Cost	0.139	0.136	-2.16

**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	-1.0	+20.1	-	+19.1
Quantity	-	+8445.2	-	+8445.2
Schedule	-	+32.1	-	+32.1
Engineering	-	-	-	-
Estimating	+215.0	+0.1	-	+215.1
Other	-	-	-	-
Support	-	+757.3	-	+757.3
Subtotal	+214.0	+9254.8	-	+9468.8
Total Changes	+214.0	+9254.8	-	+9468.8
Current Estimate	980.7	11332.5	-	12313.2

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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	-	+5710.5	-	+5710.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+217.7	+0.1	-	+217.8
Other	-	-	-	-
Support	-	+582.8	-	+582.8
Subtotal	+217.7	+6293.4	-	+6511.1
Total Changes	+217.7	+6293.4	-	+6511.1
Current Estimate	952.1	8010.5	-	8962.6

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
Increased funding to meet LW ORD Block II development requirements (predominately software and vehicle integration). (Estimating)	+217.0	+214.3
RDT&E Subtotal	+217.7	+214.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+20.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Increased funding for technology insertions/refreshment and system upgrade costs associated with the quantity increase of 43,287 systems from 15,613 to 58,900 systems (Provides refreshments of Commercial Off The Shelf components on a five-year schedule over a 20-year system life). (Quantity)	+4050.0	+6291.8

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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>
Delay production start from Fiscal Year 2004 to FY 2006. (Schedule)	0.0	+32.1
Increased funding for a quantity increase of 43,287 systems from 15,613 to 58,900 systems to align with approved Army Acquisition Objective (AAO). (Quantity)	+1660.5	+2153.4
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Increased funding for Initial Spares due to quantity increase. (QR)(Support)	+121.3	+151.3
Increased funding for Peculiar Support due to quantity increase. (QR)(Support)	+112.9	+150.2
Increased funding for Training due to quantity increase. (QR)(Support)	+339.8	+445.2
Increased funding for Data due to quantity increase. (QR)(Support)	+8.5	+10.3
 Procurement Subtotal	 <u>+6293.4</u>	 <u>+9254.8</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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.178	--	+0.013	+0.001	--	+0.004	--	+0.013	+0.031	0.209

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	--	+0.045	+0.001	--	--	--	+0.013	+0.059	0.192

The Army Acquisition Executive approved the LW Acquisition Program Baseline on October 2, 2003.

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Land Warrior, December 31, 2003

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	AUG 1994	N/A	AUG 1994
Milestone II	N/A	AUG 1994	N/A	AUG 1994
Milestone C	N/A	DEC 2003	N/A	JUN 2006
FUE	N/A	SEP 2005	N/A	JUN 2007
Total Cost	N/A	2844.4	N/A	12313.2
Total Quantity	N/A	15985	N/A	59038
Prog Acq Unit Cost	N/A	0.2	N/A	0.2

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

a. RDT&E --	Initial Contract Price		
<u>Land Warrior:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Dynamics, Scottsdale, AZ			
DAAB07-03-C-N001, CPFF	\$59.9	N/A	69
Award: January 30, 2003			
Definitized: N/A			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$161.5	N/A	\$161.5	\$161.5
Previous Cumulative Variances		N/A	N/A
Cumulative Variances To Date		\$1.2	\$-1.6
Net Change		\$1.2	\$-1.6

Explanation of Change:

Net favorable Cost Variance due to proceeding under cost and net unfavorable Schedule Variance due to staffing effort and delay in schedule.

Contract Comments:

The difference between Initial Contract Price Target and the Current Contract Price Target is attributed to recent contract modifications. Examples include development of a digital Full Function Crew Station (FFCS) interface for voice communication, LW vehicle-based battery charger, OSD requirement to meet Department of Defense Instruction 8500.2, Information Assurance, additional risk mitigation efforts, and on-going field assessment of possible early capability spiral for LW situational awareness for Soldiers. Initial Contract Price Quantity should have read 69 vice 0 in prior SAR. Contract has been rebaselined and definitization is on-going at this time.

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

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

<u>Appropriation</u>	<u>Prior Years (FY93-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-38)</u>	<u>Total</u>
RDT&E	378.1	81.0	91.3	430.3	980.7
Procurement	-	-	9.6	11322.9	11332.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	378.1	81.0	100.9	11753.2	12313.2

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>
1993				2.6	2.3
1994				4.3	3.9
1995				6.8	6.2
1996				22.1	20.6
1997				53.6	50.6
1998				41.0	39.0
1999				45.1	43.4
2000				40.3	39.4
2001				60.2	59.5
2002				59.4	59.3
2003				53.3	53.9
2004				79.1	81.0
2005				87.8	91.3
2006				99.2	104.8
2007				107.5	115.7
2008				117.3	128.7
2009				72.5	81.1
Subtotal	138			952.1	980.7

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>
2004					
2005				9.2	9.6
2006	1900		72.3	85.3	90.5
2007	2900		115.2	179.9	194.5

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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	2625		102.2	143.5	158.2
2009	2347		93.6	133.5	150.1
2010	1643		87.4	113.9	130.6
2011	1072		97.5	113.2	132.5
2012			112.7	113.5	135.5
2013	5060		242.8	297.0	361.5
2014	7209		303.2	385.4	478.6
2015	8235		327.4	414.0	524.3
2016	7698		329.3	410.9	530.8
2017	7604		358.8	436.9	575.7
2018	4245		391.8	435.8	585.7
2019	6362		387.3	452.3	620.0
2020			313.6	315.2	440.7
2021			292.2	293.8	419.0
2022			292.5	294.2	428.0
2023			385.3	387.1	574.4
2024			451.4	453.7	686.7
2025			345.8	347.4	536.3
2026			282.3	283.8	446.9
2027			260.3	261.6	420.2
2028			296.3	297.8	487.9
2029			392.1	394.0	645.5
2030			237.7	239.1	391.7
2031			216.2	217.5	356.3
2032			200.8	202.1	331.1
2033			131.7	132.6	217.3
2034			164.3	165.5	271.1
2035				0.3	0.5
2036				0.2	0.4
2037				0.2	0.3
2038				0.1	0.1
Subtotal	58900		7284.0	8010.5	11332.5

Fiscal Year 2012 and Fiscal Years 2020-2034 have Procurement funds without corresponding quantities due to technology insertions/refreshments and system upgrades.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	59038		7284.0	8962.6	12313.2

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**17. Delivery/Expenditure Information:**

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

Percent Total Program Quantities Delivered: 0.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 376.7

Percent Total Program Expended: 3.1%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --  
Operating and Support (O&S) costs reflect regular Army activity and are presented as an estimate of the average annual cost per fielded LW system. These costs assume the average operating tempo of 630 hours per year.

LW does not impact current Army force structure. Therefore, Mission Pay & Allowances costs are estimated as zero.

LW maintenance concept is for two levels of maintenance. Therefore, Intermediate Maintenance costs are estimated as zero.

The O&S estimate assumes a useful life of 20 years and a quantity of 58,900 systems.

The source for this cost estimate is the Army Cost Position, dated October 2003.

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	Land Warrior Avg. Annual Cost Per System	Antecedent System
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.9	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.8	N/A
Contractor Support	0.4	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.3	N/A
Total	2.4	N/A

Total O&S Cost	Land Warrior	Antecedent System
BY\$ (In Millions)	4154.7	N/A
TY\$ (In Millions)	6176.3	N/A

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

Report Creation Date: 3/17/2004 10:11:03 AM

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AF-4 B-1B CMUP

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

PROGRAM: B-1B CMUP

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): B-1B Conventional Mission Upgrade Program (Computer Upgrade)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/YD	Col James H. Lynch
B-1 System Program Office	Assigned: April 18, 2003
2690 Loop Road West, Room 104	DSN 785-3281; COMM (937) 255-3281
WPAFB, OH 45433-7148	James.Lynch@wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604226F

PROCUREMENT:

APPN 3010 ICN 0101126F (Air Force)

O&M:

PE 0101126F

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DEPARTMENT OF DEFENSE

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B-1B CMUP, December 31, 2003

## **5. References:**

SAR Baseline (Production Estimate):

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated April 11, 2003.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated April 11, 2003.

## **6. Mission and Description:**

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. The Conventional Mission Upgrade Program (CMUP) was to have been accomplished in three major system upgrades to the aircraft--Joint Direct Attack Munitions (JDAM) and Communications Upgrade, Defensive System Upgrade (DSUP) and Computer Upgrade. Subsequently, the DSUP was deferred and the JDAM upgrade has been fielded.

The Computer Upgrade is the only remaining major element of 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 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.

## **7. Executive Summary:**

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.

This annual SAR is being submitted for the Computer Mission Upgrade Program (CMUP) Computer Upgrade. CMUP Computer Upgrade is in full-rate production. The FY 2003 hardware procurement buy was exercised on April 14, 2003, using the B-1 Next Enhancement (BONE) contract. The B-1 System Program Office declared Required Assets Available (RAA) complete on June 25, 2003.

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

B-1 aircraft are being modified at Ellsworth AFB by a contractor field team. Installs began on July 28, 2003, and will be completed by the end of CY 2005. Software fielding decision was made on December 17, 2003. As of February 11, 2004, eight software release E/EI installs have been completed and two additional are currently in work. The E/EI software provides the capability to deliver multiple weapons on a single sortie.

**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	APR 1993	APR 1993	APR 1993
Milestone II	JAN 1995	JAN 1995	JAN 1995
Development Contract Award	MAY 1996	MAY 1996	MAY 1996
Critical Design Review	MAY 1998	MAY 1998	JUN 1998
Low Rate Production Contract Award	JUL 1999	JUL 1999	NOV 1999
Service Final DT&E			
Start	FEB 2001	FEB 2001	DEC 2000
Complete	MAR 2002	MAR 2002	JUN 2002
Low Rate Initial Production 1st Delivery	NOV 2001	NOV 2001	MAY 2001
IOT&E			
Start	FEB 2001	FEB 2001	DEC 2000
Complete	OCT 2002	OCT 2002	DEC 2002

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9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone III	JAN 2003	JAN 2003	APR 2003
Full Rate Production Contract Award	JAN 2003	JAN 2003	APR 2003
Required Assets Available	JAN 2003	JAN 2003	JUN 2003

Acronyms:

DT&E - Development Test and Evaluation

IOT&E - Initial Operational Test and Evaluation

Notes:

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

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Weapons Flexibility	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/ 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 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 type per bay) with a single software load.
Mission Capable (MC) Rate (%)	75	75 / 65	TBD	67

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10a. Performance Characteristics (Cont'd):

Mission Capable Rate as expressed applies to the overall fleet aircraft wartime mission capable rate. The integration of the weapons upgrade modification will not cause the fleet Mission Capable rate to degrade below the threshold value. For information only - the following reliability and maintainability parameters are included 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

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	260.2	260.2	245.8
Procurement	116.5	116.5	117.0
Recurring	(109.6)		(109.3)
Nonrecurring	(3.3)		(3.3)
Total Flyaway	(112.9)		(112.6)
Other Wpn System Spt Cost	(0.0)		(0.0)
Peculiar Support	(0.4)		(0.4)
Initial Spares	(3.2)		(4.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	316.6	316.6	303.5
Total FY 2003 Base-Year \$	693.3	693.3	666.3
Escalation	-17.9	-17.9	-18.6
Development (RDT&E)	(-9.8)	(-9.8)	(-9.8)
Procurement	(2.7)	(2.7)	(2.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(-10.8)	(-10.8)	(-10.8)
Total Then Year \$	675.4	675.4	647.7

This is part II of rebaselining the SAR at Milestone III. The SAR Development Estimate has been replaced with SAR Production Estimate.

b. Quantity --

Development (RDT&E)	N/A	0	0
Procurement	60	60	60
Total	60	60	60

Low Rate Initial Production (LRIP) 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).

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (APR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	693.3	666.3	
(2) Quantity	60	60	
(3) Unit Cost	11.555	11.105	-3.89
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	116.5	117.0	
(2) Quantity	60	60	
(3) Unit Cost	1.942	1.950	+0.41

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**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	250.4	119.2	-	305.8	675.4
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Economic	-	-0.3	-	+0.1	-0.2
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-14.4	-0.7	-	-13.2	-28.3
Other	-	-	-	-	-
Support	-	+0.8	-	-	+0.8
Subtotal	-14.4	-0.2	-	-13.1	-27.7
Total Changes	-14.4	-0.2	-	-13.1	-27.7
Current Estimate	236.0	119.0	-	292.7	647.7

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	260.2	116.5	-	316.6	693.3
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-14.4	-0.3	-	-13.1	-27.8
Other	-	-	-	-	-
Support	-	+0.8	-	-	+0.8
Subtotal	-14.4	+0.5	-	-13.1	-27.0
Total Changes	-14.4	+0.5	-	-13.1	-27.0
Current Estimate	245.8	117.0	-	303.5	666.3

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

**b. Current Change Explanations --**

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&amp;E</u>		
	Reduction in Program Office Estimate due to actual contract cost. (Estimating)	-14.4	-14.4
	RDT&E Subtotal	-14.4	-14.4
(2)	<u>Procurement</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)	+0.3	+0.4
	Updated Program Office Estimate. (Estimating)	-0.6	-1.1
	Revision of Initial Spares Estimate. (Support)	+0.8	+0.8
	Procurement Subtotal	+0.5	-0.2
(3)	<u>O&amp;M</u>		
	Revised escalation indices. (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	Updated estimate in O&M to reflect actuals. (Estimating)	-13.0	-13.1
	O&M Subtotal	-13.1	-13.1

**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	
4.03	--	--	--	--	--	--	--	--	4.03

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
11.26	-0.003	--	--	--	-0.472	--	+0.013	-0.462	10.80

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	
2.25	--	--	--	--	--	--	--	--	2.25

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	
1.99	-0.005	+0.001	--	--	-0.012	--	+0.013	-0.003	1.98

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	APR 1993	APR 1993	APR 1993
Milestone II	N/A	JAN 1995	JAN 1995	JAN 1995
Milestone III	N/A	JAN 2001	JAN 2003	APR 2003
IOC	N/A	JAN 2003	JUN 2003	JUN 2003
Total Cost	N/A	414.9	675.4	647.7
Total Quantity	N/A	103	60	60
Prog Acq Unit Cost	N/A	4.0	11.3	10.8

Date shown for IOC is the RAA data. HQ Air Combat Command (ACC) agreed to use the RAA date in lieu of IOC. RAA was completed on June 25, 2003.

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

The contract is currently 96.2% complete, therefore updated contract information has been omitted.

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

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

<u>Appropriation</u>	<u>Prior Years (FY93-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	236.0	-	-	-	236.0
Procurement	75.2	37.0	6.8	-	119.0
MILCON	-	-	-	-	-
O&M	292.7	-	-	-	292.7
Total	603.9	37.0	6.8	-	647.7

**b. Annual Summary -- Computer Upgrade**

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

<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>
1993				4.5	4.0
1994					
1995				1.4	1.3
1996				14.3	13.3
1997				34.8	32.8
1998				47.0	44.6
1999				54.1	51.9
2000				41.8	40.7
2001				34.9	34.4
2002				12.4	12.4
2003				0.6	0.6
Subtotal				245.8	236.0

Appropriation: 3010 - Aircraft Procurement, Air Force

<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>
2000	6		8.2	8.2	8.1
2001		0.2	0.6	0.8	0.8
2002	10	0.1	18.7	19.2	19.3

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B-1B CMUP, December 31, 2003

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

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	28	2.9	41.5	46.3	47.0
2004	16	0.1	34.7	36.0	37.0
2005			5.6	6.5	6.8
2006					
Subtotal	60	3.3	109.3	117.0	119.0

For modification programs, budget policy requires kits to be funded in the year of acquisition and installations to be funded in the year the aircraft is inducted for installation. Given the lead time to deliver a kit is greater than twelve months, installations will occur in following years. The buy profile is based on the year in which the kits are procured. Therefore, in the last year in which there is an install, there is no kit quantity since the kit was purchased in a previous year.

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				5.8	5.4
1997				30.8	29.0
1998				64.5	61.2
1999				75.4	72.3
2000				57.2	55.7
2001				49.6	49.0
2002				20.2	20.1
2003					
Subtotal				303.5	292.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	60	3.3	109.3	666.3	647.7

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B-1B CMUP, December 31, 2003

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	13	13

Percent Total Program Quantities Delivered: 21.7%

b. Total Expenditures To Date (In Millions of Dollars): \$ 579.5

Percent Total Program Expended: 89.5%

**18. Operating and Support Costs:**

a. 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. Operating 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 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 Operating & Support costs reflect aircraft life 2002 through 2026.

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)

Cost Element	Computer Upgrade 60 B-1B Aircraft Avg Annual Costs	B-1B AP101F Computer 60 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

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B-1B CMUP, December 31, 2003

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

Total O&S Cost	Computer Upgrade	B-1B AP101F Computer
BYS	218.8	1902.5
TY\$	304.5	2747.3

Report Creation Date: 03/22/2004 6:42:17 PM

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# N-29 TACTICAL TOMAHAWK

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## SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: TACTICAL TOMAHAWK

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): RGM 109E/ UGM-109E TACTICAL TOMAHAWK AUR
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
PEO Strike Weapons and Mr D.K Sanders  
Unmanned Aviation (Acting) Assigned: December 5, 2003  
Patuxent River, MD 20670-1547 DSN 757-6334; COMM 301-757-6334  
david.sanders@navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0204229N Project A0545, A2658, A2659  
PROCUREMENT:  
(U) APPN 1507 ICN 210100 (Navy)

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~~Derived from: OPNAVINST S5513.2B  
Downgrade instructions: OPNAVINST S5513.2B  
Declassify on: X3~~

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TOMAHAWK(R/UGM-109E), December 31, 2003

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Navy Acquisition Executive approved Acquisition Program Baseline (APB) dated September 27, 1997.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated September 12, 2003.

**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 overflow 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 re-certification 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) 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 99% complete. 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.

During this SAR reporting period, AUR level qualification testing, system level qualification testing, Naval Safety authorization for the TT AUR to be handled and launched from Naval vessels, Live Fire Test and Evaluation (LFT&E) testing and four highly successful formal Government Technical Evaluation (TECHEVAL) Flight Tests (DT-4, DT-5, DT-6 and DT-7) of the AUR were conducted. The DT-4 and DT-5 were launched on the surface from the USS Stethem (DDG-63) in the Vertical Launch System (VLS) configuration in April and May 03 respectively. DT-6 and DT-7 were launched below the water's surface from the USS Tucson (SSN-770) in the Capsule Launch System (CLS) configuration in July 03. All flight tests were successfully executed and flew fully guided flight profiles using Global Positioning System (GPS) and Digital Scene Matching Area

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TOMAHAWK(R/UGM-109E), December 31, 2003

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

Correlation (DSMAC) navigation updates. All TECHEVAL flights successfully demonstrated the anti-jam protection capabilities, in-flight retargeting and satellite communication capabilities, and impacted the targets well within its target impact accuracy requirement, achieving all required test objectives. Based upon the results of all AUR, Tomahawk Weapon System (TWS) interface, and TECHEVAL flight testing, the TT AUR program entered formal OPEVAL with the successful execution of the Operational Test Readiness Review (OTRR) on 01 December 2003.

The Tomahawk Baseline IV Weapon System (TWS) has completed all OPEVAL test events with four flight test events (two surface and two underwater launches), numerous mission planning exercises and a complete 96-hour end-to-end operational scenario scheduled. OPEVAL is planned to complete in March 2004 and the release of the formal operational evaluation test report by Commander, Operational Test Force in May 2004.

The government and contractor have been conducting Production Readiness Reviews with both the Prime contractor and its key subcontractors covering their facilities and production processes. Additionally, an ASN (RDA) directed Non-Advocate Acquisition Review has been completed which assessed the Program's readiness to proceed to Block IV Tomahawk production as favorable. The FY03 Emergency Supplemental Appropriation provided an increase of \$193 million of FY03 WPN funding to procure approximately 183 additional Block IV Tomahawk LRIP missiles as a result of expenditures of Tomahawk Block III during Operation Iraqi Freedom. The contract is being negotiated as LRIP 3 with Raytheon for 183 Block IV Tomahawk missiles. The FY04 Defense Authorization and Appropriations Act provided for the Navy to proceed toward an FY04 Block IV Tomahawk Multi-year Contract Award. A multi-year full rate production contract for a target quantity of 1981 Block IV Tomahawk missiles is also being negotiated. This multi-year procurement strategy is estimated to realize significant savings (\$133M) over annualized procurements. The Navy and Raytheon are negotiating contract awards in March 2004 for LRIP 3 and June 2004 for Full Rate Production (FRP).

The FY 2005 President's Budget reflects a sponsor supported weapons procurement increase to more closely match Naval forces missile requirements and restore inventory levels of Tomahawks launched during operations Enduring Freedom and Iraqi Freedom. The FY 2005 President's Budget increases the production of LRIP and FRP missiles to a new mandated missile quantity increase of 394 (total 2780) missiles over the previous program of record quantity of 2386 (Sept 03 APB). The increase precipitated an associated procurement cost and total acquisition cost APB breach. The revised APB, to reflect increased quantities, has been submitted to the Milestone Decision Authority for approval.

The Tactical Tomahawk AUR is meeting and in most cases exceeding its design performance requirements and the program is executing within all APB thresholds. Initial Operational Capability (IOC) is planned for May 2004. MS-III decision and FRP Award are on track for June 2004.

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TOMAHAWK(R/UGM-109E), December 31, 2003

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 2005 President's Budget. The driver for the increase was additional missile procurement (394 Baseline IV Tactical Tomahawk missiles for a total of 2780) over the previous program of record quantity (2386 missiles, September 12, 2003 APB).

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II Development Contract Award	JUN 1998	JUN 1998	JUN 1998
Operational Assessment	OCT 2001	OCT 2002	JAN 2003
TECHEVAL			
Start	JAN 2002	OCT 2002	MAR 2003
Complete	SEP 2002	JUL 2003	OCT 2003
OPEVAL			
Start	OCT 2002	AUG 2003	DEC 2003 (Ch-1)
Complete	MAR 2003	MAR 2004	MAR 2004
LRIP Authorization	DEC 2001	JUN 2002	SEP 2002
Milestone III	JUN 2003	MAY 2004	JUN 2004
FRP Contract Award	JUL 2003	MAY 2004	JUN 2004
Initial Operational Capability	APR 2003	MAR 2004	MAY 2004
LRIP 2	N/A	JAN 2003	JAN 2003

(U) Acronyms:

OA-Operational Assessment

TECHEVAL-Technical Evaluation

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TACTICAL TOMAHAWK, December 31, 2003

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

OPEVAL-Operational Evaluation  
LRIP-Low Rate Initial Production  
FRP-Full Rate Production

b. Current Change Explanations --

(U) (Ch-1) Operational Evaluation (OPEVAL) Start changed from November 2003 to December 2003 to reflect the December 1, 2003 Operational Test Readiness Review (OTRR) due to scheduling conflicts.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Accuracy Land Attack CEP (ft.)				
ECCM Jam Resistance GPS/Navigation (dBW)				
Mission Reliability (%)				
Cruise Reliability (%)				
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 and Government development test flights DT-0, DT-1, DT-4, DT-5, DT-6, and DT-7.

Mission Reliability and Cruise Reliability were demonstrated in TECHEVAL

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TOMAHAWK(R/UGM-109E), December 31, 2003

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

b. Current Change Explanations -- None

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	525.3	525.3	564.9
Procurement	1158.4	2098.6	2412.4
Flyaway	(860.0)		(1869.5)
Other Weapon System Costs	(237.6)		(509.2)
Peculiar Support	(60.8)		(33.7)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1999 Base-Year \$	1683.7	2623.9	2977.3
Escalation	179.7	335.0	313.0
Development (RDT&E)	(6.3)	(55.7)	(16.1)
Procurement	(173.4)	(279.3)	(296.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1863.4	2958.9	3290.3
b. (U) Quantity --			
Development (RDT&E)	12	10	10
Procurement	1353	2386	2780
Total	1365	2396	2790

(U) 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 October 2002 for 25 missiles and an LRIP II option award in January 2003 for 167 additional missiles upon successful completion of an Operational Assessment.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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TOMAHAWK(R/UGM-109E), December 31, 2003

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1999 BY\$)	2623.9	2977.3	
(2) Quantity	2396	2790	
(3) Unit Cost	1.095	1.067	-2.56
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1999 BY\$)	2098.6	2412.4	
(2) Quantity	2386	2780	
(3) Unit Cost	0.880	0.868	-1.36

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	-1.6	-39.3	-	-40.9
Quantity	-	+686.7	-	+686.7
Schedule	+55.1	+297.2	-	+352.3
Engineering	-	-	-	-
Estimating	-4.1	+1.2	-	-2.9
Other	-	-	-	-
Support	-	+100.3	-	+100.3
Subtotal	+49.4	+1046.1	-	+1095.5
Current Changes:				
Economic	+0.1	-1.3	-	-1.2
Quantity	-	+216.0	-	+216.0
Schedule	-	-26.7	-	-26.7
Engineering	-	-	-	-
Estimating	-0.1	-45.8	-	-45.9
Other	-	-	-	-
Support	-	+189.2	-	+189.2
Subtotal	-	+331.4	-	+331.4
Total Changes	+49.4	+1377.5	-	+1426.9
Current Estimate	581.0	2709.3	-	3290.3

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TOMAHAWK(R/UGM-109E), December 31, 2003

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	-	+587.7	-	+587.7
Schedule	+50.3	+161.3	-	+211.6
Engineering	-	-	-	-
Estimating	-10.6	+219.0	-	+208.4
Other	-	-	-	-
Support	-	-27.8	-	-27.8
Subtotal	+39.7	+940.2	-	+979.9
Current Changes:				
Quantity	-	+181.9	-	+181.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	-140.4	-	-140.5
Other	-	-	-	-
Support	-	+272.3	-	+272.3
Subtotal	-0.1	+313.8	-	+313.7
Total Changes	+39.6	+1254.0	-	+1293.6
Current Estimate	564.9	2412.4	-	2977.3

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+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	-7.5
Economic adjustment for negative program change. (Economic)	N/A	+6.2
Total Quantity Variance associated with increase of 394 missiles from 2386 to 2780 missiles. (Quantity)	+181.9	+216.0
Acceleration of annual procurement buy profile. Buying more missiles earlier. (Schedule)	0.0	-26.7
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.4
Revision of program cost estimate (Estimating)	+48.4	-45.8
Adjustment for Current and Prior Inflation. (Support)	+0.8	+0.8
Increase in Peculiar Support (Support)	+0.7	+0.8

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TOMAHAWK(R/UGM-109E), December 31, 2003

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	<u>Base-Year</u>	<u>Then-Year</u>
Increase in Other Weapon System Costs.	+80.8	+94.6
Additional canisters and capsules required due to additional 394 missiles procured.		
(QR)(Support)		
Revision to December 2002 SAR to correct cost variance categorization.		
(Support)	+112.5	0.0
(Estimating)	-112.5	0.0
Correction to December 2002 SAR to align flyaway and support costs		
(Support)	+77.5	+93.0
(Estimating)	-77.5	-93.0
Procurement Subtotal	+313.8	+331.4

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	
1.37	-0.015	-0.375	+0.117	--	-0.017	--	+0.104	-0.186	1.18

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	-0.015	-0.180	+0.097	--	-0.016	--	+0.104	-0.010	0.975

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TOMAHAWK(R/UGM-109E), December 31, 2003

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	3290.3
Total Quantity	N/A	1365	N/A	2790
Prog Acq Unit Cost	N/A	1.4	N/A	1.2

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

a. Procurement --

(U) LRIP 1 & 2:

RAYTHEON MISSILE SYSTEMS, TUCSON AZ

0019-02-C-3205, FPI

Award: October 3, 2002

Definitized: October 3, 2002

Initial Contract Price  
Target      Ceiling      Qty

\$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:

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. First LRIP missile is to be delivered in May 04 and remainder in following months thereafter.

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TOMAHAWK(R/UGM-109E), December 31, 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 (FY98-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	561.2	19.8	-	-	581.0
Procurement	510.0	352.6	256.2	1590.5	2709.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1071.2	372.4	256.2	1590.5	3290.3

b. Annual Summary -- TACTICAL TOMAHAWK AUR

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1999 Dollars Nonrec</u>	<u>Flyaway FY 1999 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1998				49.9	49.8
1999				120.4	121.5
2000				160.4	164.2
2001				101.6	105.4
2002				60.1	63.0
2003				54.1	57.3
2004				18.4	19.8
Subtotal	10			564.9	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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1999 Dollars Nonrec</u>	<u>Flyaway FY 1999 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2002	25		56.6	69.1	73.0
2003	350		365.2	408.6	437.0
2004	350		210.5	325.1	352.6
2005	293		176.2	232.6	256.2
2006	419		252.4	309.2	346.5
2007	434		261.5	330.3	377.1

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TOMAHAWK(R/UGM-109E), December 31, 2003

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

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 \$
2008	485		292.0	377.9	439.9
2009	424		255.1	359.6	427.0
Subtotal	2780		1869.5	2412.4	2709.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2790		1869.5	2977.3	3290.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RD&E	10	10
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 565

(U) Percent Total Program Expended: 17.2%

(U) TECHEVAL started in March 03 with four E&MD missiles expended. OPEVAL started in Dec 03 with an additional four scheduled E&MD missiles to be expended.

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.

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TOMAHAWK(R/UGM-109E), December 31, 2003

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

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 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 AVERAGE ANNUAL COST FOR TOTAL SYSTEM	TOMAHAWK BLOCK III AVERAGE ANNUAL 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	8.6	36.6
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0
Tech/Operational Support	10.9	16.0
Platform Maintenance	N/A	2.9
Theater Mission Planning	N/A	14.8
Mission Personnel	5.1	N/A
Demilitarization	1.3	N/A

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TOMAHAWK(R/UGM-109E), December 31, 2003

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

b. (U) Costs -- (FY 1999 Constant (Base-Year) Dollars in Millions)

Cost Element	TACTICAL TOMAHAWK AUR AVERAGE ANNUAL COST FOR TOTAL SYSTEM	TOMAHAWK BLOCK III AVERAGE ANNUAL COST FOR TOTAL SYSTEM
OTL	9.6	18.4
Software Support	3.7	13.3
	N/A	N/A
Indirect Costs	N/A	N/A
Total	39.2	102.0

Total O&S Cost	TACTICAL TOMAHAWK AUR	TOMAHAWK BLOCK III
BY\$ (In Millions)	1176.5	3058.4
TY\$ (In Millions)	1735.3	N/A

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AF-19 MP-RTIP

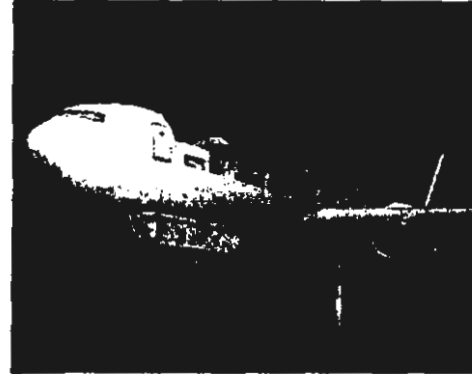
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: MP-RTIP

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): Multi-Platform Radar Technology Insertion Program

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

System Program Director	Col Joseph Smyth
ESC/MA	Assigned: August 8, 2001
75 Vandenberg Rd, Bldg 1630	DSN 478-7045; COMM 781-377-7045
Hanscom AFB	joseph.smyth@hanscom.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0207449F  
PE 0207450F  
PE 0207581F (Shared) Project 670003

5. References:

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 4, 2003

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated December 4, 2003

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## **6. Mission and Description:**

The Multi-Platform Radar Technology Insertion Program (MP-RTIP) is the result of a restructuring of the Joint STARS Radar Technology Insertion Program (RTIP), formerly a Pre-Planned Product Improvement to Joint STARS. MP-RTIP will design modular, scalable 2-dimensional active electronically scanned array (2D-AESA) radars suitable for integration on various airborne platforms. The MP-RTIP RDT&E effort will be accomplished in two phases: Pre-System Development and Demonstration (SDD) for radar design, and SDD for radar development, fabrication, integration, and test. The pre-SDD program includes a Wide Area Surveillance (WAS) radar design for integration on the E-10A, a smaller radar design for integration on the Global Hawk Unmanned Aerial Vehicle (UAV), and a conceptual radar design to support NATO's Transatlantic Cooperative Alliance Ground Surveillance (AGS) Radar (TCAR) Program. SDD will include the development, fabrication, integration, and test of MP-RTIP radars on the E-10A and Global Hawk airborne platforms. At this time, NATO has not chosen an AGS platform. As a result, neither a final design nor development of a NATO radar is currently included in the MP-RTIP effort.

MP-RTIP enables the E-10A with Multi-Sensor Command and Control Aircraft (MC2A) to provide a focused Air Moving Target Indicator (AMTI) to support Cruise Missile Defense (CMD), and a surface surveillance capability that includes a Ground Moving Target Indicator (GMTI) and Synthetic Aperture Radar (SAR) imaging. The E-10A, equipped with MP-RTIP, will provide near-real-time (NRT) surveillance and targeting information on stationary and moving targets, slow-moving rotary and fixed-wing aircraft, and rotating antennas, enabling tactical commanders to make and execute decisions for the employment of combat forces in the battlefield area. This includes providing a sensor/control system utilizing near-real-time information to direct attack systems to delay, disrupt, or destroy enemy mobile forces with conventional systems during all-light, adverse weather conditions. The MP-RTIP enabled mission includes conducting wide-area surveillance to detect, locate, classify, track, and monitor moving targets and providing target information to assigned direct attack aircraft and standoff weapons.

Wide-area target detection is required to monitor the movement and disposition of enemy forces and for use in resource prioritization, force allocation and Intelligence Preparation of the Battlefield at Army, Navy and Air Force Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) elements. The E-10A with MP-RTIP will be capable of responding to the full spectrum of worldwide non-nuclear crises ranging from deterring aggression, small-scale contingencies, to major theater wars. The system will function effectively in a dense electronic attack and threat environment.

When installed on the Global Hawk UAV, MP-RTIP will provide improved GMTI and SAR imaging over current capability. The weight and power restrictions of the platform drive the smaller Global Hawk Radar design and determine its performance. The Global Hawk's air surveillance modes are suitable for detecting aircraft, but insufficient to detect cruise missiles. The Global Hawk MP-RTIP variant will provide persistent GMTI and SAR imaging on a long endurance platform.

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

MP-RTIP, E-10A, Joint STARS, Global Hawk (GH), Multi-Platform Common Data Link (MP-CDL), AF Distributed Common Ground System (AF-DCGS), Army's Common Ground Station (CGS), Distributed Common Ground System Army (DCGS-A), and TCAR are coordinated as a system of systems and are synchronized to ensure the MP-RTIP family of systems provides required capabilities enabled by MP-RTIP to the warfighter.

#### **7. Executive Summary:**

This is the initial Selected Acquisition Report (SAR) submission for Multi-Platform Radar Technology Insertion Program (MP-RTIP).

Pre-System Development and Demonstration (SDD) began in December 2000 after approval by the Defense Acquisition Executive (DAE). A sole source contract was awarded to Northrop Grumman, teamed with Raytheon (as a subcontractor), for the radar design efforts. An Engineering Change Proposal (ECP) adjusted the contract effort to reflect a wide-body aircraft configuration for the large radar and the Balanced Plus configuration for the small Global Hawk radar.

During Pre-SDD, a highly successful Systems Requirements Review (SRR) was conducted in May 2001. The contractor demonstrated a clear understanding of the warfighter's requirements and properly allocated the associated system requirements across functional requirements.

As part of program activities, a Memorandum of Agreement (MOA) was completed in June 2001 that established important inter-program relationships, responsibilities, and key program linkages with other associated programs. This MOA provides the framework for managing the MP-RTIP enabled programs as a system-of-systems.

During February 2002, an Analysis of Alternatives (AoA) was completed by the Aerospace Command and Control and Intelligence, Surveillance, and Reconnaissance Center (AFC2ISRC) and recommended the Boeing 767-400ER as the platform for the wide area surveillance radar. This recommendation was subsequently endorsed by both Chief of Staff (CSAF) and Under Secretary of Defense for Acquisition, Technology and Logistics (USD/AT&L). Later in the year, December 2002, a successful Delta Radar Requirements Review/Radar Functional Review (RRR/RFR) was held to re-baseline the requirements to reflect a wide-body configuration for the wide area surveillance radar and the Balanced Plus configuration for the Global Hawk radar.

In May 2003, the Government issued a Request For Proposal (RFP) for the next phase of the MP-RTIP program, System Development and Demonstration (SDD). Also, in May, an Initial Design Review (IDR) was conducted by the contractor and verified that the contractor had an executable design approach. Performance estimates were provided for each of the radar modes at the IDR and these estimates were updated in December 2003 following the completion of all

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

three Mode Design Reviews.

As the program was preparing for its Milestone B, the Key Performance Parameters (KPPs) identified in the RTIP Operational Requirements Document (ORD) were revalidated in July 2003 through the Joint Requirements Oversight Council (JROC) process. Subsequently, MP-RTIP successfully met its Milestone B Defense Acquisition Board on October 16, 2003. The resulting Acquisition Decision Memorandum was signed on December 4, 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 --**

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
MP-RTIP MS B	APR 2003	APR 2003	OCT 2003
MP RTIP Final Design Review	JUN 2004	JUN 2004	JUN 2004
MP-RTIP Global Hawk Surrogate Testbed Integration and First Flight	DEC 2006	DEC 2006	DEC 2006
MP-RTIP E-10A 1st Radar DU Build/SIL Test	MAY 2007	MAY 2008	MAY 2007
MP-RTIP E-10A Testbed Integration and First Flight	OCT 2009	OCT 2009	OCT 2009

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9b. Schedule (Cont'd):

b. Current Change Explanations -- None

10. Performance Characteristics:

No data entered.

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)	1449.3	1449.3	1449.3
Procurement	0.0	0.0	0.0
Total Flyaway			(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	0.0	0.0	0.0
Total FY 2000 Base-Year \$	1449.3	1449.3	1449.3
Escalation	119.1	119.1	116.3
Development (RDT&E)	(119.1)	(119.1)	(116.3)
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 \$	1568.4	1568.4	1565.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	N/A	N/A	N/A
Total	0	0	0

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (DEC 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	1449.3	1449.3	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A
b. 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

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1568.4	-	-	1568.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-2.8	-	-	-2.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.8	-	-	-2.8
Total Changes	-2.8	-	-	-2.8
Current Estimate	1565.6	-	-	1565.6

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

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	1449.3	-	-	1449.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	1449.3	-	-	1449.3

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RD&E		
Revised escalation indices. (Economic)	N/A	-2.8
RD&E Subtotal	0.0	-2.8

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

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

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

**Current SAR Baseline to Current Estimate**

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	N/A

**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	APR 2003	N/A	OCT 2003
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	1568.4	N/A	1565.6
Total Quantity	0	0	N/A	0
Prog Acq Unit Cost	N/A	0.0	N/A	0.0

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

**a. RDT&E --**

MP-RTIP:

Northrop Grumman, El Segundo, CA

F1962800C0100, CPAF

Award: December 11, 2000

Definitized: April 11, 2001

**Initial Contract Price**

Target	Ceiling	Qty
\$303.2	N/A	0

**Current Contract Price**

Target	Ceiling	Qty
\$415.6	N/A	0

**Estimated Price At Completion**

Contractor	Program Manager
\$410.9	\$398.6

**Cost Variance Schedule Variance**

Previous Cumulative Variances  
Cumulative Variances To Date (12/31/03)  
Net Change

	N/A	N/A
	\$15.2	\$-9.1
	\$15.2	\$-9.1

**Explanation of Change:**

Of the \$9.1M cumulative unfavorable schedule variance, 97% resides in the radar design area. The cumulative variance is equivalent to 2% of the total allocated budget. Hardware design accounts for 83% of the total variance for the radar design area and was caused by staffing shortfalls and design challenges. Other radar design contributors are risk reduction/single string build and mode software development. The contractor has addressed the negative schedule variance in all areas by

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

establishing a recovery plan. This plan takes advantage the favorable cost variance (\$15.2M net) to hire more staff to recover schedule. Full schedule recovery is expected by March 2004.

**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	333.5	200.7	294.0	737.4	1565.6
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	333.5	200.7	294.0	737.4	1565.6

**b. Annual Summary -- MP-RTIP**

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				6.8	6.9
2001				40.9	41.8
2002				70.8	73.1
2003				202.9	211.7
2004				189.8	200.7
2005				274.2	294.0
2006				260.0	283.2
2007				196.4	217.8
2008				122.4	138.3
2009				85.1	98.1
Subtotal				1449.3	1565.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				1449.3	1565.6

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**17. Delivery/Expenditure Information:**

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 268.6

Percent Total Program Expended: 17.2%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The MP-RTIP effort includes the Research, Development, Test and Evaluation of radars for the Global Hawk and E-10A weapon systems. This is in accordance with the MP-RTIP Single Acquisition Management Plan, Milestone B, and APB. The cost for MP-RTIP production systems for Global Hawk and E-10A is allocated in the respective Global Hawk and E-10A programs. The Global Hawk and E-10A programs include the associated operating and support costs for their respective MP-RTIP radar subsystems.

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

Cost Element	MP-RTIP	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	MP-RTIP	Antecedent System
BY\$	N/A	N/A
TY\$	N/A	N/A

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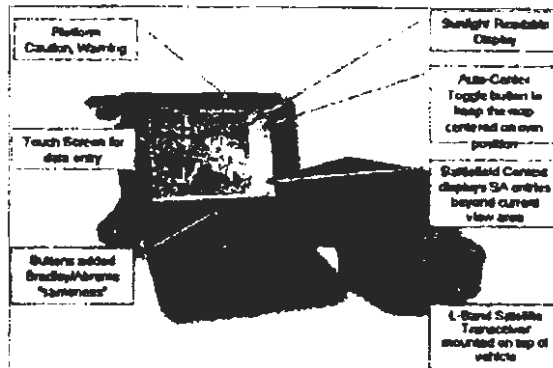
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: FBCB2

AS OF DATE: December 31, 2003

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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&amp;E:

PE 0203758A Project D374 (Shared)  
 PE 0203759A Project D120

## PROCUREMENT:

APPN 2035 ICN BS9736 (Army)  
 APPN 2035 ICN W61900 (Army) (Shared)

## O&amp;M:

PE 432000  
 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.

PM Abrams and PM Bradley also use W61900 Procurement Annex Line Item.

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FBCB2, December 31, 2003

## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated December 21, 1999.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 15, 2004.

## **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:**

The following events have occurred since the last SAR submission: successfully tested the FBCB2 system for extreme climate condition in February 2003, awarded the Low Rate Initial Production (LRIP) Contingency Option and obtained Milestone Decision Authority approval to extend the Low Rate Initial Production (LRIP) phase beyond FY 2003.

From FY 2002 through FY 2004, PM FBCB2 has been intensively engaged in the execution of Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF) and Blue Force Tracking (BFT) efforts which is satellite based communication for FBCB2 systems. The PM FBCB2 procured additional Movement Tracking System (MTS) Transceivers, Antennas and Precision Lightweight Global Positioning Systems (PLGRs) to support BFT efforts. The FBCB2 program continues to successfully execute its role in the OEF, OIF and BFT.

The program has been accelerated to complete fielding in FY 2007.

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FBCB2, December 31, 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 --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
BLOCK I			
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
Division Capstone Exercise (DCX1)/ Limited User Test (LUT#2)	N/A	APR 2001	APR 2001
Equip 4th ID at Ft Hood (IOC)	DEC 2000	DEC 2000	DEC 2000
Initial Operational Test & Evaluation (IOT&E)	NOV 2001	N/A	N/A
Milestone III Decision Review	APR 2002	N/A	N/A
Full Rate Production Award	JUN 2002	N/A	N/A
BLOCK II			
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
Participate in Army JTRS IOT&E	SEP 2005	N/A	N/A
Deployment of Block II Software	SEP 2005	SEP 2005	SEP 2005
Limited User Test (LUT) #3	N/A	N/A	N/A (Ch-1)

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9a. Schedule (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Initial Operational Test & Evaluation (IOT&E)	N/A	N/A	N/A (Ch-1)
Full Rate Production Decision Review - M/S III DAB	N/A	DEC 2003	AUG 2004 (Ch-3)
Full Rate Production Contract Award	N/A	JAN 2004	SEP 2004 (Ch-3)
FBCB2 Blue Force Tracking (BFT) Developmental/Operational Test (DT/OT)	N/A	MAR 2004	MAR 2004 (Ch-2)
Follow-on SE&I Contract Award	N/A	AUG 2004	AUG 2004 (Ch-3)
Software Version 6.4x Operational Evaluation	N/A	APR 2005	APR 2005 (Ch-2)

Acronym list:

ASARC = Army Systems Acquisition Review Council

DAB = Defense Acquisition Board

DAE = Defense Acquisition Executive

ID = Infantry Division

JTRS = Joint Tactical Radio System

M/S = Milestone

PEO C3S = Program Executive Office for Command, Control and Communications  
Systems

SE&I = Systems Engineering & Integration

b. Current Change Explanations --

(Ch-1) - Block II - Limited User Test #3, Initial Operational Test &  
Evaluation are no longer applicable.

(Ch-2) - FBCB2 Blue Force Tracking (BFT) Developmental/Operational Test  
(DT/OT) and Software Version 6.4x Operational Evaluation are new Schedule  
Milestones.

(Ch-3) - Follow-on SE&I Contract award has slipped from Jun 2004 to Aug  
2004; Full Rate Production Decision Review - M/S III DAB has changed from  
TBD to Aug 2004; and Full Rate Production Contract Award has changed from  
TBD to Sep 2004.

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10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Mean Time Between Essential Function Failure (MTBEFF)	910 hours	910 / 700	TBD	910 hours
KPP #1 Common Picture Operational FBCB2 equipped ground platforms shall display the operational force				
BLOCK I - Intra Brigade				
Immediate Battlespace (All opera- tional FBCB2)	N/A	90% / 50% Inter/ / intra / Bde /	TBD	90% Inter/in tra Bde
Extended Battlespace (Key opera- tional FBCB2)	N/A	80% / 50% Inter/ / intra / Bde /	TBD	80% Inter/in tra Bde
BLOCK II - Inter/Intra Brigade				
Immediate Battlespace (All opera- tional FBCB2)	N/A	90% / 50%	TBD	90%
Extended Battlespace (Key opera- tional FBCB2)	N/A	80% ( / 50% All / opnl / FBCB2) /	TBD	80% (All opnl FBCB2)
BLOCK III - Inter/Intra Brigade				
Immediate Battlespace (All opera- tional FBCB2)	N/A	90% / 75%	TBD	90%
Extended Battlespace (All opera- tional FBCB2)	N/A	80% / 50%	TBD	80%
Display of all operational FBCB2 equipped ground platforms				
BLOCK II (Only)				

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	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> Program (APB) <u>Obj/Threshold</u>		<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Battalion - Platoon (Center of Mass)	N/A	80%	/ 50%	TBD	80%
Brigade - Company (Center of Mass)	N/A	80%	/ 50%	TBD	80%
KPP #2					
Interoperability Performance measure of all top-level IERs					
BLOCK I Critical IER	N/A	100%	/ 100%	TBD	100%
BLOCK II/III Critical IER	N/A	100%	/ 100%	Partial during FT #5	100%
Non-Critical IER	N/A	100%	/ 100%	Partial during FT #5	100%
Interoperability w/other systems					
BLOCK I w/GPS	N/A	Yes	/ Yes	Yes	Yes
BLOCK II w/ specific ABCS					
Transmits/receives enemy position/correlated info to/from ASAS	N/A	Inter-operable/w/tactical/Allied/Coalition/systems /	/ Yes	TBD	Inter-operable w/tactical Allied/coalition systems
Transmits/receives control of direct fire information to/from AFATDS/FOS	N/A	Able to push/pull info from ABCS data-bases /	/ Yes	TBD	Able to push/pull info from ABCS data-bases
Transmits/receives orders info to/from MCS	N/A	Yes	/ Yes	TBD	Yes

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Transmits/ receives logistics info to/from CSSCS	N/A	Yes / Yes	TBD	Yes
Transmits/ receives air defense warn- ing info to/ from AMDPCS	N/A	Yes / Yes	TBD	Yes
BLOCK III Full ABCS				
Transmits/ receives enhanced (aggregate) enemy info to/from ASAS	N/A	Inter- / Yes operable/ w/ / tactical/ Allied/ / Coali- / tion / systems /	TBD	Inter-op erable w/ tactical Allied/C oalition systems
Transmits/ receives enhanced control of indirect fire info to/from AFATDS/FOS	N/A	Able to / Yes push/ / pull / info / from / ABCS / data- / bases /	TBD	Able to push/pul l info from ABCS data-bas es
Transmits/ receives C2 data (OP ORDs, combined arms graphics) to/from MCS	N/A	Yes / Yes	TBD	Yes
Transmits/ receives enhanced logistics info (med/ personnel C2 data) to/from CSSCS	N/A	Yes / Yes	TBD	Yes
Transmits/ receives SA and C2 data to/from AMDPCS	N/A	Yes / Yes	TBD	Yes

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	N/A	Yes	/ Yes	TBD	Yes
Transmits/ receives location info from Combat ID sensors	N/A	Yes	/ Yes	TBD	Yes
Transmits/ receives SA, C2, fire spt, enemy & warning info w/ Army, Navy, Air Force, & Marine Corps	N/A	Yes	/ Yes	TBD	Yes
KPP #3 Network Recon- figuration to support unit task reorganization (UTR)					
BLOCK I					
Intra-Brigade UTR Platoon/ Company in same Brigade	N/A	Inter Bde Co /Bn in same Div w/i 10 min	/ Yes / / / / /	Inter Bde Co/Bn in same Div w/i 10 min	Inter Bde Co/Bn in same Div w/i 10 min
BLOCK II					
Inter-Brigade UTR Platoon/Company/ Battalion to new Brigade in same Division	N/A	Inter Corps Co/Bn/ Bde to another Div in same Corps	/ Yes / / / / / /	TBD	Inter Corps Co/Bn/Bd e to another Div in same Corps
BLOCK III					
Intra-Brigade UTR UTR Company from from Battalion to Battalion w/i 10 min	N/A	Corps level Co/Bn/ Bde to a Div w/in the Corps	/ Yes / / / / / /	TBD	Corps level Co/Bn/Bd e to a Div w/in the Corps
KPP #4 FBCB2 Info Exchange					

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Demonstrate the capability to send/receive FRAGOs, specified graphic, control measures, & Call for Fire					
BLOCK I only	N/A	Yes	/ Yes	Yes	Yes
Reported survivability directly affects close fight displayed on operational force platforms w/i 5km of reported entity location					
BLOCK I	N/A	>50%	/ 50%	50%	>50%
Intra Brigade					
BLOCK II Inter/Intra Brigade	N/A	>50%	/ 50%	TBD	>50%
Provide a capability to exchange info across Brigades					
BLOCK II only	N/A	Yes	/ Yes	TBD	Yes
Reported mobility/ countermobility, fire support, tactical intelligence and combat support of the close fight received by the addressed operational force on the first attempt					
BLOCK II Intra Brigade	N/A	90%	/ 75%	TBD	90%
		Inter	/		Inter
		Bde	/		Bde
BLOCK III Intra Brigade	N/A	90%	/ 75%	TBD	90%
Other position location info shall be displayed on the operational					

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10a. Performance Characteristics (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Force platforms w/i 5 km of the reported entity location				
BLOCK III only	N/A	90% / 75%	TBD	90%

Notes:

As a result of the Army program guidance reflected in the FY 2005 President's Budget, funding for Block III Performance Characteristics has been reduced. Final prioritization of Block III performance characteristics is pending.

Acronym list:

ABCS = Army Battle Command Systems  
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  
C2 = Command and Control  
IER = Information Exchange Requirement  
FOS = Forward Observer System  
FRAGO = Fragmentary Order  
GPS = Global Positioning System  
MCS = Maneuver Control System  
MTBEFF = Mean Time Between Essential Function Failure  
OP ORD = Operations Order  
SA = Situational Awareness

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)	462.9	589.7	589.7
Procurement	1818.1	824.3	824.0
Flyaway	(1337.3)		(0.0)
Non-Recurring Flyaway			(5.1)
Recurring Flyaway			(550.4)
Total Flyaway	(1337.3)		(555.5)
Other Wpn System Spt	(357.0)		(207.0)
Peculiar Support	(0.0)		(33.1)
Initial Spares	(123.8)		(28.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	90.5	90.5
Total FY 2000 Base-Year \$	2281.0	1504.2	1504.2
Escalation	336.9	77.7	77.7
Development (RDT&E)	(1.6)	(9.9)	(9.9)
Procurement	(335.3)	(58.7)	(58.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(9.1)	(9.1)
Total Then Year \$	2617.9	1581.9	1581.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	59522	21054	21054
Total	59522	21054	21054

The authorized LRIP quantity of 12,626 was approved on September 22, 2003 and now exceeds ten percent of the total planned procurement.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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**12. Unit Cost Summary:**

	UCR Baseline (MAR 2004 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	1504.2	1504.2	
(2) Quantity	21054	21054	
(3) Unit Cost	0.071	0.071	0.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	824.0	824.0	
(2) Quantity	21054	21054	
(3) Unit Cost	0.039	0.039	0.00

**13. Cost Variance Analysis:**

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

	RD&E	PROC	MILCON	O&M	TOTAL
Development Estimate	464.5	2153.4	-	-	2617.9
Previous Changes:					
Economic	-5.9	-76.6	-	-	-82.5
Quantity	-	-85.7	-	-	-85.7
Schedule	-	+109.0	-	-	+109.0
Engineering	-	+126.8	-	-	+126.8
Estimating	+200.2	-386.5	-	+22.2	-164.1
Other	-	-	-	-	-
Support	-	+111.5	-	-	+111.5
Subtotal	+194.3	-201.5	-	-22.2	+15.0
Current Changes:					
Economic	+3.2	+64.6	-	-	+67.8
Quantity	-	-958.3	-	-	-958.3
Schedule	-	-44.9	-	-	-44.9
Engineering	-	-5.9	-	-	-5.9
Estimating	-62.4	+266.4	-	+77.4	+281.4
Other	-	-	-	-	-
Support	-	-391.1	-	-	-391.1
Subtotal	-59.2	-1069.2	-	+77.4	-1051.0
Total Changes	+135.1	-1270.7	-	+99.6	-1036.0
Current Estimate	599.6	882.7	-	99.6	1581.9

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

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

	RD&E	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	+175.4	-351.7	-	+21.4	-154.9
Other	-	-	-	-	-
Support	-	+90.7	-	-	+90.7
Subtotal	+175.4	-143.1	-	+21.4	+53.7
Current Changes:					
Quantity	-	-739.6	-	-	-739.6
Schedule	-	-29.7	-	-	-29.7
Engineering	-	-2.8	-	-	-2.8
Estimating	-48.6	+224.1	-	+69.1	+244.6
Other	-	-	-	-	-
Support	-	-303.0	-	-	-303.0
Subtotal	-48.6	-851.0	-	+69.1	-830.5
Total Changes	+126.8	-994.1	-	+90.5	-776.8
Current Estimate	589.7	824.0	-	90.5	1504.2

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RD&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	+0.2
	Economic adjustment for negative program change. (Economic)	N/A	+3.0
	Correction to data in FY02 SAR. (Estimating)	+0.2	+0.2
	Elimination of RD&E funding beginning in FY10. (Estimating)	-41.1	-53.5
	Increases/decreases in FY03 to FY09 funding in President's Budget 05 versus President's Budget 04. (Estimating)	-7.7	-9.1
	RD&E Subtotal	-48.6	-59.2
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+9.7
	Economic adjustment for negative program change. (Economic)	N/A	+54.9
	Correction to reconcile flyaway and support cost (Estimating)	-12.0	-30.2
	(Support)	+12.0	+30.2

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Total quantity variance associated with decrease of 35,411 from 56,465 to 21,054 systems.	-629.5	-815.4
Quantity decrease from 56,465 to 21,054 systems (Quantity)	-769.8	-990.5
Allocation to Schedule variance resulting from quantity change from 56,465 to 21,054. (QR) (Schedule)	-29.7	-40.5
Allocation to Estimating variance resulting from quantity change from 56,465 to 21,054 systems. (QR) (Estimating)	+210.4	+264.8
Allocation to Engineering variance resulting from quantity change from 56,465 to 21,054 systems. (QR) (Engineering)	-40.4	-47.1
Procure additional Movement Tracking System (MTS) Transceivers, Antennas and Precision Lightweight Global Positioning System (GPS) Receivers (PLGRs) in FY06 and FY07 for FBCB2 BFT systems. (Quantity)	+30.2	+32.2
Acceleration of annual procurement buy profile from FY09 to FY07. (Schedule)	0.0	-4.4
Procure replacement of 6,491 MTS Transceivers in FY06 and FY07 to add security component in order to meet system security requirements for deployed systems in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). (Engineering)	+27.8	+30.9
Procure Installation Kits (IK) to satisfy new Up Armor unique requirements for Operation Iraqi Freedom (OIF). (Engineering)	+9.8	+10.3
Transition of FBCB2 software support from acquisition to sustainment beginning in FY06. (Estimating)	-11.2	-12.4
Additional funding requirements for Handheld ancillary units in FY06 and FY07. (Estimating)	+6.7	+7.5
Upgrade Blue Force Tracking (BFT) capability requirements for Aviation units in FY06 and FY07. (Estimating)	+4.7	+5.2
The FY05 President's Budget has deleted the OPA funding from FY08 through FY16. (QR) (Estimating)	+25.5	+31.5
Change in Other Weapon System Support due to procurement quantity reduction. (QR) (Support)	-243.3	-328.9
Adjustment for Current and Prior Inflation. (Support)	-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>
Change in Initial Spares due to procurement quantity reduction. (QR) (Support)	-31.9	-41.7
Change in Peculiar Support due to procurement quantity reduction. (QR) (Support)	-39.7	-50.6
Procurement Subtotal	<u>-851.0</u>	<u>-1069.2</u>
(3) O&M		
Funds provided to buy satellite time to support Blue Force Tracking efforts from FY05 through FY09. (Estimating)	+69.1	+77.4
O&M Subtotal	<u>+69.1</u>	<u>+77.4</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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.044	-0.001	+0.030	+0.003	+0.006	+0.006	--	-0.013	+0.031	0.075

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	+0.017	+0.003	+0.006	-0.006	--	-0.013	+0.006	0.042

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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	NOV 1997	N/A	NOV 1997
Milestone II	N/A	NOV 1997	N/A	NOV 1997
Milestone III	N/A	APR 2002	N/A	AUG 2004
IOC	N/A	DEC 2000	N/A	DEC 2000
Total Cost	N/A	2617.9	N/A	1581.9
Total Quantity	N/A	59522	N/A	21054
Prog Acq Unit Cost	N/A	0.0	N/A	0.1

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

a. RDT&E --

SE&I:

Northrop Grumman, Carson, CA

DAAB07-01-D-E502, CPAF

Award: May 25, 2001

Definitized: June 25, 2001

Initial Contract Price  
Target      Ceiling      Qty

\$45.0      \$202.0      0

Current Contract Price  
Target      Ceiling      Qty  
\$74.2      \$202.0      0

Estimated Price At Completion  
Contractor      Program Manager  
\$50.1      \$49.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date (01/20/04)	\$0.4	\$-0.2
Net Change	\$0.4	\$-0.2

Explanation of Change:

Net Cost and Schedule variances are not considered significant

Contract Comments:

The Initial Contract Target Price of \$45.0M was only for the software version 3.5. The Current Contract Target Price of \$74.2M is the actual contract value for the software versions 3.5, 6.4 and the previously planned \$7.0M. The Estimated Price at Completion of \$50.1M is the value of the current effort.

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15b. Contract Information (Cont'd):

b. Procurement --  
LRIP:  
Northrop Grumman, Carson, CA  
DAAB07-00-D-E501, FPIF  
Award: January 25, 2000  
Definitized: June 27, 2000

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$210.0	\$210.0	5952

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$187.3	\$187.3	9534

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$169.7	\$164.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.7	\$-0.7
Cumulative Variances To Date (01/20/04)	\$4.3	\$1.4
Net Change	\$0.6	\$2.1

Explanation of Change:

Net Cost and Schedule variances are not considered significant.

Contract Comments:

The LRIP contract consist of Basic, Option 1, Option 2 and Contingency Option.

The period of performance will be completed in May 2004.

The previously reported Initial Contract Target and Ceiling Price of \$310M was incorrect and has been changed to read \$210M. The Current Contract Target and Ceiling Price of \$187.3M is the actual contract value for the Basic and 3 Options contract awards from FY 2000 to 2003. The Estimated Price at Completion of \$169.7 is the value of the current effort.

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

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

<u>Appropriation</u>	<u>Prior Years (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-09)</u>	<u>Total</u>
RDT&E	490.1	46.7	23.5	39.3	599.6
Procurement	374.7	86.9	123.4	297.7	882.7
MILCON	-	-	-	-	-
O&M	22.2	-	11.7	65.7	99.6
Total	887.0	133.6	158.6	402.7	1581.9

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				49.2	48.1
1998				62.0	61.1
1999				52.1	52.0
2000				66.0	66.8
2001				60.6	62.1
2002				53.1	54.9
2003				57.1	59.9
2004				44.0	46.7
2005				21.8	23.5
2006				13.4	14.7
2007				7.2	8.0
2008				7.3	8.3
2009				1.2	8.3
Subtotal				589.7	599.6

Appropriation: 2035 - Other Procurement, 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>
2000	1718	5.1	50.9	69.5	70.8
2001	1651		48.0	65.3	67.3
2002	2235		56.7	83.0	86.4
2003	3930		106.6	142.8	150.2
2004	1933		52.0	81.5	86.9
2005	3069		80.5	114.1	123.4

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FBCB2, December 31, 2003

**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 \$
2006	4259		99.2	132.6	145.9
2007	2259		56.5	127.5	142.9
2008				2.5	2.8
2009				5.2	6.1
Subtotal	21054	5.1	550.4	824.0	882.7

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
2004					
2005				10.9	11.7
2006				10.7	11.7
2007				12.9	14.4
2008				17.5	19.8
2009				17.1	19.8
Subtotal				90.5	99.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	21054	5.1	550.4	1504.2	1581.9

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	7515	7839

Percent Total Program Quantities Delivered: 37.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 787.1

Percent Total Program Expended: 49.8%

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FBCB2, December 31, 2003

**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 Field Service Representatives (FRSs) and Post Production Software Support (PPSS). Sustaining support is the cost of replenishment training and O&M funded system project management Satellite support and computer hardware reprocurement. 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 in millions, based on a revisions to the Original Cost estimate (Nov 99) in order to reflect current requirements.

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

Cost Element	FBCB2 AVERAGE ANNUAL COST FOR ALL SYSTEMS	NO ANTECEDENT SYSTEM
Mission Pay & Allowances	8.3	N/A
Unit Level Consumption	11.8	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	11.2	N/A
Sustaining Support	52.3	N/A
Indirect Costs	0.0	N/A
Other	0.0	N/A
Indirect Costs	N/A	N/A
Total	83.6	N/A

Total O&S Cost	FBCB2	NO ANTECEDENT SYSTEM
BY\$ (In Millions)	835.5	N/A
TY\$ (In Millions)	1159.5	N/A

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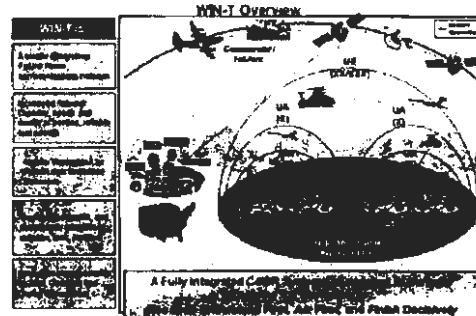
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
**PROGRAM:** WIN-T

**AS OF DATE:** December 31, 2003

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1. Designation and Nomenclature (Popular Name): Warfighter Information Network  
- Tactical (WIN-T)
2. DoD Component: Army
3. Responsible Office and Telephone Number:  
PM WIN-T COL Thomas M. Cole  
ATTN: SFAE-C3T-WIN Assigned: June 17, 2001  
Fort Monmouth, NJ 07703-5505 DSN 992-4740; COMM 732-532-4740  
tom.m.cole@us.army.mil
4. Program Elements/Procurement Line Items:  
RDT&E:  
PE 0603782A Project D355  
PROCUREMENT:  
APPN 2035 ICN B79100 (Army)

Funding for this Selected Acquisition Report (SAR) includes only Block 1 funding.

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04-C-0646

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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 31, 2003.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated July 31, 2003.

## **6. Mission and Description:**

The WIN-T program is the Army's communications system for reliable, secure, and seamless video, data, imagery, and voice services that enable decisive combat actions. The WIN-T system will establish an environment in which commanders at all echelons will have the ability to operate with virtual staffs and analytical centers that are located at remote locations throughout the battlespace. The WIN-T system operates as the principal means to frame the tactical infosphere that encompasses both the Unit of Employment (UE) and Unit of Action (UA) areas of influence. This tactical infosphere will operate on the move because of its robust networking and will be able to pass relevant information for system-of-systems combined arms capabilities in all terrain and under all environmental conditions. Major components include switching/routing and subscriber access nodes (network service provider, on a single vehicle, targeted for UE/UA echelons); handheld terminal (provides voice and data connectivity); Information Assurance (IA) (provides an integrated Defense in Depth approach to protect sensitive and classified information); Information Dissemination (information on demand, according to assigned level of precedence); Transmission Systems (provides network connectivity); and Network Management (NM) (provides a means to plan, configure, monitor and manage the network).

The WIN-T system is a mission critical system and an integrating communications network that is optimized for offensive and joint operations, while providing the Theater Combatant Commander the capability to perform multiple missions simultaneously with campaign quality. It will be a framework, conforming to established standards and protocols for the network, while interfacing with and/or replacing equipment in legacy and interim forces. WIN-T is a high-speed and high capacity backbone communications network. It will be focused on moving information in a manner that supports commanders, staffs, functional units, and capabilities-based formations - all mobile, agile, lethal, sustainable, and deployable. WIN-T will enable them to plan, prepare, and execute multiple missions and tasks simultaneously. WIN-T will provide required reach, reachback, interoperability and network operations for the Maneuver UA Infospheres and seamlessly interface with Joint Tactical Radio System (JTRS), which extends to the individual warfighter platform level. At the UE, WIN-T will provide command centers and staff elements with the communications capabilities to link to adjacent UE, subordinate UAs, sustaining base, and Joint, Allied and Coalition forces.

The WIN-T system supports the Future transition path of the Army Campaign Plan.

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

Key to the Department's transformation strategy is the interoperability and mobility that WIN-T will provide. WIN-T is integral and necessary to the success of the Army's Future Combat Systems (FCS). WIN-T will support FCS with a network infrastructure providing the robust, efficient and responsive movement of information throughout the battlespace.

The Joint Requirements Oversight Council (JROC) approved WIN-T Operational Requirements Document (ORD) on March 5, 2003. The WIN-T ORD requirements are prioritized in blocks, which are delineated as Block 1, Block 2, Block 3 and Objective. Prioritization is based on operational need, technical feasibility, and cost.

Block 1 will meet the minimum threshold requirements and ensure the lowest cost, schedule, and performance risk. Block 1 represents high priority requirements that have been assessed as technically feasible and affordable with minimum risk during System Development and Demonstration (SDD). Block 2/Block 3 development will consist of maturing the technologies needed to satisfy Block 2/Block 3 requirements and the design and development of the Block upgrades to the WIN-T system. The Objective requirements are considered the objective capabilities of Block 3.

#### **7. Executive Summary:**

As a result of the successful Milestone B Defense Acquisition Board (DAB) on July 30, 2003, the Defense Acquisition Executive (DAE) approved the WIN-T program entry into the System Development and Demonstration (SDD) phase. SDD options were awarded on August 12, 2003, to further develop the architecture, produce prototypes, conduct modeling and simulation, and support a Development Test/Operational Test by the end of FY05. A limited competition between General Dynamics Government Systems Corporation and Lockheed Martin Mission Systems will result in a Production contract award in FY06 under which one contractor will proceed with Low Rate Initial Production (LRIP) and Full Rate Production (FRP).

System Design Reviews (SDRs) were successfully conducted with both contractors at their facilities in December 2003. The SDRs were a major contractual milestone which included initial deliveries of the contractors' technical documentation. The reviews provided the Program Manager (PM) with assurance that both designs are proceeding satisfactorily. Both contractors are now performing the necessary development work to refine their designs in preparation for the Preliminary Design Review (PDR), which is the next major design review, scheduled for August 2004.

Integrated Baseline Reviews (IBRs) were conducted with Lockheed Martin in November 2003 and General Dynamics in December 2003. A follow up IBR will be conducted with General Dynamics after completion of their IBR with BAE Systems, one of their major subcontractors.

The WIN-T system will be developed, tested, produced, and fielded using an evolutionary acquisition approach as stated in the WIN-T Acquisition Strategy.

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

approved by the Defense Acquisition Executive (DAE) on July 28, 2003. This approach minimizes time, cost, and risk, while providing a capability in phases that is fully integrated with the overall Army's Warfighting capabilities. An evolutionary acquisition strategy provides for the timely insertion of new technologies into Army communication systems. The WIN-T design will evolve using performance-based specifications and open systems design. This allows the Army to keep pace with changing commercial technology and maintain required interoperability with other Joint Technical Architecture-Army (JTA-A) and commercial standards-based networks. Using open system design, the WIN-T production contractor can update/upgrade subassembly and component level design in response to market availability as long as the performance requirements for the end item are achieved.

The WIN-T ORD requirements are prioritized in blocks, identified as Blocks 1, 2, 3 and Objective. This report includes Block 1 only.

**8. Threshold Breaches:**

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

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9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone B	JUL 2003	JUL 2003	JUL 2003
Critical Design Review	MAR 2005	MAR 2005	MAR 2005
Developmental Test/Operational Test			
Start	JUN 2005	JUN 2005	JUN 2005
Complete	JUL 2005	JUL 2005	JUL 2005
Milestone C	NOV 2005	NOV 2005	NOV 2005
Initial Operational Test (IOTE)			
Start	SEP 2008	SEP 2008	SEP 2008
Complete	JAN 2009	JAN 2009	JAN 2009
Full Rate Production Decision Review	MAY 2009	MAY 2009	MAY 2009
Initial Operational Capability (IOC)	JAN 2010	JAN 2010	JAN 2010

b. Current Change Explanations --

None.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Interoperability	All IERs	All IERs/ 100% of / Critical / IERs	TBD	100% of critical IERs
Network Reliability (Probability)				
At the halt	.99	.99 / .98	TBD	.98
Mobile	.97	.97 / .90	TBD	.90
Network Management	From	From / From	TBD	From
Location	outside AOR	outside / inside AOR		inside AOR
Information Dissemination				
Category I	< .5 sec	< .5 sec/ <= 5 sec	TBD	<=5 sec
Category II	< 1 sec	< 1 sec / < 8 sec /	TBD	<8 sec
Information Assurance				
Protection against external and known threats	99%	99% / 95%	TBD	95%
Mobile Throughput				
Traveling speed	45 mph/	45 mph/ / 25 mph/	TBD	25 mph/
(mph) w/Bps	4 Mbps	4 Mbps / 256 Kbps		256 Kbps
throughput				
(ground speed)				

The WIN-T Operational Requirements Document (ORD) requirements are

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

prioritized in blocks, which are delineated as Block 1, Block 2, Block 3 and Objective. The Acquisition Program Baseline (APB) objective values reflect the objective requirements of the ORD. At the current time, the WIN-T program has been approved to enter Block 1 development only (threshold values in the APB). The threshold values therefore equate to the current contract requirements and to the Selected Acquisition Report (SAR) Current Estimate.

**ACRONYMS:**

AOR - Area of Responsibility  
Bps- Bits per second  
IER- Information Exchange Requirement  
Kbps- Kilobits per second  
Mbps- Megabits per second  
MPH- Miles Per Hour  
TBD- To Be Determined

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)	711.7	711.7	711.7
Procurement	9153.2	9153.2	9389.0
Flyaway Cost	(7377.2)		(7439.4)
Training	(42.5)		(42.5)
Data	(12.6)		(12.6)
Fielding	(330.7)		(367.3)
S/W Spt & Maint/Tech Re	(902.1)		(1041.4)
Total Other Wpn Sys	(1287.9)		(1463.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(488.1)		(485.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	9864.9	9864.9	10100.7
Escalation	2175.6	2175.6	2350.1
Development (RDT&E)	(46.8)	(46.8)	(45.9)
Procurement	(2128.8)	(2128.8)	(2304.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	12040.5	12040.5	12450.8
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

Due to the ongoing competitive nature of the program and the different contractors' architectures, different quantities and configurations of equipment are required to support each contractor's architecture. The WIN-T system consists of many different elements. The major components include switching/routing and subscriber access nodes (network service provider, on a single vehicle, targeted for UE/UA echelons); Information Assurance (IA) (provides an integrated Defense in Depth approach to protect sensitive and classified information); Information Dissemination (information on demand, according to assigned level of precedence); Transmission Systems (provides network connectivity); and Network Management (NM) (provides a means to plan, configure, monitor, and manage the network). For the purposes of the Milestone B APB, the unit of measure is one. The APB will be revised for the Milestone C Decision to reflect the down-selected architecture.

As presented to the Defense Acquisition Board (DAB) on July 30, 2003, and reflected in the Acquisition Decision Memorandum dated August 6, 2003, the WIN-T plan for Low Rate Initial Production (LRIP) will result in a three-year LRIP, with quantities totaling less than 4% of the total Army Acquisition Objective [1 Unit of Action (UA) and 2 1/4 Units of Employment (UE) Level 1].

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (JUL 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	9864.9	10100.7	
(2) Quantity	1	1	
(3) Unit Cost	9864.900	10100.700	+2.39
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	9153.2	9389.0	
(2) Quantity	1	1	
(3) Unit Cost	9153.200	9389.000	+2.58

**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	758.5	11282.0	-	12040.5
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-2.6	+117.9	-	+115.3
Quantity	-	-	-	-
Schedule	+1.7	-	-	+1.7
Engineering	-	-	-	-
Estimating	-	+69.3	-	+69.3
Other	-	-	-	-
Support	-	+224.0	-	+224.0
Subtotal	-0.9	+411.2	-	+410.3
Total Changes	-0.9	+411.2	-	+410.3
Current Estimate	757.6	11693.2	-	12450.8

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

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	711.7	9153.2	-	9864.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+62.2	-	+62.2
Other	-	-	-	-
Support	-	+173.6	-	+173.6
Subtotal	-	+235.8	-	+235.8
Total Changes	-	+235.8	-	+235.8
Current Estimate	711.7	9389.0	-	10100.7

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Revised escalation indices (Economic)	N/A	-2.6
Revised schedule (Schedule)	0.0	+1.7
RD&E Subtotal	0.0	-0.9
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	+117.9
Increased recurring engineering estimates consistent with contractor actuals (Estimating)	+62.2	+69.3
Reduction in initial spares costs (Support)	-2.3	-3.3
Inclusion of interim contractor logistics support costs previously omitted (Support)	+36.5	+41.5
Correction of software maintenance and refreshment cost estimate (Support)	+139.4	+185.8
Procurement Subtotal	+235.8	+411.2

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

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

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12040.50	+115.30	--	+1.70	--	+69.30	--	+224.00	+410.30	12450.80

**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	
11282.00	+117.90	--	--	--	+69.30	--	+224.00	+411.20	11693.20

**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	JUL 2003	N/A	JUL 2003
Milestone C	N/A	NOV 2005	N/A	NOV 2005
IOC	N/A	JAN 2010	N/A	JAN 2010
Total Cost	N/A	12040.5	N/A	12450.8
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	12040.5	N/A	12450.8

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

**a. RDT&E --**

WIN-Tactical:

Lockheed Martin Msn Sys, Gaithersburg, MD

DAAB07-02-C-F403, CPFF

Award: August 9, 2002

Definitized: August 9, 2002

**Initial Contract Price**

Target      Ceiling      Qty

\$74.6      N/A      0

**Current Contract Price**

Target      Ceiling      Qty  
\$87.5      N/A      0

**Estimated Price At Completion**

Contractor      Program Manager  
N/A      N/A

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

The cost and schedule variance and Estimated Price at Completion (EPC) information is competition sensitive.

Contract Comments:

The difference between the initial and the current contract price is due to Engineering Change Proposals (ECPs) 1 and 2, which were contract mods reflecting the additional development of Developmental Test/Operational Test (DT/OT) prototypes and increase to the period of performance.

<u>WIN-Tactical:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
General Dynamics Gov Sys, Taunton, MA					
DAAB07-02-C-F404, CPFF	\$72.1	N/A	0		
Award: August 9, 2002					
Definitized: August 9, 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>
\$81.5	N/A	0	N/A	N/A

	<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:

The cost and schedule variance and Estimated Price at Completion (EPC) information is competition sensitive.

Contract Comments:

The difference between the initial and the current contract price is due to Engineering Change Proposals (ECPs) 1 and 2, which were contract mods reflecting the additional development of Developmental Test/Operational Test (DT/OT) prototypes and increase to the period of performance.

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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 (FY02-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-20)</u>	<u>Total</u>
RDT&E	61.0	81.4	99.6	515.6	757.6
Procurement	-	-	-	11693.2	11693.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	61.0	81.4	99.6	12208.8	12450.8

b. Annual Summary -- WIN-T

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>
2002				12.1	12.1
2003				48.3	48.9
2004				79.5	81.4
2005				95.8	99.6
2006				132.8	140.3
2007				147.0	158.2
2008				132.4	145.3
2009				47.4	53.1
2010				16.4	18.7
Subtotal				711.7	757.6

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>
2006			121.7	123.5	131.1
2007			99.9	101.6	109.8
2008			209.7	223.1	246.0
2009			217.5	295.8	332.7
2010			519.0	580.3	665.7
2011			503.9	571.2	668.3
2012			789.5	892.6	1065.2
2013			844.2	956.4	1164.2
2014			843.1	1004.3	1247.0
2015			1085.9	1280.2	1621.4
2016			1090.8	1300.0	1679.3
2017			698.9	949.3	1250.9

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**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 \$
2018			378.4	642.1	863.0
2019			18.8	242.0	331.7
2020	1		18.1	226.6	316.9
Subtotal	1		7439.4	9389.0	11693.2

Quantity has been designated as 1 for the complete WIN-T system, thus this quantity is shown in the year that the procurement of the system will be complete. Recurring flyaway in years 06-19 procure hardware and software for the entire force, resulting in a quantity of 1 for the Army. The major components include switching/routing and subscriber access nodes; Information Assurance (IA); Information Dissemination; Transmission Systems; and Network Management (NM).

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		7439.4	10100.7	12450.8

**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): \$ 142.4

Percent Total Program Expended: 1.1%

**18. Operating and Support Costs:**

- a. Assumptions and Ground Rules --
1. Costs estimated In Accordance With (IAW) Department of the Army (DA) Cost Analysis Manual, US Army (USA) Cost and Economic Analysis Center (CEAC), May 2001.
  2. System life is estimated at 20 years.
  3. Operating and Support Costs presented extend through FY2030.
  4. Estimate includes Block 1 Operating and Support Costs.
  5. Military Pay and Allowances (MPA) estimates based on WIN-T Manpower Estimate Report (MER) plus Unmanned Aerial Vehicle (UAV) Personnel.

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WIN-T, December 31, 2003

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

6. Operating and Support costs are reflected at the steady-state annual cost of the entire fielded WIN-T program. Costs ramp up to this level until FY2020 and are then maintained until FY2030. As a result of the ramp up, the steady state annual cost cannot be simply derived from the total cost.
7. Two-level maintenance concept.
8. Operating and Support Costs based on Operating Tempo (OPTEMPO) approved by the Army's G3.
9. Operating and Support Cost factors taken from Operating and Support Management Information System (OSMIS).
10. There is no antecedent program to this system.
11. Operating and Support Costs based on Army Cost Position approved in July 2003.

**b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)**

Cost Element	WIN-T Steady-State Annual Cost	Antecedent System N/A
Mission Pay & Allowances	605.7	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 & Maintenance	594.0	N/A
Total	1199.7	N/A

Total O&S Cost	WIN-T	Antecedent System
BY\$ (In Millions)	17639.9	N/A
TYS (In Millions)	29808.7	N/A

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AF-7 C-130AMP

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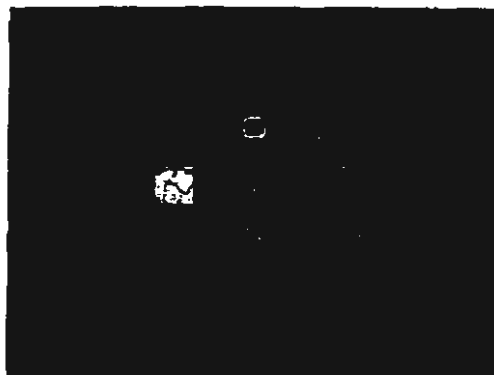
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: C-130 AMP

AS OF DATE: December 31, 2003

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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

2275 D Street, Bldg 16

Room 149

WPAFB, OH 45433-7239

Col Kevin Harms

Assigned: July 15, 2003

DSN 785-1226; COMM 937 255-1226

kevin.harms@wpafb.af.mil

4. Program Elements/Procurement Line Items:

ROT&E:

PE 046404

PE 41115F

PROCUREMENT:

APPN 0300 ICN 046404 (DoD)

APPN 3010 ICN 41115F (Air Force)

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DEPARTMENT OF DEFENSE

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## **5. References:**

SAR Baseline (Development Estimate):

Air Force Acquisition Executive (AFAE) approved Acquisition Program Baseline (APB) dated July 27, 2001.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated March 6, 2003.

## **6. Mission and Description:**

The C-130 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 modifications 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 14 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 14 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 an Intel Broadcast Receiver (IBR) and through correlation of the on-board defensive systems with the off-board data received via the IBR. Also CAAP will present the Aircrew a single integrated picture of the threat environment on the AC-130H/U and the MC-130E/H.

## **7. Executive Summary:**

The C-130 AMP is currently undergoing an independent cost estimate (ICE), which is projecting increases to program cost in the out years. The primary reasons for the projected cost increase are not related to program performance, but are driven by new requirements, changes in the cost estimating methodology, and projected increased depot labor rates for AMP kit installation. Currently, the program is still on the proper execution track for both FYs 04/05, and no

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

additional funding is required at this time.

A Restructure Engineering Change Proposal (ECP) 1302 was awarded to Boeing August 20, 2003. The ECP rebaselines the program due to funding reductions in FYs 03/04 resulting in delays in System Development and Demonstration program for up to 2 years.

There is insufficient funding in the C-130 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 (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 06 initiatives. A revised approach to fielding the training systems resulted in deferring the funding shortfalls until FYs 10-12, by Zero Base Transferring of production funds to RDT&E in FYs 06-09.

**8. Threshold Breaches:**

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

**b. Nunn-McCurdy Unit Cost:**

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

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9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Critical Design Review (CDR)	FEB 2003	NOV 2005	AUG 2005 (Ch-1)
LRIP Decision/Contract Award	FEB 2005	MAY 2007	FEB 2006 (Ch-1)
Production Readiness Review (PRR)	JAN 2007	JUL 2008	MAY 2008 (Ch-1)

Acronyms

LRIP - Low Rate Initial Production

b. Current Change Explanations --

(Ch-1) 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 resulted in a change to APB milestone dates. Engineering Change Proposal (ECP) 1302 was awarded to Boeing, August 20 2003.

CDR changed from May 2006 to August 2005

LRIP/CA changed from November 2007 to February 2006

PRR changed from January 2009 to May 2008

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
GATM/Nav Safety Requirements	Comply with required Navigation Performance 1 (RNP-1)	Comply / Compy with required/ required Navigation / on Performance 1 / nce 1 (RNP-1) / (RNP-1).	TBD	Comply with required Navigation Performance 1 (RNP-1).
Removal of Navigator (Combat Delivery)	Navigator removed for combat delivery missions	Navigator / r removed / removed for combat / combat N/A / N/A missions/ missions	TBD	Navigator removed for combat delivery missions

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Improved TF/TA	Safe and effectiv e manual TF flight guidance at selectab le Set Clearanc es Plane (SCP) of 100 feet.	Safe and/ effectiv/ e manual/ TF / TF flight / flight guidance/ at / at selectab/ le Set / le Set Clearanc/ es Plane/ (SCP) of/ 100 / 250 feet. / feet.	TBD	Safe and effect- ive manual TF flight guidance at select- able Set Clear- ances Plane (SCP) of 250 feet.
ESA Threat Location and Targeting Data	Notify the aircrew within 0.5 seconds when a threat has been identifi ed.	Notify / Notify the / the aircrew / aircrew within / within 0.5 / 0.5 seconds / seconds when a / when a threat / threat has been/ has been identifi/ identifi ed. / ed.	TBD	Notify the aircrew within 0.5 seconds when a threat has been identi- fied.
EW Bus Fused Data	Present the pop-up threat and intervis ibility within 1 seconds, 99% of the time.	Present / Present the / the pop-up / pop-up threat / threat and / and intervis/ ibility / ibility within 1/ within 2 seconds./ seconds, 99% of / 99% of the / the time. / time.	TBD	Present the pop-up threat and inter- visibi- lity within 2 seconds, 99% of the time.
Interoperability	100% of top-leve l IERs.	100% of / 100% of top-leve/ top-leve l IERs. / l IERs / designat / ed / critical	TBD	100% of top- level IERs design- ated critical

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10a. Performance Characteristics (Cont'd):

Acronyms:

ESA - Enhanced Situational Awareness  
 EW - Electronic Warfare  
 GATM - Global Air Traffic Management  
 IERS - Information Exchange Requirements  
 TF/TA - Terrain Following/Terrain Avoidance

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)	625.6	1151.6	1159.8
Procurement	2708.3	2995.8	2757.9
AMP PROD	(2574.8)		(2684.9)
CAAP PROD	(8.8)		(7.3)
Total Flyaway	(2583.6)		(2692.2)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(124.7)		(65.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	3333.9	4147.4	3917.7
Escalation	631.5	718.5	668.3
Development (RDT&E)	(44.5)	(88.8)	(90.4)
Procurement	(587.0)	(629.7)	(577.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3965.4	4865.9	4586.0
b. Quantity --			
Development (RDT&E)	15	16	11
Procurement	504	503	479
Total	519	519	490

Note: Excludes 16 RDT&E prototypes from the SAR Baseline and 11 from the Current Estimate that are not considered fully configured.

The 11 RDT&E prototypes will be refurbished to make them fully configured production kits.

The July 27, 2001 Acquisition Decision Memorandum approved Low Rate Initial Production quantities of not more than 50 units: 45 AMP and five Common Avionics Architecture for Penetration aircraft.

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	4147.4	3917.7	
(2) Quantity	519	490	
(3) Unit Cost	7.991	7.995	+0.05
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	2995.8	2757.9	
(2) Quantity	503	479	
(3) Unit Cost	5.956	5.758	-3.32

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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	-25.6	-382.7	-	-408.3
Quantity	+28.7	-195.7	-	-167.0
Schedule	+119.0	+58.8	-	+177.8
Engineering	-	-	-	-
Estimating	+456.1	+516.2	-	+972.3
Other	-	-	-	-
Support	-	+3.7	-	+3.7
Subtotal	+578.2	+0.3	-	+578.5
Current Changes:				
Economic	-1.9	+11.9	-	+10.0
Quantity	-	+15.5	-	+15.5
Schedule	-	+0.3	-	+0.3
Engineering	-	-	-	-
Estimating	+3.8	+88.4	-	+92.2
Other	-	-	-	-
Support	-	-75.9	-	-75.9
Subtotal	+1.9	+40.2	-	+42.1
Total Changes	+580.1	+40.5	-	+620.6
Current Estimate	1250.2	3335.8	-	4586.0

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	-137.8	-	-112.4
Schedule	+99.4	-	-	+99.4
Engineering	-	-	-	-
Estimating	+405.6	+162.9	-	+568.5
Other	-	-	-	-
Support	-	+3.5	-	+3.5
Subtotal	+530.4	+28.6	-	+559.0
Current Changes:				
Quantity	-	+11.8	-	+11.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.8	+71.7	-	+75.5
Other	-	-	-	-
Support	-	-62.5	-	-62.5
Subtotal	+3.8	+21.0	-	+24.8
Total Changes	+534.2	+49.6	-	+583.8
Current Estimate	1159.8	2757.9	-	3917.7

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-2.3
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Refinement of Current Estimate. (Estimating)	+3.5	+3.5
RDT&E Subtotal	+3.8	+1.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+11.9
Total Quantity Variance associated with increase of 3 kits (476 to 479).	+14.0	+18.4
Quantity increase of 3 kits (476 to 479). (Quantity)	+11.8	+15.5
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	0.0	+0.3
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	+2.2	+2.6
Change in cost estimating assumptions (location of installations and labor rates). (Estimating)	+7.3	+10.2
Decrease in Initial Spares. (Support)	-0.3	-0.3
Correction to December 2002 SAR to align flyaway and support costs. (Support)	-62.2	-75.6
(Estimating)	+62.2	+75.6
Procurement Subtotal	+21.0	+40.2

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	
7.64	-0.813	+0.146	+0.363	--	+2.17	--	-0.147	+1.72	9.36

**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	-0.774	-0.032	+0.123	--	+1.26	--	-0.151	+0.426	6.96

**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	AUG 2001
Milestone C	N/A	JAN 2007	N/A	MAY 2008
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	3965.4	N/A	4586.0
Total Quantity	N/A	519	N/A	490
Prog Acq Unit Cost	N/A	7.6	N/A	9.4

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

**a. RDT&E --**

C-130 AMP:

Boeing, Wichita, KS

F33657-01-C-0047, CPAF

Award: July 31, 2001

Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$484.6	\$453.0	519

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$910.6	\$942.5	490	\$969.5	\$1015.0

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-7.6	\$-26.4
Cumulative Variances To Date (12/31/03)	\$-0.2	\$-15.3
Net Change	\$7.4	\$11.1

Explanation of Change:

C-130 AMP had a favorable net change in cost and schedule variance. The contractor's cost growth was included in the Over Target Baseline (OTB) which was completed and incorporated into the contract on 18 Sep 2003. Costs increased by \$182.965M as a result.

A Restructure Engineering Change Proposal (ECP) 1302 was awarded to Boeing and incorporated into the contract on 20 Aug 2003. The ECP rebaselines the program due to funding reductions in FYs 03/04 resulting in delays in System Development and Demonstration program for up to 2 years. Costs were increased by \$200.03M as a result.

Remaining \$43M is attributed to a variety of ECPs (0303-SOF Acceleration, 1002-Electrical Power Standardization) and CCPs (0103-Live Fire Test and Evaluation, 0202-Multifunction Control Display Unit & Data Link Printer GFE to CFE).

**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 (FY06-16)</u>	<u>Total</u>
RD&E	310.0	166.9	231.7	541.6	1250.2
Procurement	-	-	-	3335.8	3335.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	310.0	166.9	231.7	3877.4	4586.0

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

b. Annual Summary -- C-130 AMP

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				6.5	6.7
2002				12.6	13.0
2003				45.5	47.5
2004				59.0	62.4
2005				76.0	81.5
2006				29.7	32.3
Subtotal				229.3	243.4

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		45.4	15.0	61.9	63.3
2002		33.5	23.3	47.8	49.3
2003		101.4	47.3	124.8	130.2
2004		87.1	11.4	98.9	104.5
2005		116.3	22.4	140.1	150.2
2006		135.7	28.4	164.5	179.1
2007		106.5	21.4	128.0	142.0
2008		82.3	13.9	96.1	108.6
2009		29.0	7.3	36.0	41.5
2010				32.4	38.1
Subtotal	11	737.2	190.4	930.5	1006.8

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.

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

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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 \$
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		101.4	101.4	111.6
2007	13		139.8	139.7	156.7
2008	33		216.2	216.3	247.4
2009	65		363.6	364.4	425.3
2010	75		402.6	402.6	479.1
2011	79		407.4	429.3	521.2
2012	75		388.9	409.6	507.1
2013	75		338.5	354.5	447.7
2014	51		246.2	253.3	326.2
2015	6		50.2	50.2	66.0
2016	3		30.1	29.3	39.3
Subtotal	479		2684.9	2750.6	3327.6

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD		7.3		236.6	251.6
USAF	490	737.2	2875.3	3681.1	4334.4
Grand Total	490	744.5	2875.3	3917.7	4586.0

17. Delivery/Expenditure Information:

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

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 219.5

Percent Total Program Expended: 4.8%

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

At the preparation of this Dec 03 SAR, there were no prototypes delivered.

NOTE: Expenditures are calculated against the total program which includes procurement. Actual kit buys will not occur until FY06.

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-130 AMP	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-130 AMP	Antecedent System
BY\$	N/A	N/A
TYS	N/A	N/A

Report Creation Date: 03/22/2004 6:52:19 PM

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# A-20 STRYKER

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

**PROGRAM:** Stryker

**AS OF DATE:** December 31, 2003

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1. Designation and Nomenclature (Popular Name): Stryker Family of Vehicles (Stryker)

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, DC03  
PROCUREMENT:  
APPN 2033 ICN G85100 (Army)  
MILCON:  
PE 0202096A (Shared)

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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 04, 2004.

Approved Program / Production Estimate (PdE):

DAE Approved Acquisition Program Baseline (APB) dated March 4, 2004.

## **6. Mission and Description:**

**Mission:** The Stryker Family of 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 comprised of two variants, the Infantry Carrier Vehicle (ICV) and the Mobile Gun System (MGS). Within the ICV there are nine configurations as follows: Infantry Carrier Vehicle, 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.

(1) Infantry Carrier Vehicle (ICV) Variant - The ICV is the base vehicle in the BCT. Within the ICV variant, there are nine configurations as follows:

(a) Infantry Carrier Vehicle (ICV) - 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.

(b) Reconnaissance Vehicle (RV) - The principal function of the RV configuration is to provide an effective platform to enable the RSTA Squadron and battalion scouts to perform reconnaissance and surveillance operations.

(c) 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.

(d) Commander's Vehicle (CV) - The CV provides an operational platform for selected elements of command within the BCT. Commanders must have the

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

capability to see and direct the battle continuously, maintaining the Common Relevant Operating Picture (CROP) for all friendly forces within their respective areas of operation.

(e) 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.

(f) 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.

(g) Medical Evacuation Vehicle (MEV) - The MEV integrates medical evacuation support into the BCT as an essential element of the inter-netted combat forward formation.

(h) Anti-Tank Guided Missile Vehicle (ATGM) - The ATGM provides the brigade's primary tank killing capability.

(i) 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) Variant - 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 Stryker 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) for the Mortar Carrier (MC), the Mobile Gun System (MGS) and the Nuclear, Biological, Chemical Reconnaissance Vehicles (NBCRV), and is transitioning from Low Rate Initial Production (LRIP) to full rate production for the other seven vehicles. At the November 2000 milestone decision, seven of the vehicles in the Stryker family were approved for LRIP, with the Fire Support Vehicle (FSV) approved in August 2001 for a total of eight vehicles. The Stryker Program successfully completed an ASARC January 04 and a DAB Milestone III (MS III) full rate production decision for seven out of ten of the vehicles in February 2004.

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.

Brigade Initial Operational Capability (IOC) was declared by General Ellis for the 3/2 Brigade in October 2003.

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

In December 2003, 330 Strykers were deployed to Iraq in support of Operation Iraqi Freedom (OIF). Stryker Deployment is progressing successfully. In spite of a very tight window for execution and many challenges, a first Stryker Brigade (3/2 Brigade) has fully deployed in theater with logistics activities established to support vehicle requirements. Since deployment, the Operational Readiness Rate (ORR) has remained above 92%. A Stryker European Distribution Center (EDC) has been established in Germersheim, Germany to support parts distribution in Iraq. Equipment needs at all areas of support within the AOR (Area of Responsibility) and other OCONUS sites have been determined and equipment is being procured. A PM BCT Logistics Operation Center (LOC) was established and is currently "OPEN FOR BUSINESS" to cover current SBCT operations, and an Integrated Management Task Force (IMTF) cell in Kuwait was also established.

In November 2003, HQDA approved a second deployment for Stryker vehicles for on or around 4Q04. Execution of the second deployment began in the November 2003 time frame.

MC: Operation Test Readiness Review (OTRR) III was completed at Yuma Proving Ground (YPG) on February 5, 2004 and testing began February 9, 2004 at Cold Regions Test Center (CRTC). The PMO is on schedule to conduct IOTE with completion NLT 2nd quarter FY 2004. Accordingly, a Milestone II decision for this system has moved from February 2004 to August 2004.

MGS: Two MGS vehicles are located out at Ft. Lewis supporting the Force Development Exercise (FDE) that began the first week in February 2004. At the completion of FDE, the vehicles move to Ft. Polk to support the FDE Military Operations in Urban Terrain (MOUT) event in March 2004. At the completion of the MOUT, the vehicles will be sent to Ft. Knox to support the MGS Limited User Test (LUT). Production Qualification Testing (PQT) continues on four MGS vehicles at Aberdeen Proving Ground (APG) and Yuma Proving Ground (YPG). RAM and performance data is being collected to support the Low Rate Initial Production (LRIP) Decision of the vehicle system.

NBCRV: With the Limited User Test (LUT) completed, first tier priority fixes have been agreed upon and initiated. The PQT for the NBCRV is ongoing at YPG and should be completed mid-May 2004. The ATEC System Evaluation Report is expected by March 31, 2004. The NBCRV Production Readiness Review was completed in early December 2003 that identified major findings in the areas of Logistics and Product Design and Test. A Council of Colonels and General Officer review were held in late Feb and early March 2004, respectively, to outline the path forward for the program. Updates to the NBCRV stand alone TEMP are now in process. Forwarding to OSD is targeted for mid-July 2004.

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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; PdE	Current Estimate
Low Rate Initial Production (LRIP)	AUG 2000	NOV 2000	NOV 2000
Award			
Milestone II	AUG 2000	NOV 2000	NOV 2000
FSV Initial Production IPR	JUN 2001	AUG 2001	AUG 2001
First Unit Equipped (FUE)	JUL 2002	MAR 2003	MAR 2003
Initial Operational Test and Evaluation (IOT&E #1)			
Start	AUG 2002	APR 2003	APR 2003 (Ch-1)
Completion	JAN 2003	SEP 2003	SEP 2003 (Ch-1)
NBC RV Initial Production IPR	JUL 2002	AUG 2004	AUG 2004 (Ch-2)
MGS Initial Production IPR (Mobile Gun System)	DEC 2002	AUG 2004	AUG 2004 (Ch-3)
Initial Operational Capability (IOC)	MAY 2003	NOV 2003	OCT 2003 (Ch-4)
Milestone III	SEP 2003	MAR 2004	FEB 2004 (Ch-5)
Full Operational Capability (FOC):	FEB 2005	JUN 2006	JUN 2006 (Ch-6)
BDE #3			
ICV - NDI			
Armor IPR	N/A	JUN 2004	JUN 2004 (Ch-7)
MC(B) Milestone III	N/A	AUG 2004	AUG 2004 (Ch-7)
Net Ready Migration Strategy IPR	N/A	AUG 2004	AUG 2004 (Ch-7)
Decision			
NBC RV Milestone III	N/A	SEP 2006	SEP 2006 (Ch-7)
MGS Milestone III	N/A	SEP 2006	SEP 2006 (Ch-7)
ICV - NDI			

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9a. Schedule (Cont'd):

ACRONYMS:

BDE: Brigade

FSV: Fire Support Vehicle

ICV: Infantry Carrier Vehicle

IPR: Interim Progress Review

MGS: Mobile Gun System

NBC RV: Nuclear, Biological, Chemical Reconnaissance Vehicle

NDI: Non-Development Item

MC: Mortar Carrier

The following milestones were requested as additions in the Acquisition Program Baseline (APB) in support of Milestone III: Armor IPR, MC(B) MSIII, Net Ready Migration Strategy IPR Decision, NBCRV MSIII, and MGS MSIII.

b. Current Change Explanations --

(Ch-1) The IOTE start date changed from February 2003 to April 2003 and the completion date changed from July 2003 to September 2003 and is completed. Testing slipped in order to test all vehicles during the same foliage conditions.

(Ch-2) The NBCRV IPR date changed from November 2003 (typo in the December 2002 SAR) to August 2004 based on PQT/LUT emerging test results. The NBCRV IPT is determining HFE and NBC mission equipment package modifications required to reach a Low Rate Initial Production decision.

(Ch-3) The MGS Low Rate Initial Production Decision changed from August 2003 to August 2004 due to the LUT being postponed as a result of design and performance issues identified by subject matter experts from Ft. Knox.

(Ch-4) IOC changed from May 2003 to October 2003 and is completed.

(Ch-5) MS III changed from December 2003 to February 2004 in order to complete the MS III documentation.

(Ch-6) FOC changed from September 2005 to June 2006 as a result of NBCRV and MGS LRIP being delayed by 9 months.

(Ch-7) These milestones were added to the Acquisition Program Baseline in support of Milestone III.

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10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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)	Demonstrated for 7 out of 10 vehicles	Trans- portable in a C-130 aircraft & combat ready on exit
Interoperability*	Host and inte- grate planned C4ISR systems	Host and/ Host inte- / and grate / inte- planned / grate C4ISR / existing systems / Army / C4ISR / systems / (EPLRS, / FBCB2, / ABCS, / WIN-T / Sub- / scribe / Node)	Demonstrated in IOTE	Host and inte- grate planned C4ISR systems
Reliability: (Less GFE)				
MMBCF	2000 MMBCF	2000 / 80% MMBCF / confid- / ence of / achiev- / ing 1000 / MMBCF	Threshold demonstrated in PVT	2000 MMBCF
Supportability (Commonality)	Maintain Common- ality baseline in contract with fielding of IAV Block Improve-	Maintain/ Support Common- / charac- ality / teris- baseline/ tics in / esta- contract/ blished with / in IAV fielding/ contract of IAV / Block / Improve-/	Demonstrated	Maintain Common- ality baseline in contract with fielding of IAV Block Improve-

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR) ments	Approved Program; PdE Obj/Threshold ments /	Demon- strated Perf	Current Estimate ments
Mobility				
Cruising Range	300 miles w/o refuel- ing	300 / 300 miles / miles w/o / w/o refuel- / refuel- ing / ing	Demonstr ated in PVT	300 miles w/o refuel- ing
Sustained Hard Surface Speed	40 mph	40 mph / 40 mph	Demonstr ated in PVT.	40 mph
Survivability:	Overhead crew protec- tion against 152mm HE airburst at [Classi- fied] meters; all around crew protec- tion against blast and over- pressure effects of 7.5kg explo- sive	Overhead/ Integral crew / frontal, protec- / side, tion / rear, against / and 152mm HE/ overhead airburst/ protec- at / tion [Classi- / from fied] / 7.62mm meters; / AP all / at around / [Classi- crew / fied] protec- / meters; tion / overhead against / crew blast / protec- and / tion over- / against pressure/ 152mm HE effects / airburst of 7.5kg/ at explo- / [Classi- sive / fied] / meters; / all / around / crew / protec-	N/A	Overhead crew protec- tion against 152mm HE airburst at [Classi- fied] meters; all around crew protec- tion against blast and over- pressure effects of 7.5kg explo- sive
Combat Capability:				
FUE	2 Com- pany Teams equipped with ICV,	2 Com- / 2 Com- pany / pany Teams / Teams equipped/ equipped with / with ICV, / ICV,	Demonstr ated	2 Com- pany Teams equipped with ICV,

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program;PdE Obj/Threshold	Demon- strated Perf	Current Estimate
IOC	MC, CV, FSV, MGS Brigade equipped with ICV, RV, MC, CV, FSV, ESV, MEV, ATGM, MGS	MC, CV, / MC, CV FSV, MGS/ Brigade / Brigade equipped/ equipped with / with ICV, / ICV, RV, MC, / RV, MC, CV, FSV, / CV, ESV, ESV, / MEV, MEV, / ATGM ATGM, / MGS /	Demonstrated	MC, CV, FSV, MGS Brigade equipped with ICV, RV, MC, CV, FSV, ESV, MEV, ATGM, MGS
ICV/ESV Squad Carrying*	10 soldiers and 2 crew members, with indivi- dual eqmt	10 / Infantry soldiers/ Squad (9 and 2 / sol- crew / diers) members, / and 2 with / crew indivi- / members, dual / with eqmt / indivi- / dual / eqmt /	Demonstrated	10 soldiers and 2 crew members, with indivi- dual eqmt
MGS Lethality*	Defeat std infantry bunker and create opening for infantry in double rein- forced concrete wall	Defeat / Defeat std / std infantry/ infantry bunker / bunker and / and create / create opening / opening for / for infantry/ infantry in / in double / double rein- / rein- forced / forced concrete/ concrete wall / wall /	N/A	Defeat std infantry bunker and create opening for infantry in double rein- forced concrete wall
ATGM Antitank Capability	Host next genera- tion of fire & forget	Host / Inte- next / grate genera- / IBAS/ tion of / ITAS or fire & / equiv forget / w/equal	Threshold demonstrated in PVT	Host next genera- tion of fire & forget

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR) and LOSAT missiles	Approved Program; PdE Obj/Threshold and / target LOSAT / acquisi- missiles/ tion / capa- / bility /	Demon- strated Perf	Current Estimate and LOSAT missiles
FSV: Target Acquisition accuracy of Sensor	Inte- grate a lt-wt laser designa- tor/ Range- finder MEP	Inte- / Inte- grate a / grate lt-wt / M707 laser / Striker designa- / MEP with tor/ / current Range- / func- finder / tions MEP /	Threshol d demonstr ated in PVT	Inte- grate M707 Striker MEP with current func- tions
ESV: Obstacle Neutralization	Inte- grate emerging mine detec- tion devices	Inte- / Inte- grate / grate emerging/ existing mine / obstacle detec- / neutral- tion / ization, devices / & lane / marking, / and mine / detec- / tion / devices	N/A	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- operate / grate & on the / fully move/ / employ incor- / LRAS3 porate / masted / sensor & / target / at a / platform/ height / of 5-10m/	Demonstr ated in PVT	Host, inte- grate & fully employ LRAS3
Transportation (Highway, Ship & Rail)	N/A	/	TBD	

\* Key Performance Parameters (KPPs)

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

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  
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  
NBCRV: Nuclear, Biological, Chemical Reconnaissance Vehicle  
NDI: Non-Development Item  
OSP: Objective Sensor Package  
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):

a. Cost --	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
Development (RDT&E)	512.4	678.6	649.7
Procurement	5990.7	6327.0	6467.3
Recurring Rollaway	(4183.6)		(4671.9)
Non-recurring Rollaway	(718.6)		(822.6)
Total Rollaway	(4902.2)		(5494.5)
Other Weapon System	(1003.8)		(927.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(84.7)		(45.0)
Construction (MILCON)	300.8	1271.3	1270.4
Acquisition O&M	0.0	0.0	0.0
Total FY 2004 Base-Year \$	6803.9	8276.9	8387.4
Escalation	316.3	257.8	271.3
Development (RDT&E)	(-4.4)	(-3.0)	(-4.1)
Procurement	(299.3)	(198.8)	(212.5)
Construction (MILCON)	(21.4)	(62.0)	(62.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	7120.2	8534.7	8658.7

The factor used to convert the SAR Development Estimate from Base year FY 2000 to FY 2004 was 1.0499.

b. Quantity --

Development (RDT&E)	3	10	10
Procurement	2128	2086	2086
Total	2131	2096	2096

LRIP Note: Initial production vehicles are required to maintain momentum of the Chief of Staff Army 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 seven of the ten 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 for the 3rd BCT. The date is driven, in turn, by the completion of LFTE, PVT and IOTE, and statutorily required reports.

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAR 2004 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2004 BY\$)	8276.9	8387.4	
(2) Quantity	2096	2096	
(3) Unit Cost	3.949	4.002	+1.34
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2004 BY\$)	6327.0	6467.3	
(2) Quantity	2086	2086	
(3) Unit Cost	3.033	3.100	+2.21

Unit Cost display modified to approximate the MS III decision and suppress the expanded Section 12.

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**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	-5.7	-151.6	-10.4	-167.7
Quantity	+7.4	-44.1	-	-36.7
Schedule	-	+2.1	-	+2.1
Engineering	+21.5	-9.2	-	+12.3
Estimating	+121.1	+170.2	+3.2	+294.5
Other	-	-	-	-
Support	-12.1	-33.5	-	-45.6
Subtotal	+132.2	-66.1	-7.2	+58.9
Current Changes:				
Economic	-	+3.9	-	+3.9
Quantity	-	-61.7	-	-61.7
Schedule	-	+5.7	-	+5.7
Engineering	-	-	-	-
Estimating	+5.4	+591.8	+1018.3	+1615.5
Other	-	-	-	-
Support	-	-83.8	-	-83.8
Subtotal	+5.4	+455.9	+1018.3	+1479.6
Total Changes	+137.6	+389.8	+1011.1	+1538.5
Current Estimate	645.6	6679.8	1333.3	8658.7

Summary (FY 2004 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	512.4	5990.7	300.8	6803.9
Previous Changes:				
Quantity	+7.8	-37.8	-	-30.0
Schedule	-	-	-	-
Engineering	+19.9	+11.3	-	+31.2
Estimating	+115.1	+131.3	-	+246.4
Other	-	-	-	-
Support	-10.9	-23.7	-	-34.6
Subtotal	+131.9	+81.1	-	+213.0
Current Changes:				
Quantity	-	-53.9	-	-53.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.4	+541.4	+969.6	+1516.4
Other	-	-	-	-
Support	-	-92.0	-	-92.0
Subtotal	+5.4	+395.5	+969.6	+1370.5
Total Changes	+137.3	+476.6	+969.6	+1583.5
Current Estimate	649.7	6467.3	1270.4	8387.4

At the time the original estimate of Military Construction was completed, only Ft. Lewis, WA had been identified as an installation to receive two of the six

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

Stryker Brigade Combat Teams (SBCTs). An assumption was made that the remaining sites to receive an SBCT, once identified, would be CONUS based. The estimate reflected only the cost of upgrading maintenance facilities at each location to accommodate the Stryker, without benefit of knowing the actual infrastructure or "infostructure" (eg., digital training) requirements that would be needed to accommodate an SBCT. Further, the estimate assumed the transformation of three light Infantry units and three heavy Mechanized units into SBCTs.

The current estimate of Military Construction costs reflects the identification of the four other sites to receive the SBCTs in addition to Ft. Lewis: Alaska; Ft. Polk, LA; Hawaii; and the Pennsylvania National Guard. Two locations are OCONUS locations. Both infrastructure and infostructure requirements at each location are now known. The current estimate also reflects a scope growth in that the estimate now includes the total cost of transforming the installation to accommodate an SBCT, rather than just the cost of maintenance facility upgrades for the Stryker. Additionally, the estimate reflects the mix of units ultimately chosen to transition to an SBCT, which was five light Infantry units and only one heavy Mechanized unit. Light Infantry units are more costly to transition.

**b. Current Change Explanations --**

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Updated estimated cost of the development engineering effort (Estimating)	+38.4	-99.4
Latest cost for prototype hardware cost (Estimating)	+8.6	+3.5
Revision of Program Management Office support requirements (Estimating)	+25.4	+64.2
Update of test execution costs for the NBC and MGS (Estimating)	+1.4	+30.5
Update of training device development costs (Estimating)	+4.5	+4.5
Data requirement revision (Estimating)	-72.9	+2.1
RDT&E Subtotal	+5.4	+5.4
(2) <u>Procurement</u>		
Economic adjustment for negative program change. (Economic)	N/A	+3.9
Total Quantity Variance associated with decrease of 25 units from 2111 to 2086. (Quantity)	-53.9	-61.7
Stretchout of the procurement schedule. (Schedule)	0.0	+5.7
Revised estimate for Engineering Change Orders (Estimating)	-10.3	-11.0

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Refined test execution costs for future test requirements and test support costs (Estimating)	+64.8	+68.0
Redefined engineering support (Estimating)	+99.6	+55.1
Support requirement for the Program Management Office as re-evaluated (Estimating)	-15.0	-17.0
Updated estimate for Add-on Armor unit cost and requirements adjustment from 4 to 6 Bdes of Add-on Armor (Estimating)	+461.6	+508.9
Updated estimate for the equipment applied to the vehicle (Estimating)	-59.3	-12.2
Refined estimate for ASL/PLL to reflect current contract cost for future buys (Support)	+1.8	+1.2
Removal of modifications previously identified (Support)	-93.8	-85.0
Procurement Subtotal	+395.5	+455.9
(3) <u>MILCON</u>		
Added scope growth of the six sites to include total transformation of installations versus upgrading existing maintenance facilities (Estimating)	+969.6	+1018.3
MILCON Subtotal	+969.6	+1018.3

Acronym

ASL/PLL: Authorized Stockage List and Prescribed Load List.

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	-0.078	+0.009	+0.004	+0.006	+0.911	--	-0.062	+0.790	4.13

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

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

**Current SAR Baseline to Current Estimate**

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.96	-0.071	+0.008	+0.004	-0.004	+0.365	--	-0.056	+0.246	3.20

**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	FEB 2004
IOC	TBD	MAY 2003	N/A	NOV 2003
Total Cost	352.5	7120.2	N/A	8658.7
Total Quantity	N/A	2131	N/A	2096
Prog Acq Unit Cost	N/A	3.3	N/A	4.1

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

**a. RDT&E --**

**RDTE:**

General Dynamics Land Sys, Sterling Heights MI

DAAE07-00-D-M051, CPAF

Award: November 16, 2000

Definitized: November 16, 2000

**Initial Contract Price**

Target      Ceiling      Qty

\$203.1      N/A      0

**Current Contract Price**

Target      Ceiling      Qty  
\$337.3      N/A      0

**Estimated Price At Completion**

Contractor      Program Manager  
\$331.1      \$337.3

**Cost Variance      Schedule Variance**

Previous Cumulative Variances	\$-30.5	\$-17.2
Cumulative Variances To Date (12/31/03)	\$-1.6	\$-8.5
Net Change	\$28.9	\$8.7

**Explanation of Change:**

The net favorable cost and schedule variances are due to contract rebaselining approved by the government in Jul 03.

**Contract Comments:**

The RDTE portion of this contract has experienced cost growth as a result of additions to contract scope, i.e., MGS weight management, NBCRV program

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15. Contract Information (Cont'd):

restructuring, and contract overruns.

b. Procurement -- <u>Procurement:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Dynamics Land Sys, 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>
\$1692.8	\$1692.8	1021	\$1692.8	\$1692.8

Explanation of Change:

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

Contract Comments:

The cost increase in the production portion of this contract is due to the addition of the annual production buys into the total funded contract price since the initial contract award. 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 \$4.5B, with a total hardware buy of 2086 vehicles.

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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 (FY00-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	504.0	60.7	51.9	29.0	645.6
Procurement	2376.3	982.7	905.1	2415.7	6679.8
MILCON	276.1	285.3	306.3	465.6	1333.3
O&M	-	-	-	-	-
Total	3156.4	1328.7	1263.3	2910.3	8658.7

b. Annual Summary -- Stryker

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2004 Dollars Nonrec</u>	<u>Rollaway FY 2004 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2000				15.1	14.6
2001				247.0	241.1
2002				99.5	98.1
2003				150.4	150.2
2004				60.0	60.7
2005				50.6	51.9
2006				7.3	7.6
2007				0.1	0.1
2008				19.6	21.2
2009				0.1	0.1
Subtotal	10			649.7	645.6

Appropriation: 2033 - Procurement of W&TCV

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2004 Dollars Nonrec</u>	<u>Rollaway FY 2004 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2000	7	3.8	18.3	22.6	22.0
2001	447	102.2	737.9	938.7	920.9
2002	300	122.8	469.4	658.8	653.3
2003	282	115.0	544.4	776.3	780.1
2004	310	110.1	744.1	964.3	982.7
2005	310	136.8	594.6	875.0	905.1
2006	300	102.4	724.5	903.8	951.3
2007	130	82.9	591.7	718.1	770.2
2008		23.8	34.5	69.8	76.4
2009		22.8	32.2	151.3	168.8
2010			125.9	159.0	181.0

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

Appropriation: 2033 - Procurement of W&TCV

Fiscal Year	Qty	Rollaway FY 2004 Dollars Nonrec	Rollaway FY 2004 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2011			54.4	162.0	188.0
2012				67.6	80.0
Subtotal	2086	822.6	4671.9	6467.3	6679.8

No vehicles are procured in FY 08-12. Funding in these years is for add-on armor kits and defined pre-planned product improvements.

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Rollaway FY 2004 Dollars Nonrec	Rollaway FY 2004 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				56.2	56.2
2003				216.9	219.9
2004				277.3	285.3
2005				291.9	306.3
2006				192.5	205.7
2007				97.2	105.9
2008				129.6	144.0
2009				8.8	10.0
Subtotal				1270.4	1333.3

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2096	822.6	4671.9	8387.4	8658.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	4	4
Procurement	348	348

Percent Total Program Quantities Delivered: 16.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 970.1

Percent Total Program Expended: 11.2%

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

Stryker Status as of March 2, 2004: 779 Strykers DD250'd (Accepted), 307-ICVs, 85-MCs, 41-CVs, 128-RVs, 88-ATGMs, 8-MGSSs, 32-ESVs, 4-NBCRVs, 47-MEVs and 39-FSVs.

**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 are 1157. The expected operating life is 20 years. The Army Cost Position dated Jan 2004 is the source for the costs in 18.b.

The Prod APB O&S for Stryker is defined according to the Department of Defense Cost Analysis Guidance and Procedures, 5000.4-M, Operating and Support, which includes military pay and allowances.

b. Costs -- (FY 2004 Constant (Base-Year) Dollars in Thousands)

Cost Element	Stryker Average Annual Cost Per Vehicle	N/A
Mission Pay & Allowances	485.0	N/A
Unit Level Consumption	48.0	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	28.0	N/A
Contractor Support	23.0	N/A
Sustaining Support	9.0	N/A
Indirect Costs	N/A	N/A
Total	593.0	N/A

Total O&S Cost	Stryker	N/A
BY\$ (In Millions)	24836.2	N/A
TY\$ (In Millions)	33927.5	N/A

Report Creation Date: 3/19/2004 1:33:46 PM

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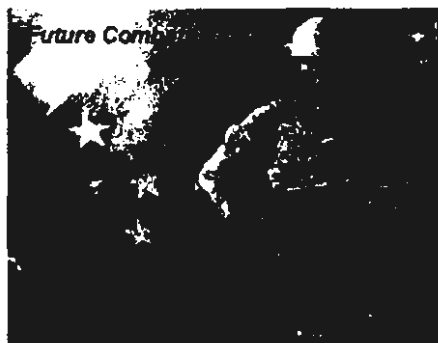
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

**PROGRAM:** Future Combat System

**AS OF DATE:** December 31, 2003

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1. Designation and Nomenclature (Popular Name): Future Combat Systems (FCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM, Future Combat Systems	BG Donald Schenk
PEO, GCS	Assigned: October 17, 2001
Attn: SFAE-GCS-FCS	DSN 786-7102; COMM 586-574-7102
Warren, MI 48397-5000	SchenkD@tacom.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 65645 Project F58

PE 65647 Project F59, F60, F61, F62, F63, F64, F65, F66, F67, F68, F69, F70

PROCUREMENT:

APPN 2033 ICN G86100 (Army)

MILCON:

PE TBD

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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated May 17, 2003

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated May 17, 2003.

## **6. Mission and Description:**

Mission: Future Combat Systems (FCS) enable the Unit of Action (UA), a full spectrum maneuver force that will conduct entry and campaign operations. It is optimized for Major Combat Operations (MCO) employment. The UA deploys rapidly and conducts operations immediately on arrival to deter, contain, stabilize, or fight. The UA will participate in MCO as a subordinate maneuver component within a Unit of Employment (UE) in a variety of roles. The UA will also participate in stability and support operations as an initial entry force or as a guarantor force to provide security for other forces.

The major fighting components of the UA are Combined Arms (CA) battalions supported by additional organic maneuver, maneuver support, and maneuver sustainment assets, which are described in detail in the UA Operational and Organizational (O&O) Plan. To meet its demanding deployment threshold, the UA's design capitalizes on the widespread use of common platforms and advanced technologies in air and ground robotic vehicles to reduce personnel and logistical footprints.

Description: The FCS Program is the greatest technology and integration challenge the Army has ever undertaken, providing unprecedented military capability. It focuses on growing increments of affordable capability on a path to full objective capability. The FCS development is a collaborative effort between the DoD and the Army requiring active involvement from industry. The Army will lead overall program management and development efforts while using an Lead Systems Integrator (LSI) to manage the System of Systems (SoS) integration efforts. The Army is executing an event driven program on an aggressive schedule to develop, test and field an initial operational capability by the end of this decade. Success will require the application of sound systems engineering and software engineering processes, proactive management, stable requirements and an appropriate level of oversight in order to maintain the program schedule and maintain established cost goals. The program goals are to acquire Future Combat Systems, equip soldiers, and field Units of Action.

The Army's FCS is a family of systems composed of advanced, networked air- and ground-based combat and maneuver sustainment systems, unmanned ground, and air vehicles, and unattended sensors and munitions. The Soldier is the centerpiece of this system of systems architecture and is networked with 18 FCS core systems and numerous other enabling systems referred to as "complementary programs." Increment 1 currently includes 14 systems and will rely on an

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

overarching network for information superiority and survivability. Additional systems and new technologies will be introduced as they mature and funding is available.

Future combat systems are networked via a Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architecture, including networked communications, network operations, sensors, battle command systems, training and both manned and unmanned reconnaissance and surveillance capabilities that will enable improved situational understanding and operations at a level of synchronization heretofore unachievable. The FCS will operate as a system of systems that will network existing systems, systems already under development, and new systems to be developed to meet the needs of the UA. The FCS will be interoperable within the UA, with the UE and with Joint and national assets making these capabilities available to the small units of the UA.

The C4ISR network is an integrated multi-layered self healing network of sensors and their associated processors, information systems, computers, and communications systems integrated via the system of systems common operating environment, enabling battle command. The C4ISR network provides secure, reliable access and distribution of information throughout the Global Information Grid (GIG) from extended distances, over open or complex terrain.

The Manned Ground Vehicles (MGVs) are an integrated group of seven systems that are capable of conducting mounted operations, mounted operations supporting dismounted operations and being supported by dismounted operations in all environments. These systems complement battle command on the move and ensure overwhelming tempo in both mounted and dismounted operations.

The Unmanned Aerial Vehicles (UAVs) are part of the commander's requirement for enhancing Situational Understanding (SU) throughout the Unit of Action. They require a robust suite of systems organic to the UA and its subordinate organizations, functioning under a tiered approach of air-to-air and ground-to-air teaming.

The Unmanned Ground Vehicles (UGVs) are part of the commander's requirement for enhancing SU throughout the Unit of Action. They require a robust suite of systems organic to the UA and its subordinate organizations. There are three types of UGV capabilities required within an FCS equipped UA. The three types are the Armed Reconnaissance Vehicle (ARV), Multifunction Utility/Logistics and Equipment Vehicle (MULE), and Small (Man-packable) Unmanned Ground Vehicle (SUGV).

The Unmanned Ground Sensors (UGS) are technologies packaged for deployment and perform the missions of remote early warning, target detection, location and/or recognition and Chemical, Biological, Radiological, and Nuclear (CBRN) warning. The FCS UGS will be modular and tailorable groups of sensors utilizing multiple ground sensing technologies.

The UA will be enhanced by Unmanned Munitions (UM) technologies that are

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

packaged for deployment that perform the missions of remotely executing effects on the battlefield. They will take the form of Non-Line-of-Sight (NLOS) munitions that perform collaborative engagements with organic and Joint assets.

## **7. Executive Summary:**

The FCS Program is the greatest technology and integration challenge the Army has undertaken. It will provide unprecedented military capability. It focuses on growing increments of affordable capability on a path to full objective capability. The FCS development is a collaborative effort between the DoD and the Army requiring active involvement from industry. The Army leads program management and development efforts while contracting a Lead Systems Integrator (LSI) to manage the system of systems integration efforts. The Army is executing an event driven program on an aggressive schedule to develop, test, and field an initial operational capability by the end of this decade. Success requires the application of sound systems engineering, software engineering processes, proactive management, stable requirements and an appropriate level of oversight in order to maintain the program schedule and cost goals. The Program Manager's mission is to acquire Future Combat Systems, equip soldiers, and field Units of Action.

The FCS program is executing system integration activities to translate the requirements in the FCS ORD and Unit of Action Organizational and Operational (O&O) Concept into a Systems of Systems Specification, Prime Item Development Specifications (PIDS), and CIs/CSCIs. The program successfully completed the first part of this process at the 16 and 17 December 2003 System of Systems Requirements Review (SoSRR), completing 52 of 57 exit criteria. The program is executing recovery plans for the remaining 5 criteria and is moving forward to develop PIDS.

At Milestone B, the FCS program defined technologies in 31 Critical Technology Areas. The FCS program began system development and demonstration (SDD) with 65% of its critical technologies matured to Technology Readiness Level (TRL) 5/6. The program technology development strategy states that continued product maturation would continue in SDD provided that technologies could be matured to appropriate TRLs by the Preliminary Design Review (PDR), and/or full integration could be demonstrated at the time of operational testing. Maturing technologies concurrently with product development increases the risk of cost growth and schedule delays; therefore, the program is conducting aggressive technology risk mitigation plans with DA and OSD oversight. These risk mitigation plans are on track to mature 77% of our critical technologies to a TRL 6 by the April 2005 Preliminary Design Review, and 88% by the Design Readiness Review (DRR).

Since FCS will dominate Army investment accounts over the next decade, cost growth and schedule delays could affect all Army acquisitions. While system development began in May 2003, the program will undergo a Milestone B update in November 2004 to determine if the Army should continue the development phase and to authorize prototypes.

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

The FCS program projects that about 80 percent of the estimated 42,750 drawings will be released to manufacturing by the time the design review is completed in July 2006. The DoD may provide the Army authority for prototype production as early as November 2004, about 20 months prior to the design review. The program schedule anticipates prototypical/preproduction hardware deliveries in 2007/2008 to satisfy statutory requirements found in both the FY03 and FY04 Appropriations and FY03 Authorizations Acts. The Army may use development prototypes, combined with simulations in limited user tests conducted before the 2008 Production Decision, to generate additional acquisition knowledge needed to help mitigate cost and schedule risk.

The FCS program represents a major integration effort both at the weapon systems platform level and at the networked systems level. The total program involves over 33 million lines of code and 14 weapon systems or platforms networked together.

The concept of an FCS equipped Unit of Action represents a major departure in the way the Army has conducted combat operations in the past and is a major part of the Army's transformation efforts. To successfully develop the FCS, the Army faces a number of technological and programmatic challenges. One challenge is to equip newly designed brigade-sized units (Units of Action) with a common family of networked vehicles and other systems. These vehicles and systems are to be a fraction of the weight of existing heavy fighting vehicles and will improve transportability. For example, vehicles must be light and small enough to be able to be airlifted by a C-130 transport, which could require lighter weight weapons and armor on each vehicle than existing vehicles such as the M-1 tank.

Another challenge involves developing multiple systems and a network in less time than DoD typically needs to develop a single advanced system. The schedule for developing the FCS is aggressive and currently focuses on obtaining an initial operating capability in 2010. The Army will manage the FCS systems development below the MDAP level; but due to the complexity and joint nature of the program, OSD has applied a special management oversight and review process to surface issues promptly for resolution, and to ensure synchronization of complementary systems and external interfaces. Because of the overriding importance of network integration to the success of the FCS program, the elements of the network and the C4ISR components of the program must meet the requirements of the net-centric capabilities promulgated and managed by DoD.

The Defense Committee Professional Staff members and Army agreed to pursue use of the FCS Work Breakdown Structure and Earned Value Management processes as the basis for satisfying future reporting requirements to Congress. The statute reflected one PE for NLOS-C and a second PE (with multiple projects) for all other FCS effort.

Definitization of the Other Transactions Agreement (OTA) between PM FCS and the Lead System Integrator (LSI) was executed by signature of Modification P20007 on 10 December 03. The LSI began the transition from the current contractual

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

baseline, the Procurement Control Documents (PCDs) to Prime Item Development Specifications (PIDS), Computer Software Configuration Items (CSCIs) and Configuration Items (CIs). The PIDS are the basis for what the LSI will sign-off and deliver to the Army and will be developed in accordance with MIL-STD-961.

**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 B	MAY 2003	MAY 2003	MAY 2003
SoS PDR	DEC 2004	DEC 2004	APR 2005 (Ch-1)
SoS CDR	MAR 2006	MAR 2006	JUL 2006 (Ch-2)
Integration Phase SDD2 Testing Complete	DEC 2006	DEC 2006	DEC 2006
Limited User Test 1	OCT 2007	OCT 2007	OCT 2007
Initial Production Decision	FEB 2008	FEB 2008	FEB 2008
Initial Operational Capability (IOC)	DEC 2010	DEC 2010	DEC 2010
Initial Operational T&E (IOT&E) Start	JUN 2012	JUN 2012	JUN 2012
Full Operational Capability (FOC) UA	DEC 2012	DEC 2012	DEC 2012
Full Rate Production (FRP) Decision	JUN 2013	JUN 2013	JUN 2013

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

ACRONYMS:

CDR - Critical Design Review  
PDR - Preliminary Design Review  
SDD - System Development and Demonstration  
SoS - System of Systems  
T&E - Test and Evaluation  
UA - Unit of Action

b. Current Change Explanations --

(Ch-1) Preliminary Design Review (PDR):

The System of Systems PDR changed from Dec 2004 to April 2005 in order to develop metrics for JROC-approved KPPs and to update the AoA update for post-MS B activity.

(Ch-2) SoS Critical Design Review (CDR):

The Critical Design Review (CDR) changed from Mar 2006 to July 2006 to allow for the development and approval of criterion to transition from system integration to system demonstration.

**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>
KPP1 - Joint Interoperability: The FCS FoS must be Joint Interoperable				
FCS-equipped UA will operate as part of a Joint Team across DOTMLPF	Yes	Yes / Yes	TBD	Yes
No. of IERs/ achievement of time standards	100%/ 100%	100%/ 100% / 100%/ / >= 70%	TBD	100%/ 100%
KPP2 - Networked Battle Command: The FCS network must enable Battle Command and provide situational awareness to the manned platform and dismounted soldier level				
Static	>98%	>98% / >80%	TBD	>98%
Mobile	>90%	>90% / >75%	TBD	>90%

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10a. Performance Characteristics (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
KPP3 - Networked Lethality: The FCS FoS must be capable of joint networked lethal & nonlethal effects that achieve overmatch, out of & in contact, at tactical standoff & in close combat, to defeat the target sets in the STAR	TBD	TBD / TBD	TBD	TBD
KPP4 - Transportability: The FCS FoS must be transportable world-wide by air, sea, highway, and rail modes to support inter-theater strategic deployment and intra-theater operational maneuver				
Multi-modal transportable ranges	>500NM	>500NM / >250NM	TBD	>500NM
KPP5 - Sustainability/Reliability: The FoS must maximize available combat power while achieving significant logistics footprint reductions and personnel efficiencies in the area of opns through reduced demand for maintenance				
Operational Availability (measured by mission defined critical systems)	>99%	>99% / >85%	TBD	>99%
Reduced Maintenance ratios (MMH/OH)	<0.025	<0.025 / <0.10	TBD	<0.025
Reduction in fuel consumption and on-board water generation	Yes	Yes / No	TBD	YES

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Future Combat System, December 31, 2003

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>
KPP6 - Training:				
The FCS FoS must have an embedded individual and collective training capability that supports live, virtual and constructive training environments				
Provide leaders w/ readily available system for training and assessing Combat Critical Skills	Yes	Yes / Yes	TBD	Yes
Provide the capability to train and assess	Crew/ sections & dis- mounted soldiers & multi- echelon combined arms	Crew/ sections/ & dis- mounted / soldiers/ & multi- echelon / combined/ arms /	TBD	Crew/sec tions & dis- mounted Soldiers & multi- echelon combined arms
KPP7 - Survivability:	TBD	TBD / TBD	TBD	TBD
The FCS FoS must provide essential protection to mounted and dismounted soldiers through the best combination of ground and air systems				

ACRONYMS:

DOTMLPF - Doctrine Organization Training Materiel Leader Development  
 Personnel Facilities  
 FoS - Family of Systems  
 IER - Information Exchange Requirements  
 KPP - Key Performance characteristics  
 MMH/OH - Maintenance Man-hours to operating hours  
 STAR - System's Threat Analysis Report  
 TBD - To Be Determined  
 NM - Nautical Mile

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Future Combat System, December 31, 2003

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

UA - Unit of Action

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)	18100.0	18100.0	18014.1
Procurement	59100.0	59100.0	59122.1
Recurring Rollaway	(44855.0)		(44855.0)
Nonrecurring Rollaway	(6245.0)		(6245.0)
Total Rollaway	(51100.0)		(51100.0)
Other Wpn System Spt Cost	(8000.0)		(8022.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	600.0	600.0	600.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	77800.0	77800.0	77736.2
Escalation	14400.0	14400.0	14864.7
Development (RDT&E)	(1500.0)	(1500.0)	(1374.7)
Procurement	(12700.0)	(12700.0)	(13329.6)
Construction (MILCON)	(200.0)	(200.0)	(160.4)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	92200.0	92200.0	92600.9

**Notes:**

- This report includes FCS Increment 1 only.
- RDT&E includes developmental engineering, software, prototype, system test and evaluation, modeling and simulation, system engineering, and program management (government).
- These cost estimates and will be updated prior to the Milestone B Update, November 2004.
- Design to Initial Unit Procurement Cost (the cost in FY03 BY\$ of procuring the first UA over a two year period) is \$4.83 billion.
- Procurement costs (and hence program acquisition costs) do not include costs for training ammo, war reserve ammo, and modifications.
- Other Weapon System Support Cost includes, training, data, support equipment, fielding, and software support.

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Future Combat System, December 31, 2003

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

b. Quantity --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0	0	0
Procurement	15	15	15
Total	15	15	15

- Unit of measure of 15 Units of Actions for Increment 1.
- Initial Operational Test and Evaluation (IOTE) on the first Unit of Action (UA) is planned to be completed by 2012. Future fielding of the remaining 14 UAs (Increment 1) is planned to continue through 2020. Full Rate Production (FRP) is planned for 2013.
- Low Rate Initial Production (LRIP) quantity approval expected to coincide with the Defense Acquisition Board (DAB) review planned for November 2004

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (MAY 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	77800.0	77736.2	
(2) Quantity	15	15	
(3) Unit Cost	5186.667	5182.413	-0.08
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	59100.0	59122.1	
(2) Quantity	15	15	
(3) Unit Cost	3940.000	3941.473	+0.04

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Future Combat System, December 31, 2003

13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	19600.0	71800.0	800.0	92200.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-118.8	+626.7	-39.6	+468.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-92.4	+0.4	-	-92.0
Other	-	-	-	-
Support	-	+24.6	-	+24.6
Subtotal	-211.2	+651.7	-39.6	+400.9
Total Changes	-211.2	+651.7	-39.6	+400.9
Current Estimate	19388.8	72451.7	760.4	92600.9

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	18100.0	59100.0	600.0	77800.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-85.9	-	-	-85.9
Other	-	-	-	-
Support	-	+22.1	-	+22.1
Subtotal	-85.9	+22.1	-	-63.8
Total Changes	-85.9	+22.1	-	-63.8
Current Estimate	18014.1	59122.1	600.0	77736.2

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Future Combat System, December 31, 2003

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

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	-119.3
	Economic adjustment for negative program change. (Economic)	N/A	+0.5
	Adjustment for Current and Prior Inflation. (Estimating)	+5.8	+5.9
	Revised Estimate due to Other Transactions Agreement definitization (Estimating)	-91.7	-98.3
	<b>RDT&amp;E Subtotal</b>	<b>-85.9</b>	<b>-211.2</b>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+626.7
	Revised Estimate (Estimating)	0.0	+0.4
	Change in Other Wpn System Spt Costs (Support)	+22.1	+24.6
	<b>Procurement Subtotal</b>	<b>+22.1</b>	<b>+651.7</b>
(3)	<u>MILCON</u>		
	Revised escalation indices. (Economic)	N/A	-39.6
	<b>MILCON Subtotal</b>	<b>0.0</b>	<b>-39.6</b>

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	
6146.67	+31.22	-0.003	--	--	-6.13	--	+1.64	+26.73	6173.39

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	
4786.67	+41.78	--	--	--	+0.027	--	+1.64	+43.45	4830.11

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Future Combat System, December 31, 2003

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 A	N/A	N/A	N/A	N/A
Milestone B	N/A	MAY 2003	N/A	MAY 2003
Milestone C	N/A	FEB 2008	N/A	FEB 2008
IOC	N/A	DEC 2010	N/A	DEC 2010
Total Cost	N/A	92200.0	N/A	92600.9
Total Quantity	N/A	15	N/A	15
Prog Acq Unit Cost	N/A	6146.7	N/A	6173.4

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

a. RDT&E --

The Boeing Company, St. Louis, MO  
DAAE07-03-9-F001, OTA  
Award: May 30, 2003  
Definitized: December 10, 2003

Initial Contract Price  
Target      Ceiling      Qty

\$14924.8      \$14924.8      0

Current Contract Price  
Target      Ceiling      Qty  
\$14780.0      \$14780.0      0

Estimated Price At Completion  
Contractor      Program Manager  
\$14780.0      \$14780.0

Previous Cumulative Variances  
Cumulative Variances To Date  
Net Change

Cost Variance      Schedule Variance  
N/A      N/A  
N/A      N/A  
N/A      N/A

Explanation of Change:

None.

Definitization agreement between PM FCS and the Lead System Integrator (LSI) was executed by signature of Modification P20007 on December 10, 2003 and expect to include EVMS data in the next SAR.

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Future Combat System, December 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 (FY03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-20)</u>	<u>Total</u>
RDT&E	157.0	1683.6	3198.1	14350.1	19388.8
Procurement	-	-	-	72451.7	72451.7
MILCON	-	-	-	760.4	760.4
O&M	-	-	-	-	-
Total	157.0	1683.6	3198.1	87562.2	92600.9

b. Annual Summary -- FCS Increment 1

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>
2003				155.2	157.0
2004				1643.3	1683.6
2005				3076.6	3198.1
2006				4022.8	4250.9
2007				3363.7	3619.7
2008				2065.5	2266.3
2009				1421.4	1590.8
2010				1156.4	1320.0
2011				732.6	853.0
2012				288.7	342.9
2013				87.9	106.5
Subtotal				18014.1	19388.8

This report includes FCS Increment 1 Program cost only.

Appropriation: 2033 - Procurement of W&TCV

<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>
2007		525.0		692.4	752.3
2008		990.0		2876.5	3187.4
2009	1	581.0	4071.0	2789.8	3153.3
2010	1	512.0	3550.0	4195.2	4836.6
2011	2	573.0	6092.0	7457.5	8769.3
2012	2	510.0	5957.0	7324.7	8785.3
2013	2	507.0	5945.0	7399.9	9053.0

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Future Combat System, December 31, 2003

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

Appropriation: 2033 - Procurement of W&TCV

Fiscal Year	Qty	Rollaway FY 2003 Dollars Nonrec	Rollaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2014	2	506.0	5788.0	7222.6	9013.1
2015	2	501.0	5678.0	7093.6	9028.7
2016	2	495.0	5365.0	6763.2	8780.7
2017	1	444.0	2409.0	3697.5	4896.6
2018		58.0		856.8	1157.4
2019		43.0		703.2	968.9
2020				49.2	69.1
Subtotal	15	6245.0	44855.0	59122.1	72451.7

This report includes FCS Increment 1 Program cost only.

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Rollaway FY 2003 Dollars Nonrec	Rollaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2009				21.0	24.1
2010				21.5	25.2
2011				42.2	50.4
2012				84.6	103.1
2013				84.8	105.4
2014				84.9	107.6
2015				85.0	109.9
2016				85.0	112.1
2017				85.0	114.4
2018				6.0	8.2
Subtotal				600.0	760.4

Funding expected in the FY06 President Budget. The PE is not yet known.

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	15	6245.0	44855.0	77736.2	92600.9

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Future Combat System, December 31, 2003

**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): \$ 465.7

Percent Total Program Expended: 0.5%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Operating and Support costs for the FCS will be updated at the next Milestone review in November 2004. There is no antecedent system.

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)

Cost Element	FCS Increment 1	Antecedent System
Mission Pay & Allowances	830.0	N/A
Unit Level Consumption	11263.0	N/A
Intermediate Maintenance	701.0	N/A
Depot Maintenance	1033.0	N/A
Contractor Support	8640.0	N/A
Sustaining Support	130.0	N/A
Indirect Costs	1001.0	N/A
Other - Demilitarization	265.0	N/A
Training Munitions/Expen	2001.0	N/A
Petroleum, Oil and Lubri	36.0	N/A
Total	25900.0	N/A

Total O&S Cost	FCS Increment 1	Antecedent System
BY\$ (In Millions)	25900.0	N/A
TY\$ (In Millions)	39900.0	N/A

Report Creation Date: 03/19/2004 10:30:15 AM

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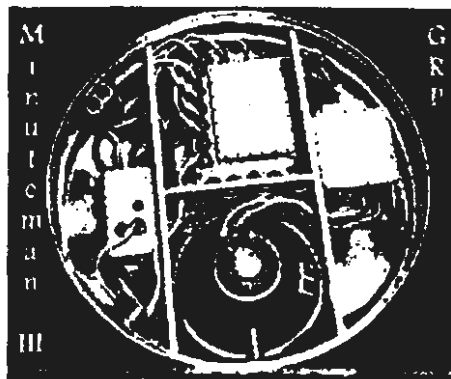
## SELECTED ACQUISITION REPORT (RCS: DD-A&amp;T(Q&amp;A)823)

PROGRAM: MMIII GRP

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): Minuteman III Guidance Replacement Program (GRP)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

OO-ALC/LMG

6031 GUM LANE

HILL AFB, UT 84056-5826

MAJ SAMUEL ELLIOTT

Assigned: June 25, 2003

DSN 775-2293; COMM (801) 775-2293

samuel.elliott@hill.afm.af.mil

**CLEARED**

FOR OPEN PUBLICATION

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

RDT&amp;E:

(U) PE 0101213F (Shared)

(U) PE 0604312F

(U) PE 0604851F

PROCUREMENT:

(U) APPN 3020 ICN LGM30G (Air Force)

(U) Program Element Code (PEC) 11213F and Modification # 13503B

**AS AMENDED**  
MAR 25 2004 5SECURITY REVIEW  
DEPARTMENT OF DEFENSETOP SECRET  
S&F/PAS document

04-C-104

UPL 007 0022/007 0032  
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**5. (U) References:**

SAR Baseline (Production Estimate):

(U) Air Force Acquisition Executive (APAE) Approved Acquisition Program Baseline (APB) dated June 8, 1999.

Approved Program:

(U) APAE 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) Two hundred sixty-two Guidance Replacement Program (GRP) (NS-50) Missile Guidance Sets (MGS) have been delivered as of December 31, 2003. 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, 2003, a total of 205 units have been deployed, 102 at Malmstrom Air Force Base (AFB), MT, 47 at Minot AFB, ND, and 56 at F.E. Warren AFB, WY. Performance continues to be outstanding, with more than 2,726,000 alert hours accumulated. The Mean Time Between Failure (MTBF) for the NS-50 is exceeding the requirement of 15,000 hours.

The program is now executing three full-rate production (FRP) contracts. The FY02 FRP contract for 76 kits was awarded in January 2002 and is currently six units ahead of schedule. The FY03 FRP contract for 80 kits was awarded in December 2002 and then modified in March 2003 by adding four units that were dropped off of the FY02 option due to funding constraints. The FY04 FRP option was awarded on December 15, 2003, for 80 units. The Air Force is committed to procuring the entire United States Strategic Command (USSTRATCOM) requirement of 652.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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) ACRONYMS:

AFSARC: Air Force Systems Acquisition Review Council  
 QOT&E: Qualifying Operational Test and Evaluation  
 QT&E: Qualifying Test and Evaluation

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

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

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

(b)(1)



(U) ACRONYM:  
G&C - Guidance and Control

b. Current Change Explanations -- None

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	496.0	496.0	509.9
Procurement	1516.5	1516.5	1642.9
Recurring Flyaway	(1060.6)		(1135.6)
Nonrecurring Flyaway	(334.9)		(370.9)
Total Flyaway	(1395.5)		(1506.5)
Total Weapon Other System	(8.6)		(8.6)
Peculiar Support	(65.5)		(67.2)
Initial Spares	(46.9)		(60.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1993 Base-Year \$	2012.5	2012.5	2152.8
Escalation	387.6	387.6	315.3
Development (RDT&E)	(35.9)	(35.9)	(33.3)
Procurement	(351.7)	(351.7)	(282.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2400.1	2400.1	2468.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	652	652	652
Total	652	652	652

(U) The unit of measure for this program is the Missile Guidance Set (MGS) for the Minuteman III missile.

The initial planned LRIP quantity was 46, but was increased to 83. This represents more than 10% of the total planned buy as approved by the Component Acquisition Executive per the Acquisition Strategy Panel.

c. (U) Foreign Military Sales --  
None.

d. Nuclear Costs -- None.

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MMIII GRP, December 31, 2003

12. (U) Unit Cost Summary:

	UCR Baseline (JUN 1999 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	2012.5	2152.8	
(2) Quantity	652	652	
(3) Unit Cost	3.087	3.302	+6.96
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1993 BY\$)	1516.5	1642.9	
(2) Quantity	652	652	
(3) Unit Cost	2.326	2.520	+8.34

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	-	+0.6	-	+0.6
Quantity	-	-60.3	-	-60.3
Schedule	-	+0.1	-	+0.1
Engineering	-	-	-	-
Estimating	+11.3	+140.4	-	+151.7
Other	-	-	-	-
Support	-	+2.6	-	+2.6
Subtotal	+11.3	+83.4	-	+94.7
Current Changes:				
Economic	-	-7.0	-	-7.0
Quantity	-	+22.7	-	+22.7
Schedule	-	+0.2	-	+0.2
Engineering	-	-	-	-
Estimating	-	-59.2	-	-59.2
Other	-	-	-	-
Support	-	+16.6	-	+16.6
Subtotal	-	-26.7	-	-26.7
Total Changes	+11.3	+56.7	-	+68.0
Current Estimate	543.2	1924.9	-	2468.1

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

(U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	496.0	1516.5	-	2012.5
Previous Changes:				
Quantity	-	-52.3	-	-52.3
Schedule	-	+0.4	-	+0.4
Engineering	-	-	-	-
Estimating	+13.9	+192.9	-	+206.8
Other	-	-	-	-
Support	-	+2.6	-	+2.6
Subtotal	+13.9	+143.6	-	+157.5
Current Changes:				
Quantity	-	+18.2	-	+18.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-48.2	-	-48.2
Other	-	-	-	-
Support	-	+12.8	-	+12.8
Subtotal	-	-17.2	-	-17.2
Total Changes	+13.9	+126.4	-	+140.3
Current Estimate	509.9	1642.9	-	2152.8

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) Procurement

Revised escalation indices. (Economic)	N/A	-7.3
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Total Quantity Variance associated with increase of 11 units from 641 to 652 units.	+21.4	+26.7
Quantity increase of 11 units. (Quantity)	+18.2	+22.7
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	0.0	0.0
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	+3.2	+4.0
Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.2
Estimating change due to process improvement in the production process. (Estimating)	-23.2	-28.0
Adjustment for Current and Prior Inflation. (Estimating)	+2.1	+2.6
Revised Estimate of Program Costs. (Estimating)	-30.3	-37.8
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Change in Initial Spares (Support)	+12.7	+16.5
Change in Peculiar Support (Support)	+0.1	+0.1

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Change in Total Weapon Other System (Support)		-0.1	-0.1
Procurement Subtotal		-17.2	-26.7

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	
2.51	-0.166	-0.530	+0.319	-0.009	+1.41	--	+0.146	+1.17	3.68

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	
3.68	-0.010	-0.057	--	--	+0.142	--	+0.029	+0.104	3.79

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	
1.82	-0.151	-0.485	+0.217	+0.033	+1.29	--	+0.146	+1.05	2.87

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

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.87	-0.010	-0.057	--	--	+0.125	--	+0.029	+0.087	2.95

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

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	AUG 1993	N/A	AUG 1993
Milestone II	N/A	AUG 1993	AUG 1993	AUG 1993
Milestone III	N/A	MAY 1997	JUN 1999	NOV 1999
IOC	N/A	MAR 1998	MAY 2000	JUL 2000
Total Cost	N/A	1636.2	2400.1	2468.1
Total Quantity	N/A	652	652	652
Prog Acq Unit Cost	N/A	2.5	3.7	3.8

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

a. Procurement --

(U) MM III GRP FRP 01 (IPIC):		Initial Contract Price		
Northrup Grumman, San Bernadino CA		Target	Ceiling	Qty
F42610-98-C-0001, FPIF/AF		\$185.0	\$201.3	80
Award: November 15, 2000				
Definitized: November 15, 2000				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$187.9	\$203.9	80	\$178.6	\$178.6
Previous Cumulative Variances		Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/22/03)		\$6.7	\$-3.3	
Net Change		\$11.1	\$0.0	
		\$4.4	\$3.3	

Explanation of Change:

(U) The net cost variance is a favorable \$4.4M which is due to lower than planned material prices at the sub-contractor level. Factory support, test engineering and overall box to MGS build-up for both labor and material all showed additional positive cost results. The incentive portions of the contract are working as designed. The contractors actively review their processes to reduce cost and schedule thereby creating a shared savings situation.

The net schedule variance is a favorable \$3.3M which reflects a recovery in schedule during the final months of production. This resulted in the cumulative variance of zero and early completion of the production option by one month in June 03.

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

This contract is over 90% complete and will not be reported in the next SAR.

(U) MM III GRP FRP 02 (IPIC): Northrup Grumman, San Bernadino CA F42610-98-C-0001, FPIF/AF Award: November 6, 2001 Definitized: November 6, 2001	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$107.3	\$117.1	76

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$219.8	\$247.4	76	\$215.2	\$215.2

Explanation of Change:

(U) The net cost variance is a favorable \$4.7M which reflects better than expected performance at the sub-contractor level. Effective parts management, lower than planned levels of support, favorable trends in production and quicker than expected work completion all contribute to the favorable cost variance. Again, the incentive contract type continues to provide benefits to the program and contractors creating a true win-win situation.

The modest net schedule variance reflects a material catch back from the sub-contractor supporting hardness assurance testing and piece part acceptance.

Cost and Schedule variance reporting is not required on this FPIF/AF contract.

(U) MM III GRP FRP 03: Northrup Grumman, San Bernadino CA F42610-C-98-0001, FPIF/AF Award: December 13, 2002 Definitized: December 13, 2002	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$182.4	\$218.9	80

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$225.0	\$245.3	84	\$225.0	\$225.0

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/22/03)	\$1.3	\$0.8
Net Change	\$1.3	\$0.8

Explanation of Change:

(U) The modest net cost variance reflects a normal temporary under run of manpower staffing as a part of contract start-up.

The modest net schedule variance is due to the early release of Interface Revision Metal Oxide Silicon Field Effect Transistor parts.

(U) MM III GRP FRP 04: Northrup Grumman, San Bernadino CA F42610-98-C-0001, FPIF/AF Award: December 15, 2003 Definitized: December 15, 2003	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$165.1	\$196.7	80

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$165.1	\$196.7	80	\$165.1	\$165.1

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

Explanation of Change:

(U) Contract was awarded December 15, 2003. Cost and Schedule Variances will be reported in the next SAR.

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

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

<u>Appropriation</u>	<u>Prior Years (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	1113.4	213.7	207.4	390.4	1924.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1656.6	213.7	207.4	390.4	2468.1

b. Annual Summary -- MM III GRP

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

<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>
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

Appropriation: 3020 - Missile Procurement, Air Force

<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>
1996	4	1.3	7.9	9.2	10.0
1997	10	21.8	19.4	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	104.1	158.2	179.6
2001	80	36.3	128.2	175.1	200.7
2002	76	32.5	144.7	186.1	216.1
2003	84	46.0	145.8	200.3	234.3
2004	80	33.4	137.6	180.2	213.7
2005	70	33.9	129.7	172.3	207.4
2006	80	37.7	138.1	184.6	225.9
2007	34	38.3	71.6	116.1	144.6
2008		1.4		8.1	10.3
2009		0.7		7.4	9.6

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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 \$
Subtotal	652	370.9	1135.6	1642.9	1924.9

(U) The PEO funded four additional units in 2003 to return to the baseline schedule. The \$13M FY05 reduction to support higher DoD priorities is equivalent to a ten unit cut. These units will be addressed prior to the final FRP option in FY07 at the expense of support and test equipment, nuclear certification test stations, and program closeout costs until funding is restored. The Air Force intends to procure all 652 missile guidance sets to meet the USSTRATCOM requirement.

The "Total TY\$ Program" values match those reflected in the Air Force funds database, and includes funding for spares.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	652	370.9	1135.6	2152.8	2468.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	256	262

(U) Percent Total Program Quantities Delivered: 40.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1345.2

(U) Percent Total Program Expended: 54.5%

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 planned life of these units is through 2020. 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

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

are based on the current manning levels associated with guidance system repair. These levels will not change because maintenance personnel have multiple tasks and qualifications that drive overall manning requirements. Repair costs are calculated as the number of projected annual repairs, multiplied by the unit repair cost. Unit level consumption costs are based on costs associated with deployment of missile wing personnel to missile sites to remove and replace guidance systems, and the annual user costs associated with maintaining guidance related maintenance support equipment. Repair and unit level consumption costs will decrease as a result of this modification. The increase in reliability of the electronics will result in fewer guidance system repairs and fewer maintenance actions by field personnel. NOTE: The calculated costs to repair the guidance set compares system level Missile Guidance System (MGS) repair. O&S data was extracted from the routine Program Office Estimate (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) Avg 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

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AF-25 WGS

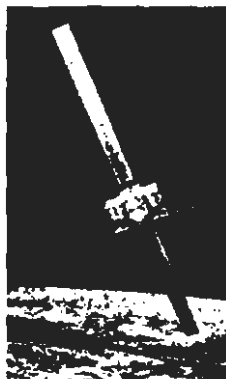
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: WGS

AS OF DATE: December 31, 2003

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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 310/336-4877  
chris.anderson@losangeles.af.mil
4. Program Elements/Procurement Line Items:  
RDT&E:  
PE 0603854F (Shared) Project Number 4811  
PROCUREMENT:  
APPN 3080 ICN 836780 (Navv)  
APPN 3020 ICN GAP000 (Air Force)

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## **5. References:**

SAR Baseline (Production Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline dated December 15, 2000

Approved Program:

USecAF Approved Acquisition Program Baseline (APB) dated February 24, 2004.

## **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 significant increase 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.

## **7. Executive Summary:**

Although 98% of all parts needed for Wideband Gapfiller Satellites (WGS) 1 have been manufactured and delivered, Boeing Satellite Systems (BSS) has continued to experience difficulties with the X-band phased array antenna. An out of cycle Selected Acquisition Report (SAR) was submitted in June 2003 due to launch delay to February 2005 from manufacturing problems with the X-band phased array. Since then, BSS has notified the Military Satellite Communications (MILSATCOM) Joint Program Office (MJPO) that they cannot meet their current launch month commitment. This delay is the consequence of continuing technical and manufacturing problems with the phased array antenna. The manufacturing problems force a first launch delay to December 2005 and Initial Operational Capability (IOC) to February 2007. The MJPO updated the Acquisition Program Baseline (APB) to reflect the new IOC date. The Under Secretary of the Air Force approved the APB on February 24, 2004. From March 2003 through January 2004, the Program Executive Officer (PEO) and the MJPO conducted monthly executive level program reviews with Boeing, and the MJPO will continue to conduct monthly reviews.

As noted in the December 2002 SAR, the Office of the Secretary of Defense (OSD) directed two additional WGS, satellites 4 and 5, be acquired; launches are currently planned for FY 2009 and FY 2010 respectively. The contract options must be extended and renegotiated to cover the cost of the production gap between satellites 3 and 4. The current funding estimates for satellite 4 and 5 were based upon preliminary knowledge of the nature of the production gap. Since then, three factors have evolved to increase the cost of the production gap impact. First, parts obsolescence has grown significantly due to the dramatic industry wide reduction in commercial satellite orders. Second,

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

during the production gap, the contractor will lose manufacturing knowledge gained during the production of the first three satellites. And third, actual production costs of the first three satellites have been greater than initial estimates had predicted. These three factors will result in satellites 4 and 5 costing more to re-qualify critical parts and manufacture than BSS, or the government originally planned. The MJPO is assessing the expected cost increase, and will identify required funding to Air Force Space Command (AFSPC).

**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 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	FEB 2007	FEB 2007 (Ch-1)
Full Operational Capability (FOC)	DEC 2005	DEC 2011	DEC 2011 (Ch-2)

ACRONYMS:

DAB-Defense Acquisition Board

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) Due to manufacturing difficulties with key components of the X-band phased array to include power amplification modules, beam forming modules, and power divider/combiner striplines, Boeing Satellite Systems (BSS) notified the Military Satellite Communications (MILSATCOM) Joint Program Office (MJPO) of a slip in delivery of satellites 1-3. This slip forced an Initial Operational Capability (IOC) schedule breach. The MJPO estimates the first launch of satellite 1 to now be in December 2005 which would result in an IOC of no earlier than February 2007. The MJPO submitted an updated Acquisition Program Baseline (APB) that was approved on February 24, 2004.

To date BSS has overcome the manufacturing problems with the power amplification modules and beam forming modules. The latest delay is due to variable thickness of metal layers of the striplines. BSS is working to improve its sole stripline subcontractor's performance and investigating potential additional sources of the stripline to help minimize the schedule impact.

(Ch-2) In December 2002, the Office of the Secretary of Defense (OSD) directed two additional Wideband Gapfiller Satellites (WGS satellites 4 and 5) be acquired; launches are currently planned for FY 2009 and FY 2010 respectively. The Full Operational Capability (FOC) date will now be based on the fifth satellite instead of the third satellite and will result in an FOC date no earlier than December 2011.

10. Performance Characteristics:

a. Performance --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Coverage	Capable of pro- viding communi- cations connec- tivity anywhere between 70 deg N and 65 deg S latitude and at all longi- tudes within each	Capable / Capable of pro- / of pro- viding / viding communi- / communi- cations / cations connec- / conncc- tivity / tivity anywhere/ anywhere between / between 70 deg N/ 65 deg N and 65 / and 65 deg S / deg S latitude/ latitude and at / and at all / all longi- / longi- tudes / tudes within / within each / each	TBD	Capable of pro- viding communi- cations connec- tivity anywhere between 65 deg N and 65 deg S latitude and at all longi- tudes within each

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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>
Capacity	satel- lites field of view, 24 hrs a day Each satel- lite should provide a min through- put of 3.6 Gbps	satel- / satel- lites / lites field / field of view, / of view, 24 hrs / 24 hrs a day / a day 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	satel- lites field of view, 24 hrs a day 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

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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>
Interoperability	Satel- lites must be fully inter- operable with existing and pro- grammed DSCS and GBS ter- minals	Satel- / Satel- lites / lites must be / must be fully / fully inter- / inter- operable/ operable with / with existing/ existing and pro-/ and pro- grammed / programmed DSCS and/ DSCS and GBS ter-/ GBS ter- minals / minals	TBD	Satel- lites must be fully inter- operable with existing and pro- grammed DSCS and GBS ter- minals

ACRONYMS:

DSCS - Defense Satellite Communication System

GBS - Global Broadcast System

TBD - To Be Determined

b. Current Change Explanations -- None

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	175.8	321.8	218.4
Procurement	804.6	1325.7	1237.8
Total Flyaway	(758.5)		(1187.3)
Total Other Wpn Sys			(0.0)
Peculiar Support	(46.1)		(50.5)
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 \$	980.4	1647.5	1456.2
Escalation	62.1	119.6	99.6
Development (RDT&E)	(3.0)	(12.9)	(6.7)
Procurement	(59.1)	(206.7)	(92.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1042.5	1767.1	1555.8

NOTE: The MILSATCOM Joint Program Office (MJPO) is assessing the expected cost increase due to the production gap between satellites 3 and 4, and will identify required funding to Air Force Space Command (AFSPC).

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	3	5	5
Total	3	5	5

There is no Low Rate Initial Production (LRIP) for WGS.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (FEB 2004 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BYS)	1647.5	1456.2	
(2) Quantity	5	5	
(3) Unit Cost	329.500	291.240	-11.61
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BYS)	1325.7	1237.8	
(2) Quantity	5	5	
(3) Unit Cost	265.140	247.560	-6.63

13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	178.8	863.7	-	1042.5
Previous Changes:				
Economic	-1.1	-14.9	-	-16.0
Quantity	-	+634.2	-	+634.2
Schedule	-	-	-	-
Engineering	+63.2	-	-	+63.2
Estimating	-12.2	-146.3	-	-158.5
Other	-	-	-	-
Support	-	-21.3	-	-21.3
Subtotal	+49.9	+451.7	-	+501.6
Current Changes:				
Economic	+1.9	-5.1	-	-3.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.5	+20.4	-	+14.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-3.6	+15.3	-	+11.7
Total Changes	+46.3	+467.0	-	+513.3
Current Estimate	225.1	1330.7	-	1555.8

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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	175.8	804.6	-	980.4
Previous Changes:				
Quantity	-	+560.5	-	+560.5
Schedule	-	-	-	-
Engineering	+59.7	-	-	+59.7
Estimating	-11.7	-126.1	-	137.8
Other	-	-	-	-
Support	-	-19.3	-	-19.3
Subtotal	+48.0	+415.1	-	+463.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.4	+18.1	-	+12.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-5.4	+18.1	-	+12.7
Total Changes	+42.6	+433.2	-	+475.8
Current Estimate	218.4	1237.8	-	1456.2

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+1.9
Adjustment for Current and Prior Inflation. (Estimating)	-2.0	-2.0
General Air Force and Congressional Reductions. (Estimating)	-3.4	-3.5
RDT&E Subtotal	-5.4	-3.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-5.1
Adjustment for Current and Prior Inflation. (Estimating)	+1.7	+1.7
Adjustment for higher Air Force priorities. (Estimating)	+10.5	+12.4
Mitigates excessive FY04 PB reduction for satellite 3 launch processing. (Estimating)	+5.9	+6.3
Procurement Subtotal	+18.1	+15.3

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
347.50	-3.84	-12.16	--	+12.64	-28.72	--	-4.26	-36.34	311.16

**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	-4.00	+11.68	--	--	-25.18	--	-4.26	-21.76	266.14

**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	FEB 2007
Total Cost	N/A	N/A	1042.5	1555.8
Total Quantity	N/A	N/A	3	5
Prog Acq Unit Cost	N/A	N/A	347.5	311.2

None.

**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

Initial Contract Price  
Target Ceiling Qty

\$137.0 N/A 0

Current Contract Price

Target Ceiling Qty  
\$139.4 N/A 0

Estimated Price At Completion  
Contractor Program Manager  
\$139.4 \$139.4

Explanation of Change:

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

None.

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

b. Procurement -- <u>Wideband Gapfiller:</u> Boeing Satellite Systems, El Segundo CA F04701-00-C-0011, FFP Award: January 2, 2001 Definitized: January 2, 2001	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$19.6	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$559.1	N/A	3	\$559.1	\$559.1

Explanation of Change:

None.

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

Contract Comments:

In previous SARs, development cost was inadvertently included as part of the current Contract Target Price. However, this section should have only included the procurement funding. This year's current Contract Target Price \$559.1M correctly only reflects the procurement funding.

Initial procurement contract price represents only advanced parts for satellite 1. Difference between initial procurement contract target price and current procurement contract target price is the exercise of options for procurement of satellites 1-3, advance parts for satellites 1-3 and launch services for satellites 1 and 2.

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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 (FY99-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-15)</u>	<u>Total</u>
RDT&E	161.9	-	53.2	10.0	225.1
Procurement	586.8	34.2	40.3	669.4	1330.7
MILCON	-	-	-	-	-
G&M	-	-	-	-	-
Total	748.7	34.2	93.5	679.4	1555.8

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				4.5	4.5
2001				76.7	77.7
2002				77.3	79.0
2003					
2004					
2005				50.0	53.2
2006				7.1	7.7
2007				2.1	2.3
Subtotal				218.4	225.1

Appropriation: 3020 - Missile Procurement, Air Force

<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>
2001			0.9	24.8	25.0
2002	2		355.4	355.4	363.6
2003	1		177.4	177.4	183.1
2004			21.0	21.0	22.0
2005			38.0	38.0	40.3
2006			57.5	57.5	62.0
2007	1		246.3	246.3	270.7
2008	1		156.4	156.4	175.3
2009			41.7	41.7	47.7
2010			15.4	15.4	18.0
2011			15.5	15.5	18.4
2012			15.4	15.4	18.7

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**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 \$
2013			15.4	15.4	19.1
2014			15.5	15.5	19.5
2015			15.5	15.5	20.0
Subtotal	5		1187.3	1211.2	1303.4

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				14.8	15.1
2004				11.8	12.2
Subtotal				26.6	27.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5		1187.3	1456.2	1555.8

**17. Delivery/Expenditure Information:**

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

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 565.4

Percent Total Program Expended: 36.3%

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**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 (2009-2021). 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 satellite was launched in October 1982, and the last DSCS III satellite was launched in August 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
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
TYS (In Millions)	169.4	156.1

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

Report Creation Date: 03/22/2004 11:30:16 AM

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AF-5 C-5 RERP

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: C-5 RERP

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): C-5 Reliability Enhancement and Reengining Program (RERP)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/GRA	Lt Col Darrel Watsek
AMC III Complex, Bldg 558	Assigned: September 1, 2003
2590 Loop Rd., West, Room 011	DSN 986-9488; COMM 937-656-9488
WPAFB, OH 45433-7142	darrel.watsek@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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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (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 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 RERP continues to progress as scheduled. Last year, we reported completing several major System Development and Demonstration (SDD) milestone events: System Requirements Review (SRR), (February 2002) and several subcontractor Preliminary Design Reviews (PDR). In March 2003, we completed all PDR actions and held Air Vehicle Critical Design Review (CDR) in December 2003. Several action items remain open (centered on the structural design) that are critical to completing this review. We anticipate these will be cleared in March 2004 concluding the hardware critical design phase of SDD. Our near term focus is a successful Software CDR scheduled to complete in 2004.

During the course of the year we reported several issues that we have since retired. One of them was the Slow Thrust Reverser (TR) Deployment during aerial refueling breakaway maneuver. Air Force/Lockheed team successfully resolved this risk and completed an analysis of the breakaway scenario comparing CF6 (RERP engine) performance with the TF39 configuration. The team determined that current aircraft performance and C-5 RERP aircraft performance in the breakaway maneuver were extremely comparable, and no C-5 RERP modifications were necessary. Additionally, we reported Government Furnished Equipment shortfalls and managed to overcome unanticipated shortfalls due to the hard work of our Logistics Team.

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

Avionics Modernization Program (AMP) completion and transition to RERP (test infrastructure, manpower) remains a C-5 Modernization top concern. Currently, though AMP has experienced delay, we consider the AMP-to-RERP transition manageable. Another technical issue we are monitoring is the limited projected growth capacity for the three processor RERP avionics architecture. An additional issue since the last report concerns the Berry Amendment and possible restriction to the use of only U.S. specialty metals. This would significantly impact General Electric CF-6 manufacturing and prices and could possibly cause a schedule delay. We will work a waiver through the Office of the Secretary of Defense if the current Defense Contract Management Agency (DCMA) clause deviation is determined to be invalid.

Since the "as of" date of this report, the Air Force initiated a restructure of the C-5 RERP in order to meet Department of Defense priorities. The Fiscal Year 2005 President's Budget reduced RERP funding by \$335M across the Future Years Defense Program (FYDP). Air Mobility Command is currently working to minimize this impact beginning in Fiscal Year 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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C-5 RERP, December 31, 2003

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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
First Flight	AUG 2005	NOV 2005	NOV 2005
Start Combined QT&E/QOT&E	NOV 2006	NOV 2005	NOV 2005
Milestone C	DEC 2006	MAR 2007	MAR 2007
Complete Dedicated QOT&E	AUG 2007	DEC 2007	DEC 2007
FRP For B Models	SEP 2008	JAN 2009	JAN 2009
IOC	MAR 2010	JUN 2010	JUN 2010
FRP For A Models	N/A	JUN 2011	JUN 2011
System Requirements Review (SRR)	N/A	N/A	FEB 2002

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

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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	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	TBD	840,000 lbs take-off weight; RCR 23; climb condi- tion: standard day plus 18 deg Fahren- heit; 31,000 ft in

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C-5 RERP, December 31, 2003

10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	less than 25 min	less than 25 min	/ less / than 25 / min / /		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 engine out 2.5% climb gradient/ /840,000/ lbs takeoff weight/ hot day// from rotation/	One engine out 2.5% climb gradient/ /840,000/ lbs takeoff weight/ hot day// from rotation/ /	TBD	One engine out 2.5% climb gradient /840,000 lbs takeoff weight/ hot day/ from rotation
Stage III Noise/ Pollution Compliance	Aircraft shall meet Stage IV communi- ty noise and emission require- ments	Aircraft/ shall meet Stage IV/ communi- ty noise/ and emission/ require- ments	Aircraft shall meet Stage communi- ty noise/ and emission/ require- ments	TBD	Aircraft shall meet Stage IV communi- ty noise and emission require- ments
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 5.7 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	4-hr fix rate/ shall be/ no less than 34.3% 12-hr	4-hr fix rate/ shall be/ no less than 30.1% 12-hr	TBD	4-hr fix rate shall be no less than 34.3% 12-hr

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10a. Performance Characteristics (Cont'd):

<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
fix rate	fix rate/ fix rate		fix rate
shall be	shall be/ shall be		shall be
no less	no less / no less		no less
than	than / than		than
66.5%;	66.5% / 62.9%;		66.5%;
24-hr	24-hr / 24-hr		24-hr
fix rate	fix rate/ fix rate		fix rate
shall be	shall be/ shall be		shall be
no less	no less / no less		no less
than	than / than		than
84.1%	84.1% / 82.4%		84.1%

Acronym List:

RCR Runway Condition Reading  
deg Degrees  
lbs Pounds  
TBD To Be Determined  
ft Feet  
min Minutes  
hr Hours

b. Current Change Explanations -- None

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C-5 RERP, December 31, 2003

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1413.9	1396.5	1306.2
Procurement	7381.0	6733.2	7153.8
Recurring Flyaway	(6626.2)		(6228.5)
Nonrecurring Flyaway	(34.0)		(0.0)
Total Flyaway	(6660.2)		(6228.5)
Training	(82.1)		(58.2)
Data	(74.6)		(60.2)
Other wpn sys spt costs	(262.9)		(289.5)
Total Other Wpn Sys	(419.6)		(407.9)
Peculiar Support	(97.7)		(88.1)
Initial Spares	(203.5)		(429.3)
Construction (MILCON)	3.1	3.1	3.2
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	8798.0	8132.8	8463.2
Escalation	2295.9	1887.8	1729.1
Development (RDT&E)	(124.6)	(121.5)	(85.0)
Procurement	(2170.8)	(1765.8)	(1643.7)
Construction (MILCON)	(0.5)	(0.5)	(0.4)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	11093.9	10020.6	10192.3
b. Quantity --			
Development (RDT&E)	4	3	3
Procurement	122	109	109
Total	126	112	112

The initial date of Low Rate Initial Production (LRIP) is January 2006. Both the initial and current approved LRIP quantity is five (5). This is less than 10% of the program buy.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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C-5 RERP, December 31, 2003

**12. Unit Cost Summary:**

	UCR Baseline (MAR 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	8132.8	8463.2	
(2) Quantity	112	112	
(3) Unit Cost	72.614	75.564	+4.06
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	6733.2	7153.8	
(2) Quantity	109	109	
(3) Unit Cost	61.772	65.631	+6.25

**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	-30.7	-491.9	-	-522.6
Quantity	-	-607.4	-	-607.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+30.1	+34.6	-	+64.7
Other	-	-	-	-
Support	-42.5	+271.0	-	+228.5
Subtotal	-43.1	-793.7	-	-836.8
Current Changes:				
Economic	-0.9	+49.6	-	+48.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-79.8	-	-	-79.8
Estimating	-23.5	+17.4	-	-6.1
Other	-	-	-	-
Support	-	-27.6	-	-27.6
Subtotal	-104.2	+39.4	-	-64.8
Total Changes	-147.3	-754.3	-	-901.6
Current Estimate	1391.2	8797.5	3.6	10192.3

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C-5 RERP, December 31, 2003

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

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	1413.9	7381.0	3.1	8798.0
Previous Changes:				
Quantity	-	-477.2	-	-477.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+26.9	+24.1	+0.1	+51.1
Other	-	-	-	-
Support	-39.7	+222.5	-	+182.8
Subtotal	-12.8	-230.6	+0.1	-243.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-72.4	-	-	-72.4
Estimating	-22.5	+21.4	-	-1.1
Other	-	-	-	-
Support	-	-18.0	-	-18.0
Subtotal	-94.9	+3.4	-	-91.5
Total Changes	-107.7	-227.2	+0.1	-334.8
Current Estimate	1306.2	7153.8	3.2	8463.2

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-3.2
Economic adjustment for negative program change. (Economic)	N/A	+2.3
Reduction in Maintenance Training Devices (MTDs) (Engineering)	-64.9	-71.8
Elevator Variable Feel Unit (EVFU) Termination (Engineering)	-7.5	-8.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
Estimating Refinement as a result of new data from the prime contractor (Estimating)	-23.1	-24.1
RD&E Subtotal	-94.9	-104.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+47.6
Economic adjustment for negative program change. (Economic)	N/A	+2.0
Refinements occurred as a result of various changes to estimating assumptions (Estimating)	+21.4	+17.4
Increase in Initial Spares (Support)	+4.1	+5.7

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C-5 RERP, December 31, 2003

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

**b. Current Change Explanations --**

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease in Peculiar Support (Support)	-0.5	-0.8
Decrease in Training (Support)	-17.1	-22.7
Decrease in Data (Support)	-11.0	-15.9
Decrease in Other Wpn Sys Spt Costs (Support)	+6.5	+6.1
Procurement Subtotal	<u>+3.4</u>	<u>+39.4</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	
88.05	-4.23	+5.59	--	-0.713	+0.523	--	+1.79	+2.96	91.00

**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	-4.06	+3.77	--	--	+0.477	--	+2.23	+2.42	80.71

**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	MAR 2007
IOC	N/A	MAR 2010	N/A	JUN 2010
Total Cost	N/A	11093.9	N/A	10192.3
Total Quantity	N/A	126	N/A	112
Prog Acq Unit Cost	N/A	88.0	N/A	91.0

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

a. RDT&E --			Initial Contract Price		
C-5 RERP SDD:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Marietta, GA			\$986.1	N/A	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>	
\$981.3	N/A	3	\$981.3	\$981.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-0.5	\$-1.6	
Cumulative Variances To Date			\$2.0	\$-2.6	
Net Change			\$2.5	\$-1.0	

Explanation of Change:

The decline from \$986.1M to \$981.3M is due to a combination of terminating several items under the original contract and adding several items with an overall net decrease. The following items were terminated under various contract modifications: Elevator Variable Feel Unit (EFVU), Digital Fuel Quantity Gauges, Smoke Detector Upgrade, and Parking Brake Selector Valve. A reduction was also negotiated for the Procurement Quality Assurance (PQA) estimating system.

The unfavorable net schedule variance significant drivers are due to: Utilities and Subsystem, Avionics, Airframe, Air Vehicle Analysis and Integration due to manpower shortages.

The favorable net cost variance significant drivers are due to: Utilities and Subsystem, Avionics, Airframe, Air Vehicle Analysis and Integration, Air Vehicle Management and Air Vehicle Training due to manpower shortages.

Program management continues to monitor progress and expect schedule variance to improve.

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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 (FY00-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-16)</u>	<u>Total</u>
RDT&E	336.9	290.5	416.4	347.4	1391.2
Procurement	-	-	-	8797.5	8797.5
MILCON	-	-	-	3.6	3.6
O&M	-	-	-	-	-
Total	336.9	290.5	416.4	9148.5	10192.3

b. Annual Summary -- C-5 RERP

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

<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>
2000				18.5	18.7
2001				38.7	39.6
2002				82.8	85.5
2003				185.1	193.1
2004				274.8	290.5
2005				388.4	416.4
2006				260.2	283.4
2007				57.6	63.9
2008				0.1	0.1
Subtotal	3			1306.2	1391.2

Appropriation: 3010 - Aircraft Procurement, Air Force

<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>
2006				90.2	99.3
2007	5		584.1	497.8	558.5
2008	7		545.8	595.2	680.9
2009	12		708.7	809.1	944.2
2010	12		698.9	787.6	937.2
2011	12		698.0	790.7	959.9
2012	12		628.1	728.0	901.3
2013	12		619.3	717.4	906.1
2014	12		612.7	697.2	898.0
2015	12		618.4	701.0	921.1
2016	13		514.5	739.6	991.0
Subtotal	109		6228.5	7153.8	8797.5

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

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	112		6228.5	8463.2	10192.3

**17. Delivery/Expenditure Information:**

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

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 291

Percent Total Program Expended: 2.9%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

Operating and Support (O&S) costs are 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

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

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

Cost Element	C-5 RERP	Antecedent System
Indirect Costs	N/A	N/A
Total	N/A	N/A

Total O&S Cost	C-5 RERP	Antecedent System
BY\$	N/A	N/A
TY\$	N/A	N/A

Report Creation Date: 03/22/2004 6:44:59 PM

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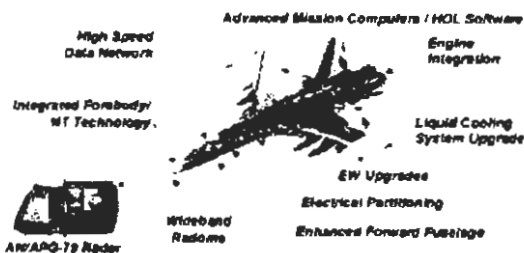
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: AESA

AS OF DATE: December 31, 2003

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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 Donald E. Gaddis  
47123 Buse Road, Unit IPT              Assigned: May 30, 2003  
BLDG 2772, Suite 445                      DSN 757-7669; COMM 301-757-7669  
Patuxent River, MD 20670-1547          donald.gaddis@navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0204136N Project E2065  
PROCUREMENT:  
(U) APPN ICN (Navy)

04-C-208  
B. Fitz-

Derived from: Security Classification Guide for F/A-18 AESA Radar  
AN/APG-79, Issue 6, 2001

Downgrade Instructions: X3  
Declassify on: X3

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DELIVER REVIEW  
DEPARTMENT OF DEFENSE

04-C-0715

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated June 15, 2001

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated February 2, 2004.

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 aircraft performing the following missions: 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 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) Approval was granted 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. The Acquisition Decision Memorandum (ADM) that approved the procurement of eight AN/APG-79 radars and related support in Low-Rate Initial Production (LRIP) Lot 1, was approved on July 21, 2003. The ADM to approve Milestone C/LRIP 2 was approved on January 29, 2004. This ADM also re-designated the Full-Rate Production Time Critical Parts decision as an LRIP 4 decision. Pursuant to 10 U.S.C. 2400(b), the minimum quantity of AN/APG-79 radars needed to conduct LRIP was revised to 84 systems. The increase from 42 to 84 (20.2% of the total number of radars)

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

is necessary to permit an orderly increase in the production rate for the system sufficient to lead to Full-Rate production upon the successful completion of operational testing. Since the total number of LRIP assets of 84 constitutes more than 10% of the total number (415) of AN/APG-79 radars, the FA/18E/F December 2003 SAR reports that LRIP quantities have been increased to 20.2%. This is reported in the F/A-18E/F SAR because procurement funding related information for this program is included in the F/A-18E/F SAR.

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 PB03 completed the FY04-05 portion. Total program cost did not increase.

Funding was secured during PB05 to initiate the AN/APG-79 Anti-Tamper (AT) development effort. As a result of funding the AESA AT requirement, the program deviated from its approved baseline, dated 18 June 2001. The Navy has agreed to resource this "must fund" requirement in the FY05 budget. The deviation does include previously approved funding in the FY04 President's Budget for an Over Target Baseline. Technical issues associated with the Fibre Channel Fabric (FCF) Module and determination that additional test assets were required to complete flight tests were contributing factors as well.

The APB approved on February 02, 2004 included changes to reflect a concurrent Milestone C and LRIP 2, the addition of the LRIP 4, and the renaming or addition of OT and DT test periods.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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	JUN 2002 (Ch-1)
DT-IIB	NOV 2002	NOV 2002	MAR 2003 (Ch-1)
DT-IIC	AUG 2004	N/A	N/A (Ch-3)
DT-C1	N/A	SEP 2003	SEP 2003 (Ch-2)
DT-C2	N/A	AUG 2004	AUG 2004 (Ch-3)
IOT&E			
OT-IIA	OCT 2002	OCT 2002	MAR 2003 (Ch-1)
OT-B1	N/A	AUG 2003	SEP 2003 (Ch-4)
OT-C1	N/A	JUN 2004	JUN 2004 (Ch-5)
OT-C2	N/A	FEB 2006	FEB 2006 (Ch-5)
LRIP 1	N/A	JUN 2003	JUL 2003 (Ch-6)
MILESTONE C/LRIP 2	N/A	DEC 2003	JAN 2004 (Ch-6)
LRIP 3	N/A	DEC 2004	DEC 2004 (Ch-6)
LRIP 4	N/A	DEC 2005	DEC 2005 (Ch-6)
Full Rate Production Contract Award	JAN 2007	JAN 2007	JAN 2007
IOC	SEP 2006	SEP 2006	OCT 2006
OT-IIB	JUN 2004	JUN 2004	N/A (Ch-4)
OT-IIC	FEB 2006	FEB 2006	N/A (Ch-4)
Milestone III	JAN 2007	N/A	N/A (Ch-5)
Full Rate Production Decision Review	N/A	JAN 2007	JAN 2007 (Ch-5)

(U) (U) ACRONYM LIST:

DT-Developmental Testing  
DT&E-Development Test and Evaluation  
EMD-Engineering and Manufacturing Development  
IOC-Initial Operational Capability  
IOT&E-Initial Operational Test and Evaluation  
LRIP-Low Rate Initial Production  
OT-Operational Testing

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

is necessary to permit an orderly increase in the production rate for the system sufficient to lead to Full-Rate production upon the successful completion of operational testing. Since the total number of LRIP assets of 84 constitutes more than 10% of the total number (415) of AN/APG-79 radars, the FA/18E/F December 2003 SAR reports that LRIP quantities have been increased to 20.2%. This is reported in the F/A-18E/F SAR because procurement funding related information for this program is included in the F/A-18E/F SAR.

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Funding was secured during PB05 to initiate the AN/APG-79 Anti-Tamper (AT) development effort. As a result of funding the AESA AT requirement, the program deviated from its approved baseline, dated 18 June 2001. The Navy has agreed to resource this "must fund" requirement in the FY05 budget. The deviation does include previously approved funding in the FY04 President's Budget for an Over Target Baseline. Technical issues associated with the Fibre Channel Fabric (FCF) Module and determination that additional test assets were required to complete flight tests were contributing factors as well.

The APB approved on February 02, 2004 included changes to reflect a concurrent Milestone C and LRIP 2, the addition of the LRIP 4, and the renaming or addition of OT and DT test periods.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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	JUN 2002 (Ch-1)
DT-IIB	NOV 2002	NOV 2002	MAR 2003 (Ch-1)
DT-IIC	AUG 2004	N/A	N/A (Ch-3)
DT-C1	N/A	SEP 2003	SEP 2003 (Ch-2)
DT-C2	N/A	AUG 2004	AUG 2004 (Ch-3)
IOT&E			
OT-IIA	OCT 2002	OCT 2002	MAR 2003 (Ch-1)
OT-B1	N/A	AUG 2003	SEP 2003 (Ch-4)
OT-C1	N/A	JUN 2004	JUN 2004 (Ch-5)
OT-C2	N/A	FEB 2006	FEB 2006 (Ch-5)
LRIP 1	N/A	JUN 2003	JUL 2003 (Ch-6)
MILESTONE C/LRIP 2	N/A	DEC 2003	JAN 2004 (Ch-6)
LRIP 3	N/A	DEC 2004	DEC 2004 (Ch-6)
LRIP 4	N/A	DEC 2005	DEC 2005 (Ch-6)
Full Rate Production Contract Award	JAN 2007	JAN 2007	JAN 2007
IOC	SEP 2006	SEP 2006	OCT 2006
OT-IIB	JUN 2004	JUN 2004	N/A (Ch-4)
OT-IIC	FEB 2006	FEB 2006	N/A (Ch-4)
Milestone III	JAN 2007	N/A	N/A (Ch-5)
Full Rate Production Decision Review	N/A	JAN 2007	JAN 2007 (Ch-5)

(U) (U) ACRONYM LIST:

DT-Developmental Testing  
DT&E-Development Test and Evaluation  
EMD-Engineering and Manufacturing Development  
IOC-Initial Operational Capability  
IOT&E-Initial Operational Test and Evaluation  
LRIP-Low Rate Initial Production  
OT-Operational Testing

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

b. Current Change Explanations --

(U) (Ch-1): DT-IIA from MAY 2002 to JUN 2002, DT-IIB from FEB 2003 to MAR 2003, and OT-IIA from Feb 2003 to MAR 2003 - Actual accomplished dates.

(Ch-2): DT-IIA was split at MS II decision and DT-C1 became the second part.

(Ch-3): Under new DoD 5000 guidance, DT-IIC became DT-C2.

(Ch-4): OT-B1 was added at MS II and therefore was not in the original APB.

(Ch-5): OT-C1 and OT-C2 were renamed to support the new DoD 5000 guidance.

(Ch-6): Under new DoD 5000 guidance, Milestone III was deleted and LRIPs and Milestone C were added, as well as the full rate production decision review.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
KEY PERFORMANCE PARAMETERS (KPPs) (Specified in AESA ORD)/1				
Interoperability	Achieve all IERs	Achieve / Achieve all IERs/ All / Critical	TBD	Achieve All IERs

1. Near Simultaneous Missions: SAR Map			TBD	(1)	Ch-1)
2. Airborne Targets					
3. Multiple (Air-to-Air) Target Track			TBD		Ch-2)
4. SAR Imagery Expand			TBD		Ch-3)
SAR TLE:					
1. Horizontal TLE-A Range(feet CEP			TBD		Ch-4)
2. Horizontal TLE-B Range(feet CEP)			TBD		Ch-4)

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) AESA Operational Availability (A sub O) /10/11	(b)(1)			

(U) Abbreviation and 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): Near Simultaneous Missions changed from (b)(1) The general purpose processor configuration (five 500 MHz boards) was reconciled for LRIP 1. There was an increase in SAR map processing time, and a cost reduction initiative for radiator machining improved radiator performance.

(Ch-2): Multiple (Air-to-Air) Target Track changed from (b)(1) There was a modified noise figure for LRIP 1 and a cost reduction initiative for radiator machining improved radiator performance.

(Ch-3): SAR Imagery Expand changed from (b)(1) The general purpose processor configuration (five 500MHz boards) was reconciled for LRIP 1, there was a modified noise figure for LRIP, there was an increase in SAR map processing time, and a cost reduction initiative for radiator machining improved radiator performance.

(Ch-4): Horizontal TLE -- changed from (b)(1) and Horizontal TLE -B changed from (b)(1) The general purpose processor configuration (five 500 MHz boards) was reconciled for LRIP 1 and there was an increase in SAR map processing time.

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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)	494.8	569.6	569.3
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	0.0	0.0	0.0
Total FY 2000 Base-Year \$	494.8	569.6	569.3
Escalation	30.4	29.9	29.8
Development (RDT&E)	(30.4)	(29.9)	(29.8)
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 \$	525.2	599.5	599.1

(U) Procurement funding related information for this program is included in the F/A-18E/F and EA-18G SARs.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	N/A	N/A	0
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 on July 31, 2001. The program office is working toward potential future sales of the Super Hornet. Potential Foreign Military Sales (FMS) customers include Malaysia, Switzerland, Australia, and Kuwait.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (FEB 2004 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	569.6	569.3	
(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 and EA-18G SARs.

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	-6.2	-	-	-6.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+27.3	-	-	+27.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+21.1	-	-	+21.1
Current Changes:				
Economic	+0.1	-	-	+0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+53.0	-	-	+53.0
Estimating	-0.3	-	-	-0.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+52.8	-	-	+52.8
Total Changes	+73.9	-	-	+73.9
Current Estimate	599.1	-	-	599.1

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

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	494.8	-	-	494.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+26.4	-	-	+26.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+26.4	-	-	+26.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+48.4	-	-	+48.4
Estimating	-0.3	-	-	-0.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+48.1	-	-	+48.1
Total Changes	+74.5	-	-	+74.5
Current Estimate	569.3	-	-	569.3

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RD&E

Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.2
Revised estimate to include addition of Anti-Tamper Requirement. (Engineering)	+48.4	+53.0
Undistributed Congressional Reductions in FY 04 (Estimating)	-1.4	-1.5
 RD&E Subtotal	<u>+48.1</u>	<u>+52.8</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	
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 C	N/A	N/A	N/A	JAN 2004
IOC	N/A	SEP 2006	N/A	SEP 2006
Total Cost	N/A	525.2	N/A	599.1
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/F --

(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  
Target Ceiling Qty

\$324.5 N/A 0

Current Contract Price  
Target Ceiling Qty  
\$330.5 N/A 0

Estimated Price At Completion  
Contractor Program Manager  
\$363.5 \$370.8

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-6.7	\$-4.4
Cumulative Variances To Date	\$6.1	\$-2.1
Net Change	\$12.8	\$2.3

Explanation of Change:

(U) Cost variance improvement is partially attributable to a re-baseline of effort associated with the implementation of an Over Target Baseline. The balance of the variance is the result of operating efficiencies at Boeing as well as software delays at Raytheon. Raytheon's software delays are creating artificially positive variances within Boeing's Software Integration, Integration and Test, and Program Management Teams, a problem to be resolved through a software realignment plan. The same factors driving cost variance improvement are also pushing improvement in the program's schedule variance; schedule issues are also expected to be resolved following implementation of the software realignment.

(U) Contract Comments:

The Current Contract Price and Estimated Price at Completion do not include the \$0M production readiness phases, which are 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. LRIP Contracts are reported in the F/A-18E/F SAR as they were awarded with APN funds.

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> (FY06-08)	<u>Total</u>
RDT&F	322.4	108.2	90.3	78.2	599.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	322.4	108.2	90.3	78.2	599.1

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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	114.4
2003				100.1	104.7
2004				102.1	108.2
2005				84.0	90.3
2006				62.6	68.4
2007				5.9	6.6
2008				2.8	3.2
Subtotal				569.3	599.1

(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				569.3	599.1

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): \$ 304.3

(U) Percent Total Program Expended: 50.8%

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.

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

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

Cost Element	AESA	No Antecedent Prog
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 Prog
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/21/2004 3:57:04 PM

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

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): OHIO CLASS SSGN CONVERSION
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, J9353  
PROCUREMENT:  
(U) APPN 1810 ICN 101000 (Navy)  
(U) APPN 1711 ICN 201700 (Navy)

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5. (U) References:

SAR Baseline (Production Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) 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) 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) Accelerated program schedule approved
- c) OSD agreed to pursue an FY03 above-threshold reprogramming (ATR) for \$177.5M of SCN to execute the accelerated program schedule.

Congress approved the ATR of \$177.5M on June 24, 2003.

Contracts

Electric Boat

The SSGN Detail Design and Long Lead Time Material (LLTM) contract was awarded to Electric Boat (EB) Corporation on September 26, 2002.

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

Several contract modifications were executed during 2003 in support of conversion installation planning and manufacturing of LLTM for execution of the USS OHIO (SSGN 726) and USS FLORIDA (SSGN 728) conversions. The conversion installation planning effort includes establishing EB onsite teams to facilitate the conversion and liaison with the Naval Shipyards to plan and coordinate conversion execution, development and management of conversion work packages and material control for items stored at the conversion site. In addition, manufacturing LLTM options were awarded to support the SSGN conversion schedules.

The USS OHIO (SSGN 726) conversion contract modification was awarded on December 19, 2003 and includes all conversion manufacturing/installation and support functions. This contract modification includes a government option for conversion of USS FLORIDA (SSGN 728).

General Dynamics Advanced Information Systems

The contract for the design and production of the Attack Weapons Control System (AWCS) was awarded to General Dynamics Advanced Information Systems (GDAIS) on December 16, 2002. A modification to the AWCS GDAIS contract was executed on July 23, 2003 for the purpose of accelerating AWCS production and delivery to support the MS C accelerated program decision.

Northrop Grumman Marine Systems

The contract for the design and production of the Multiple All-Up-Round Canister (MAC) was awarded to Northrop Grumman Marine Systems (NGMS) on December 16, 2002.

Engineered Refueling Overhaul

The USS OHIO (SSGN 726) ERO started on November 15, 2002 at Puget Sound Naval Shipyard (PSNS) and is 59 percent complete as of December 31, 2003.

The USS FLORIDA (SSGN 728) ERO started at Norfolk Naval Shipyard (NNSY) on August 1, 2003. The ERO is 22 percent complete as of December 31, 2003.

The USS MICHIGAN (SSGN 727) ERO is scheduled to start at PSNS on March 15, 2004.

The USS GEORGIA (SSBN 729) ERO is scheduled to start at NNSY on March 9, 2005.

Conversion

The conversion design is progressing on schedule. As of December 31, 2003, all background modeling is complete; arrangement drawings are 97% complete; ripout drawings are 98% complete; system diagrams are 90% complete, and design issues (drawings) are 81% complete.

The AWCS CDR was completed on October 15, 2003 and the MAC CDR was completed on December 11, 2003. Both reviews support completion of the design. The AWCS

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

Production Readiness Review was successfully conducted on December 12, 2003 to support AWCS production.

The USS OHIO (SSGN 726) lead ship conversion commenced at PSNS on November 19, 2003. The conversions are being executed via a teaming relationship between EB and the Naval Shipyards. EB is the conversion manager with the Naval Shipyards providing direct labor support and government provided facilities and services support.

The USS FLORIDA (SSGN 728) conversion is scheduled to start at NNSY on April 1, 2004. EB is making preparations with NNSY for the start of the conversion.

The USS MICHIGAN (SSGN 727) conversion is scheduled to start at PSNS on October 1, 2004.

The USS GEORGIA (SSGN 729) conversion start was shifted from FY05 to FY06 during the PR05 budget process and is scheduled to start on October 1, 2005.

Test and Evaluation

The SSGN Test and Evaluation Master Plan (TEMP) (No. 1648) was signed by Director, Operational Test & Evaluation (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 (SSGN 728) on January 14 and 16, 2003 using TOMAHAWK Block III test missiles.

Developmental Testing efforts are proceeding on schedule.

The Live Fire Test and Evaluation (LFT&E) Management Plan was signed on May 22, 2002 by DOT&E, and the Live Fire Test and Evaluation Waiver was signed on June 28, 2002 by USD(AT&L). This plan is currently being executed.

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8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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

(U) ACRONYM:

MAC - Multiple All-Up Round Canister

b. Current Change Explanations -- None

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10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
*Interoperability	100% of top- level IERS	100% of / 100% of top- / top- level / level IERS / IERS / designa- / ted / 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 *SOF Mobility Assets	(b)(1)		TBD	(b)(1)
	Ability to support 2 ASDS, or 2 DDS, or 1 ASDS and 1 DDS simulta- neously	Ability / Ability to / to support / support 2 ASDS, / 2 or 2 / ASDS, or DDS, or / 2 DDS, 1 ASDS / or 1 and 1 / ASDS DDS / and 1 simulta- / DDS neously / simulta- neously	TBD	Ability to support 2 ASDS, or 2 DDS, or 1 ASDS and 1 DDS simulta- neously
*System Operational Availability (Ao)	(b)(1)		TBD	(b)(1)
*"Full SOF Configured" - SOF Personnel	(b)(1)		TBD	(b)(1)

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
/ Endurance	(b)(1)		TBD	(b)(1)
/ Maximum Transit Speed with DDS or ASDS attached			TBD	
/ Radiated Broad Band Noise			TBD	
/ Radiated Narrow Band Noise			TBD	

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Exceptions to Noise Requirements - SOF Operations Support	(b)(1)		TBD	(b)(1)
(S) Exceptions to Noise Requirements - Land Attack/Strike Warfare Launch Operations			TBD	

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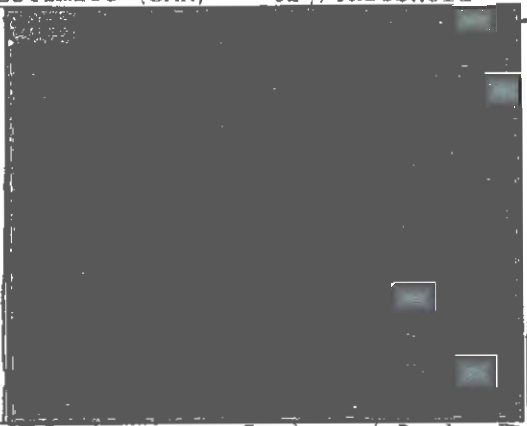
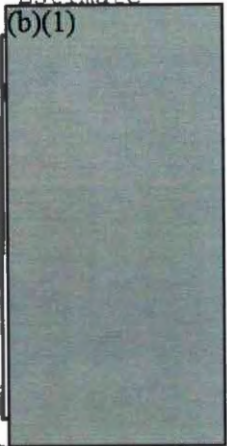
10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	(b)(1)			(b)(1)
Land Attack/Strike and Warfare Attributes				
Average Tomahawk Launch Interval			TBD	
TLAM Block III Single Mission Response Time			TBD	
Tactical Tomahawk Single Mission Response Time			TBD	
Tomahawk Multi- Mission Response Time			TBD	
SOF Operations Support Attributes				
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			TBD	

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf.	Current Estimate
(S) configuration Berthing			TBD	(b)(1) 
(C) Reconfigurable for maximum SOF stowage			TBD	
Organic Lock-out		Dual / Dual / Dual Lock-out Lock-out Lock-out Chambers Chambers Chambers	TBD	Lock-out Chambers

(U) \* - KPP (Key Performance Parameter)

Acronyms List

IER - Interface Exchange Requirement  
ASDS - Advanced Seal Delivery System  
DDS - DryDeck Shelter  
SOF - Special Operations Forces  
TLAM - Tomahawk Land Attack Missile

b. Current Change Explanations -- None

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	329.4	329.4	329.0
Procurement	3539.7	3539.7	3533.2
Total Sailaway	(3529.5)		(3522.8)
Total Other Wpn Sys Costs	(0.0)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(10.2)		(10.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	3869.1	3869.1	3862.2
Escalation	182.8	182.8	148.0
Development (RDT&E)	(9.3)	(9.3)	(1.7)
Procurement	(173.5)	(173.5)	(140.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4051.9	4051.9	4010.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	4	4	4
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. Foreign Military Sales -- None.

d. (U) Nuclear Costs --

The Nuclear costs associated with SSGN propulsion (4 reactor cores) is \$468.8 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 \$356.8 million funded with OPN.

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12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	3869.1	3862.2	
(2) Quantity	4	4	
(3) Unit Cost	967.275	965.550	-0.18
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	3539.7	3533.2	
(2) Quantity	4	4	
(3) Unit Cost	884.925	883.300	-0.18

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	-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
Current Changes:				
Economic	-0.1	-0.9	-	-1.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.6	+109.1	-	+112.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3.5	+108.2	-	+111.7
Total Changes	-2.0	-39.7	-	-41.7
Current Estimate	336.7	3673.5	-	4010.2

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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
Production Estimate	329.4	3539.7	-	3869.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.4	-104.7	-	-108.1
Other	-	-	-	-
Support	-	+0.1	-	+0.1
Subtotal	-3.4	-104.6	-	-108.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+98.0	-	+98.0
Other	-	-	-	-
Support	-	+0.1	-	+0.1
Subtotal	-	+98.1	-	+98.1
Total Changes	-3.4	-6.5	-	-9.9
Current Estimate	326.0	3533.2	-	3859.2

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation rates (Economic)	N/A	-0.1
Current Estimate adjusted to recoup excessive inflation reductions (Estimating)	N/A	+3.6
RDT&E Subtotal	0.0	+3.5
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-0.9
Recoupment of excessive inflation reductions (Estimating)	+17.8	+19.8
Outfitting and Post Delivery (Estimating)	+10.5	+11.7
Section 8126 distributed reductions (Estimating)	-6.3	-7.0
SCN revised to reflect change in USS GEORGIA (SSGN 729) conversion start date from FY05 to FY06 (Estimating)	+17.1	+19.0
Navy Working Capital Fund Rate adjustment (Estimating)	+11.9	+13.2
SSGN 729 Battery Replacement (Estimating)	+1.6	+1.8
Revised estimate for Reactor Core (Estimating)	+13.1	+14.6
Revised SSGN 726 Engineered Refueling Overhaul (ERO) Manday estimate (Estimating)	+14.2	+15.8

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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 SSGN 729 (ERO) Manday estimate (Estimating)	+18.1	+20.2
Adjustment for prior year to current year inflation (Support)	+0.1	0.0
Procurement Subtotal	+98.1	+108.2

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

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

Current SAR Baseline to Current Estimate										PAUC
PAUC	Changes									Cur Est
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
1012.97	-9.40	-0.005	--	--	-1.02	--	--	-10.43		1002.55

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		
928.30	-8.90	+0.005	--	--	-1.03	--	--	-9.93		918.37

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone 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	NOV 2002	NOV 2002
IOC	N/A	N/A	MAY 2007	MAY 2007
Total Cost	N/A	N/A	4051.9	4010.2
Total Quantity	N/A	N/A	4	4
Prog Acq Unit Cost	N/A	N/A	1013.0	1002.5

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

a. Procurement --  
 (U) Conversion (SSGN 726):  
 Electric Boat Corp., Groton, CT  
 02-C-2901/726, CPIF  
 Award: December 19, 2003  
 Definitized: December 19, 2003

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$148.3	N/A	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$148.3	N/A	1

Estimated Price At Completion
<u>Contractor</u> <u>Program Manager</u>
\$148.3      \$148.3

Previous Cumulative Variances  
 Cumulative Variances To Date (12/20/03)  
 Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

None.

(U) Contract Comments:  
 Earned Value data will be reported in the next SAR.

(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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$707.6	N/A	4

Estimated Price At Completion
<u>Contractor</u> <u>Program Manager</u>
\$707.6      \$707.6

Previous Cumulative Variances  
 Cumulative Variances To Date (12/20/03)  
 Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
\$16.2	\$-3.6
\$16.2	\$-3.6

Explanation of Change:

None.

(U) Contract Comments:  
 The difference between the Initial Contract Price and the Current Contract Price is due to the award of contract options (e.g. Long Lead Time Material)

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

(U) AWCS Design/Procurement:			Initial Contract Price		
Gen. Dyn. Adv. Info. Sys., Pittsfield MA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00030-03-C-0008, CPIF	\$6.5	N/A	4		
Award: December 16, 2002					
Definitized: December 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>	
\$114.7	N/A	4	\$114.7	\$114.7	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/30/03)	N/A	N/A
Net Change	\$0.5	\$0.0

Explanation of Change:

(U) Cost variance is insignificant.

(U) Contract Comments:

The difference between the Initial Contract Price and the Current Contract Price is due to the award of contract options.

(U) MAC Design/Procurement:			Initial Contract Price		
North. Grum. Marine Sys., Sunnyvale CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00030-03-C-0055, CPIF	\$34.2	N/A	4		
Award: December 16, 2002					
Definitized: December 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>	
\$36.8	N/A	4	\$36.8	\$36.8	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (11/16/03)	N/A	N/A
Net Change	\$-1.0	\$-2.2

Explanation of Change:

(U) The net unfavorable cost variance is primarily due to program management, system engineering and Government Furnished Information (GFI) management efforts exceeding original planned expenditures.

The net unfavorable schedule variance is primarily due to delays in

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

negotiating a subcontract with EB that has resulted in delays in test and evaluation and support equipment design efforts.

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 (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	203.1	69.4	20.0	44.2	336.7
Procurement	1458.6	1160.6	642.9	411.4	3673.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1661.7	1230.0	662.9	455.6	4010.2

b. Annual Summary -- OHIO CLASS SSGN CONVER.

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 2002 Dollars Nonrec</u>	<u>Sailaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2000				12.9	12.7
2001				35.9	35.8
2002				71.6	72.1
2003				81.0	82.5
2004				67.3	69.4
2005				19.1	20.0
2006				20.7	22.0
2007				20.5	22.2
Subtotal				329.0	336.7

Appropriation: 1611 - Shipbuilding and Conversion, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 2002 Dollars Nonrec</u>	<u>Sailaway FY 2002 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2002		102.7	246.7	349.4	353.7
2003	2	215.5	756.9	972.4	996.4
2004	1	187.5	929.6	1117.3	1160.6
2005	1	10.6	480.2	495.0	522.0
2006			238.5	244.5	262.2
2007			6.1	6.1	6.7
2008			8.1	8.1	9.0

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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 \$
2009			5.4	5.4	6.1
Subtotal	4	516.3	2671.5	3198.2	3316.7

(U) The recurring SCN SAILAWAY cost in FY02 (BY) of \$246.7M is required to support SSGN advanced procurement.

The recurring SCN SAILAWAY costs in FY07-FY09 (BY) of \$6.1M, \$8.1M, and \$5.4M respectively, are required to support Outfitting and Post Delivery for all four boats.

The recurring SCN SAILAWAY cost in FY06 (BY) of \$238.5M is required to fund the conversion of USS GEORGIA (SSGN 729).

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			105.9	105.9	108.5
2004					
2005			114.7	114.7	120.9
2006					
2007					
2008			114.4	114.4	127.4
Subtotal			335.0	335.0	356.8

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	4	516.3	3006.5	3862.2	4010.2

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 946.2

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SSGN, December 31, 2003

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

(U) Percent Total Program Expended: 23.6%

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 (VAMOSC) and was used to compute FY84-00 class average for each Cost Analysis Improvement Group (CAIG) O&S cost element, and adjustments were made to reflect the SSGN configuration.

The service life of the OHIO Class Guided Missile Nuclear Submarine (SSGN) will be 20 years.

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 annual Costs per SSGN boat	TRIDENT SSBN Program Average annual Costs per SSBN boat
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

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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# A-3 BLACK HAWK UPGRADE

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

**PROGRAM:** Black Hawk UH-60M

**AS OF DATE:** December 31, 2003

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1. Designation and Nomenclature (Popular Name): Black Hawk Upgrade (UH-60M)

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

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4. Program Elements/Procurement Line Items:

RDT&E:  
PE 273744 Project 504 (Shared)  
PROCUREMENT:  
APPN 2031 ICN AA0492 (Army) (Shared)

MAR 18 2004

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5. References:

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated February 21, 2002.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated January 14, 2004.

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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04-C-0591

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Black Hawk UH-60M, December 31, 2003

## **6. Mission and Description:**

The Black Hawk Upgrade (UH-60M) will be an improved version of the existing UH-60 Black Hawk 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 Medical Evacuation (MEDEVAC) mission equipment package (MEP) kit, will provide day/night and adverse weather emergency evacuation of casualties.

## **7. Executive Summary:**

The Black Hawk Upgrade (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, 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: In January 2003, the UH-60 Recapitalization Product Management Office developed a restructured program plan to minimize technical, cost and schedule impacts resulting from an Acquisition Program Baseline (APB) Research, Development, Test & Evaluation (RDT&E) cost breach. The Program Restructure Plan limited FY03 spending to available funds, internally funded RDT&E shortfalls with Aircraft Procurement, Army (APA) money in FY04 and beyond, funded Advanced Procurement for low rate initial production (LRIP), and developed four additional prototype aircraft. Defense Contract Audit Agency (DCAA) and Defense Contract Management Agency (DCMA) audited the prime contractor, Sikorsky Aircraft Corporation (SAC) and DCMA levied a Level 3 Corrective Action Report (CAR). The Program Manager developed a plan to work with SAC to correct Earned Value (EV) and financial control issues. The PM conducted a series of Integrated Baseline Reviews with DCMA to assess SAC's progress. The PM coordinated the restructure Program Office Estimate methodology with Deputy Assistant Secretary of the Army-Cost & Economics (DASA-CE) and Office of the

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Black Hawk UH-60M, December 31, 2003

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

Secretary of Defense (OSD) Cost Analysis Improvement Group (CAIG) and received support to restructure the program to the revised cost estimate. The FY04 Defense Appropriations Conference transferred \$75M of APA to RDT&E and included \$13.5M APA for Advanced Procurement to support LRIP. The 2005 President's Budget fully funds the restructured UH-60M program. The Army Acquisition Executive (AAE) approved the Restructure Acquisition Strategy Report (ASR) and APB in November 2003. On December 1, 2003, an OSD Overarching Integrated Product Team (OIPT) recommended approval of the ASR and APB. The Acquisition Decision Memorandum (ADM), APB and ASR remained in OSD staffing throughout December. The ADM, APB and ASR were approved by the Defense Acquisition Executive (DAE) on January 14, 2004.

The engineering effort in 2003 centered on finalizing the component and system critical design reviews and construction of UH-60M prototype aircraft 1 and 2. In June 2003, the UH-60M System Critical Design Review was completed. In August 2003, SAC delivered aircraft 1 and 2 for testing to West Palm Beach facility. The Developmental Test Pilot Familiarization Course was completed and the first flight of UH-60M Aircraft 1 was successfully conducted on September 17, 2003, 30 months after aircraft induction. SAC completed the first flight of UH 60M aircraft 2 in October 2003.

Test efforts focused on revising the Test and Evaluation Master Plan to incorporate program restructure adjustments and to detail plan ground and flight tests and the Limited User Test (LUT) in the System Integration Laboratory (SIL). These plans were briefed to the Program Executive Officer (PEO) and Commander, Army Test and Evaluation Command (ATEC), in February 2003, resulting in a T&E Strategy that consolidated/reduced test effort to minimize costs. The second of three Early User Demonstrations (EUD) was completed in May 2003. In December 2003, Operational Test Command (OTC) and Army Evaluation Center (AEC) concurred at Operational Test Readiness Review (OTRR) #1 that all planning and resources are adequate to support the scheduled LUT.

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Black Hawk UH-60M, December 31, 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 --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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	FEB 2005	FEB 2005 (Ch-1)
LRIP Contract Award	APR 2004	MAR 2005	MAR 2005 (Ch-1)
OT Start	JUL 2005	SEP 2006	SEP 2006 (Ch-1)
OT Complete	SEP 2005	NOV 2006	NOV 2006 (Ch-1)
Full Rate Production IPR	MAR 2006	MAY 2007	MAY 2007 (Ch-1)
FUE	SEP 2006	JAN 2008	JAN 2008 (Ch-1)

## Acronyms:

CDR	Critical Design Review
FUE	First Unit Equipped
IPR	In-Process Review
LRIP	Low Rate Initial Production
OT	Operational Test
PDR	Preliminary Design Review
SDD	System Design & Development

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Black Hawk UH-60M, December 31, 2003

9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) A revised APB was signed on January 14, 2004, by the DAE. Revised dates are based on program restructure plans developed in response to the APB RDT&E cost breach. Restructuring required FY03 Prototype construction and other efforts to be moved into FY04 and FY05. Subsequently, milestones were adjusted to accommodate the schedule stretch required to obtain test assets for developmental and operational test. The schedule milestones effected are:

Description	From	To
Milestone C	JUL 2004	FEB 2005
LRIP Contract Award	AUG 2004	MAR 2005
OT Start	SEP 2005	SEP 2006
OT Complete	DEC 2005	NOV 2006
Full Rate Production IPR	JUN 2006	MAY 2007
FUE	OCT 2006	JAN 2008

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Troop Movement					
Airspeed (Sustained Cruise) (KTAS)	175	175 / 145	TBD	146	
One Engine Inopera- tive (KTAS)	100	100 / 100	TBD	106	(Ch-1)
Combat Radius (w 20 min reserve) (KM)	500	500 / 225	TBD	234	(Ch-1)
Vertical Rate of Climb (fpm)	750	750 / 500	TBD	500	
Vertical Rate of Climb w One Engine Inoperative (fpm)	200	200 / 100	TBD	238	
Internal Lift Capa- bility (290 lbs each)	11	11 / 11	TBD	11	
External Lift					
Payload (KPP)	10000	10000 / 4500	TBD	5329	(Ch-1)
Vertical Rate of Climb (fpm)	500	500 / 200	TBD	500	
Combat Radius (w 20 min reserve) (KM)	275	275 / 135	TBD	135	
Self-Deploy Range (nautical miles)	1260	1260 / 1056	TBD	1097	(Ch-1)

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Black Hawk UH-60M, December 31, 2003

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>
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	1.1 (Ch-1)
Interoperability (meet information exchange rqmts) (KPP)	All	All / All / Critical	TBD	All

Acronym List:

fpm feet per minute  
 KM Kilometer  
 KPP Key Performance Parameter  
 KTAS Knots True Air Speed  
 lbs pounds  
 mhrs man hours  
 min minutes  
 mm millimeter  
 rqmts requirements

b. Current Change Explanations --

(Ch-1) The performance Current Estimate was updated per latest estimated Technical Performance Measurements (TPMs) received from the Contractor on December 22, 2003 during weekly program update. The performance characteristics changed as follows:

<u>Performance Characteristic</u>	<u>From</u>	<u>To</u>
Troop Movement		
One Engine Inoperative	105	106
Combat Radius	232	234
External Lift		
Payload	5309	5329
Self Deployment Range	1087	1097
Unscheduled mhrs per flight hr	1.3	1.1

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Black Hawk UH-60M, December 31, 2003

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	274.2	418.3	410.8
Procurement	10388.8	10388.8	10926.6
Flyaway	(9856.6)		(10284.0)
Non Recurring Flyaway			(26.1)
Total Flyaway	(9856.6)		(10310.1)
Data	(8.2)		(12.2)
Training	(81.1)		(93.8)
Initial Support Equipme	(19.2)		(20.4)
Transportation	(21.2)		(20.9)
Logistics	(70.3)		(67.6)
Total Other Wpn Sys	(200.0)		(214.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(332.2)		(401.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2001 Base-Year \$	10663.0	10807.1	11337.4
Escalation	3999.0	4002.5	3547.1
Development (RDT&E)	(12.5)	(16.0)	(15.3)
Procurement	(3986.5)	(3986.5)	(3531.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	14662.0	14809.6	14884.5
b. Quantity --			
Development (RDT&E)	4	8	8
Procurement	1217	1213	1213
Total	1221	1221	1221

The Acquisition Decision Memorandum dated April 12, 2001 contains approval for 30 Low Rate Initial Production (LRIP) aircraft units. Currently 10 LRIP units are planned for aircraft procurement.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Black Hawk UH-60M, December 31, 2003

12. Unit Cost Summary:

	UCR Baseline (JAN 2004 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	10807.1	11337.4	
(2) Quantity	1221	1221	
(3) Unit Cost	8.851	9.285	+4.90
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	10388.8	10926.6	
(2) Quantity	1213	1213	
(3) Unit Cost	8.565	9.008	+5.17

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	-4.4	-614.1	-	-618.5
Quantity	-	-	-	-
Schedule	-	-597.4	-	-597.4
Engineering	+9.4	+867.9	-	+877.3
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	+14.4	-	+14.4
Subtotal	+5.0	-329.2	-	-324.2
Current Changes:				
Economic	-0.1	+217.1	-	+217.0
Quantity	+65.3	-49.3	-	+16.0
Schedule	+28.3	+245.7	-	+274.0
Engineering	+9.6	+343.0	-	+352.6
Estimating	+31.3	-433.9	-	-402.6
Other	-	-	-	-
Support	-	+89.7	-	+89.7
Subtotal	+134.4	+412.3	-	+546.7
Total Changes	+139.4	+83.1	-	+222.5
Current Estimate	426.1	14458.4	-	14884.5

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Black Hawk UH-60M, December 31, 2003

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	-	-103.3	-	-103.3
Engineering	+8.9	+669.4	-	+678.3
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	+39.0	-	+39.0
Subtotal	+8.9	+605.1	-	+614.0
Current Changes:				
Quantity	+62.2	-30.5	-	+31.7
Schedule	+26.7	-	-	+26.7
Engineering	+9.2	+256.2	-	+265.4
Estimating	+29.6	-338.3	-	-308.7
Other	-	-	-	-
Support	-	+45.3	-	+45.3
Subtotal	+127.7	-67.3	-	+60.4
Total Changes	+136.6	+537.8	-	+674.4
Current Estimate	410.8	10926.6	-	11337.4

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-0.1
Increase in Research Development Test & Evaluation (RDT&E) aircraft from 4 to 8. (Quantity)	+62.2	+65.3
Schedule extended by up to 1 year to support Program restructure. (Schedule)	+26.7	+28.3
Incorporation of 3 Engineering Change Notifications (ECNs) increasing design and verification requirements of multifunction displays (MFD), engine and Improved Hover Infrared Suppression System (IHIRSS). (Engineering)	+0.4	+0.4
Addition of Air Warrior provisions to the aircraft configuration. (Engineering)	+0.8	+0.8
Incorporated Trade Study recommendations into aircraft configuration: Replacement of Windshield, New Drive Shaft Coupling, Fuel Tank, Digital Intercommunications System, Pavehawk Battery, New Crewseats, 400 ampere (AMP) Converters, Infrared (IR) Jammer, Tail Gearbox Oil Level Sight Gauge. (Engineering)	+2.2	+2.3

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Black Hawk UH-60M, December 31, 2003

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Added a VHF (Very High Frequency)	+0.7	+0.7
Omni-directional Radio-range (VOR) loop		
Antenna as replacement for the existing VOR		
antenna. (Engineering)		
Added development of Stand Alone Technical	+0.4	+0.4
Manuals and Publications to the UH-60M		
Integration and Qualification contract.		
(Engineering)		
Included development of web-based Interactive	+4.7	+5.0
Multimedia Instruction (IMI) and Interactive		
Course Ware (ICW) for the UH/HH-60M Program.		
(Engineering)		
Revised program estimate consistent with the	+29.6	+31.3
Program Restructure. (Estimating)		
RDT&E Subtotal	+127.7	+134.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+217.1
Adjustment for Current and Prior Inflation.	+0.2	+0.2
(Estimating)		
Decrease of 4 aircraft; from 1217 to 1213.	-30.5	-49.3
(Quantity)		
Realignment of aircraft recapitalization	0.0	+245.7
schedule due to funding adjustments and		
Program restructure. (Schedule)		
Recurring impact of the Trade Study based	+256.2	+343.0
engineering decisions made in RDT&E. Those		
incorporated due to Trade Study analysis		
include: replacement of windshield, new drive		
shaft coupling, fuel tank, digital		
intercommunications system (ICS), Pavhawk		
battery, new crewseats, 400 AMP converters,		
IR Jammer and Tail gearbox oil level sight		
gauge. (Engineering)		
Added refurbishment of 4 additional aircraft	+3.7	+4.2
from RDT&E after Operational Test is		
complete. Also added first article test due		
to added testing requirement for APA funded		
aircraft. (Estimating)		
Updated estimated costs of 4 MFDs vs. 2 MFDs,	-299.2	-411.1
701D engine upgrade kit, and dual digital		
flight controls (DDFC). The updated		
estimates were lower than anticipated		
earlier. (Estimating)		

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Black Hawk UH-60M, December 31, 2003

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

**b. Current Change Explanations --**

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduction in MEDEVAC aircraft requirements from 323 to 296 and kit procurement schedule adjustment. (Estimating)	-29.0	-10.6
Changed estimating methodology to begin learning curve calculations at theoretical 5th unit rather than theoretical first unit based on restructure program (4 production representative prototypes). (Estimating)	-14.0	-16.6
Added support requirements due to A/C procurement over a longer period of time and added hardware procurement requiring initial spares. (Support)	+45.3	+89.7
Procurement Subtotal	-67.3	+412.3

**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	
12.01	-0.329	+0.011	-0.265	+1.01	-0.330	--	+0.085	+0.182	12.19

**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	-0.327	-0.002	-0.290	+0.998	-0.358	--	+0.086	+0.107	11.92

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Black Hawk UH-60M, December 31, 2003

**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 A	N/A	N/A	N/A	N/A
Milestone B	N/A	APR 2001	N/A	APR 2001
Milestone C	N/A	MAR 2004	N/A	FEB 2005
FUE	N/A	SEP 2006	N/A	JAN 2008
Total Cost	N/A	14662.0	N/A	14884.5
Total Quantity	N/A	1221	N/A	1221
Prog Acq Unit Cost	N/A	12.0	N/A	12.2

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

a. RDT&E --  
UH-60M I/Q Contract:  
 Sikorsky Aircraft Corp, Stratford CT  
 DAAH23-01-C0053, CPAF  
 Award: May 2, 2001  
 Definitized: May 2, 2001

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$243.1	\$243.1	4	\$254.8	\$273.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-12.5	\$-5.4
Cumulative Variances To Date (12/31/02)	\$-36.3	\$-15.7
Net Change	\$-23.8	\$-10.3

Explanation of Change:

The net 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, additional digital mock up unit (DMU) interface definition, changing the Flight Control Computer (FCC) microprocessor to a Power PC, unplanned activity prior to the Dual Digital FCC contract modification, and unplanned efforts in support of pre-first flight testing. Higher than expected drawing revision traffic has been experienced due to first article build, electrical changes in the cockpit and cabin, and legacy interfaces in all areas. Manufacturing level of support is higher than planned in order to recover schedule. Another contributor to the cost overruns is poor estimating of planned work in the original baseline. Current plans are to rebaseline contract to reflect program restructure consistent with SAC performance for minimal program risk.

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Black Hawk UH-60M, December 31, 2003

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

The net unfavorable Schedule Variance is a result of deferment of work into the FY04 timeframe to maintain FY03 budget following submittal of a bottoms up Estimate at Completion (EAC) by Sikorsky during December 2002. The annual Estimate to Complete (ETC) costs associated with Sikorsky EAC exceeded current FY03 program funding levels. Deferment of work into the FY04 timeframe to maintain FY03 budget had adverse effect on the schedule as compared to the program contract baseline. However, the schedule supports the approved program restructure. The UH-60M PMO and SAC are currently working to rebaseline the contract consistent with the current approved program.

**Contract Comments:**

The contract value increased from \$238.3M last year to \$243.1M in this SAR due to incorporation of the development of web-based Interactive Multimedia Instruction (IMI) and Interactive Course Ware (ICW) for the UH/HH-60M Program into the I/Q contract.

The Program Office held two Integrated Baseline Reviews (IBRs) to assess SAC Earned Value (EV) processes. During the April 2003 IBR, SAC Cost Account Managers (CAM) demonstrated an understanding of the work to be accomplished and that work was logically planned. A follow up review was held in August 2003 of selected cost accounts, the integrated master schedule and EV action items. A second IBR was held during November 2003 which demonstrated further improvement. SAC demonstrated full cost and schedule traceability, detailed planning of FY04 work packages and program baseline consistency with the latest contract modifications. An IBR will be held to validate the program restructure baseline during July 2004.

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Black Hawk UH-60M, December 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 (FY00-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-27)</u>	<u>Total</u>
RDT&E	193.0	144.5	58.2	30.4	426.1
Procurement	-	13.4	77.9	14367.1	14458.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	193.0	157.9	136.1	14397.5	14884.5

b. Annual Summary -- Black Hawk Upgrade UH60M

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				95.9	98.8
2004				138.5	144.5
2005				55.0	58.2
2006				23.0	24.7
2007				5.2	5.7
Subtotal	8			410.8	426.1

Only funding for the UH-60M program is included in this SAR. The following paragraph explains exclusions.

During FY02, FY03 and FY04 respectively, \$13.5M, \$13.2M and \$7M was added to the Black Hawk (273744) program. These funds are intended for Integrated Mechanical Diagnostic - Health and Usage Monitoring System (IDM-HUMS) program and are not included in the funds reflected in this SAR. During FY04 \$5.1M was added to the RDT&E (273744) for Maintenance Analysis Safety Training (MAST) Program. Also, in FY05 \$9.4M was added to Black Hawk, (273744) and is intended for Common Avionics Architecture System (CAAS) program initiation. Funding in FY10-14 funds the Future Utility Rotorcraft (FUR) which will be the Block II Upgrade for the Black Hawk fleet and is not included in this SAR. FUR will have its own decision review.

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Black Hawk UH-60M, December 31, 2003

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

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				12.8	13.4
2005	5	0.6	67.8	73.1	77.9
2006	5	0.1	63.2	96.7	104.9
2007	14	1.1	174.2	244.0	269.6
2008	58	5.1	568.4	589.5	664.3
2009	61	1.1	563.1	593.6	682.3
2010	53	0.8	507.8	549.0	643.6
2011	59	1.4	548.9	582.8	696.9
2012	61	1.1	558.0	607.3	740.7
2013	67	1.5	597.1	628.8	782.4
2014	71	1.4	621.5	651.4	826.6
2015	72	1.2	625.3	658.1	851.8
2016	74	1.2	632.5	656.7	867.0
2017	69	1.0	590.3	618.5	832.9
2018	68	0.9	582.2	606.4	833.0
2019	64	0.9	560.8	596.4	835.6
2020	73	1.9	537.3	566.0	808.9
2021	73	1.1	534.1	563.7	821.7
2022	73	1.0	531.3	560.9	834.0
2023	73	1.1	528.7	558.2	846.6
2024	73	1.0	525.4	534.1	826.2
2025	47	0.6	366.1	358.5	565.7
2026				18.9	30.5
2027				1.2	1.9
Subtotal	1213	26.1	10284.0	10926.6	14458.4

Only funding for the UH-60M Program is included in this SAR. The following explains exclusions. APA funding (AA0492) is shared with other Black Hawk Modifications, such as Crashworthy External Fuel System, Medical Equipment Package, and other safety modifications.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1221	26.1	10284.0	11337.4	14884.5

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Black Hawk UH-60M, December 31, 2003

**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): \$ 202.4

Percent Total Program Expended: 1.4%

**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 to be Contractor Logistics Support. The Active Army (AA) OPTEMPO for each aircraft is 216 annual flight hours. The National Guard (NG) OPTEMPO for each aircraft is 141.6 annual flight hours. The estimated service life for each aircraft is 20 years. The total number of flight hours (including all AA and NG aircraft in operation for 20 years service life) is 4,586,606.3 hours. Induction will begin in FY05, with deployment scheduled to begin 18 months later. No scheduled depot overhaul is projected. O&S begins in FY2007 for the UH-60M.

The total Operating and Support Costs would be derived by multiplying the cost per hour by the sum of Active Army and National Guard total flight hours. Equation: Cost per flight hour x AA and NG flight hours.

The total O&S Costs for UH-60L were not reported in the last UH-60L SAR dated December 31, 1999. Therefore, this information is not reported in the table below.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

Cost Element	Black Hawk Upgrade UH60M Avg Annual Cost per 1,000 Flying Hours	UH-60L Avg Annual Cost per 1,000 Flying Hours
Mission Pay & Allowances	1852.0	1852.0
Unit Level Consumption	37.0	37.0
Intermediate Maintenance	67.0	26.5
Depot Maintenance	797.0	1683.0
Contractor Support	163.0	163.0
Sustaining Support	371.0	N/A
Indirect Costs	N/A	N/A
Total	3287.0	3761.5

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Black Hawk UH-60M, December 31, 2003

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

Total O&S Cost	Black Hawk Upgrade UH60M	UH-60L
BY\$ (In Millions)	15076.2	N/A
TY\$ (In Millions)	32198.3	N/A

Report Creation Date: 3/17/2004 11:09:42 AM

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AF-24 SDB

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

PROGRAM: SDB

CLEARED

AS OF DATE: 2003

FOR OPEN PUBLICATION

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MAR 23 2004 5

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Popular Name): SDB (Small Diameter Bomb)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

AAC/YU Direct Attack SPO - SDB  
102 West D Avenue, Suite 168  
Eglin AFB, FL 32542-6807

Col James McClendon  
Assigned: August 19, 2001  
DSN 872-7321, x2253  
COMM (850)882-7321, x2253  
james.mcclendon@eglin.af.mil

REVIEWED BY DFOISR..  
NO CLASSIFIED MATERIAL  
IDENTIFIED..

4. Program Elements/Procurement Line Items:

RDT&E:  
PE 64329F  
PROCUREMENT:  
APPN 3020 ICN 07 (Air Force)

0 - C 82

5. References:

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB)  
dated October 17, 2003.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 17, 2003.

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SDB, December 31, 2003

**6. Mission and Description:**

SDB is an Air Force ACAT ID program providing an affordable solution to a variety of needs. SDB's ultimate objective to increase kills per sortie on current and future aircraft platforms addresses the following warfighter requirements: multiple kills per pass; multiple SDB carriage; adverse weather; near precision munitions capability; capability against hardened targets; reduced munitions footprint; increased weapons effectiveness against area targets; real-time target location and/or kill capability versus small/mobile targets; reduced potential for collateral damage; and reduced susceptibility of munitions to countermeasures. Threshold aircraft for Increment I is the F-15E. Objective aircraft include the B-1, B-2, A-10, F-16, F-22, F-35, F117, B-52, and the Joint Unmanned Combat Air systems (J-UCAS). The SDB system consists of weapons on a reusable rack. The SDB system current procurement objective includes 24,000 Weapons and 2,000 Racks.

**7. Executive Summary:**

This is the first SAR submission for the SDB Program.

The SDB program concluded a highly successful competition that delivered a preproduction weapon. The two year competition achieved the following: design reviews completed; early Live Fire tests conducted; over 80% production representative hardware flown; and Boeing conducted six SDB free flights. A seamless verification test program was designed to involve the operational community earlier in the test process, reduce the test schedule and assets, and meet U.S. Code Title 10 requirements. SDB is on track to meet Milestone C (Production decision), 18 months after Milestone B, and meet 4QFY06 fielding date.

This SAR reflects Increment I baseline requirements.

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SDB, December 31, 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 --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone A	AUG 2001	AUG 2001	AUG 2001
Milestone B Decision	OCT 2003	OCT 2003	OCT 2003
Milestone C Decision	APR 2005	APR 2005	APR 2005
RAA for SDB, Threshold F-15E	SEP 2006	SEP 2006	SEP 2006
FRP Decision	OCT 2006	OCT 2006	OCT 2006

Acronyms:

FRP - Full Rate Production  
RAA - Required Assets Available

b. Current Change Explanations -- None

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SDB, December 31, 2003

# 10. Performance Characteristics:

## a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Carriage Loadout (KPP)	4 SDB wpns per SDB car- riage system	4 SDB / 4 SDB wpns per/ wpns per SDB car-/ SDB car- riage / riage system / system	4	4
Information Exchange Requirements (IERS) (KPP)	100% of top- level IERS will be satis- fied (loca- tion and timing data from the GPS network)	100% of / 100% of top- / top- level / level IERS / IERS will be / designa- satis- / ted fied / critical (loca- / will be tion and/ satis- timing / fied data / (loca- from the/ tion and GPS / timing network)/ data / from the / GPS / network)	100% of top- level IERS designa- ted critical will be satis- fied (loca- tion and timing data from the GPS network)	100% of top- level IERS designa- ted critical will be satis- fied (loca- tion and timing data from the GPS network)
Range (40kft, mach 0.8, no winds, std day atmosphere)				
Down Range	80 NM	80 NM / 40 NM /	40 NM	60 NM
Cross Range	70 NM	70 NM / 35 NM	35 NM	50 NM
Carriage System	Capable	Capable / Capable	Capable	Capable
Storage Container	of ac- commoda- ting a par- tially loaded carriage system	of ac- / of ac- commoda-/ commoda- ting / ting a a par- / carriage tially / system loaded / loaded carriage/ with SDB system / wpns & / an empty / carriage / system	of ac- commoda- ting a carriage system loaded	of ac- commoda- ting a carriage system loaded
SDB Employment	Indepen- dent target- ing capabil- ity; able to	Indepen-/ Indepen- dent / dent target- / target- ing / ing capabil-/ capabil- ity; / ity; able to / able to	Indepen- dent target- ing capabil- ity; able to	Indepen- dent target- ing capabil- ity; able to

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10a. Performance Characteristics (Cont'd):

<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
repro-	repro- / repro-	repro-	repro-
gram	gram / gram	gram	gram
target	target / target	target	target
coordi-	coordi- / coordi-	coordi-	coordi-
nates	nates / nates	nates	nates
& the	& the / & the	& the	& the
wpn en-	wpn en- / wpn en-	weapon	weapon
gagement	gagement/ gagement	en-	en-
profile	profile / profile	gagement	gagement
prior to	prior to/ prior to	profile	profile
wpns	wpns / wpns	prior to	prior to
release	release / release	weapons	weapons
		release	release

The Development Estimate consists of the approved APB Objectives and not our Threshold Objectives.

Acronyms:

GPS	Global Positioning System
IER	Independent Evaluation Report
kft	1000 feet
KPP	Key Performance Parameters
NM	Nautical Miles
SDB	Small Diameter Bomb
std	standard
wpn	weapon
wpns	weapons

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)	366.3	366.3	365.9
Procurement	1159.7	1159.7	1184.3
Recurring Flyaway	(1136.4)		(1161.0)
Nonrecurring Flyaway	(18.5)		(18.5)
Total Flyaway	(1154.9)		(1179.5)
Other Wpn System Spt Cost	(4.8)		(4.8)
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 2001 Base-Year \$	1526.0	1526.0	1550.2
Escalation	260.3	260.3	266.3
Development (RDT&E)	(15.0)	(15.0)	(14.4)
Procurement	(245.3)	(245.3)	(251.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1786.3	1786.3	1816.5

This SAR reflects Increment I baseline requirements.

Procurement quantities are minimums and estimates are based on price commitment curves on contract. Cost savings realized by program efficiencies added dollars for increased quantities.

b. Quantity --

Development (RDT&E)	70	70	70
Procurement	24000	24000	24000
Total	24070	24070	24070

There are two Low Rate Initial Production (LRIP) lots planned prior to going into Full Rate Production (FRP). LOT-1 is comprised of 158 SDB weapons and 27 carriage systems. Lot-2 is comprised of 512 weapons and 128 carriage systems. Lot-1 will support Air Force Required Assets Available (RAA), and is defined as one third of the fighter aircraft in a squadron capable of deploying the munitions; associated spares; support equipment; and suitable technical orders in place at the first SDB capable wing or group.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	1526.0	1550.2	
(2) Quantity	24070	24070	
(3) Unit Cost	0.063	0.064	+1.59
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	1159.7	1184.3	
(2) Quantity	24000	24000	
(3) Unit Cost	0.048	0.049	+2.08

Notes:

SDB system includes 24,000 Weapons and 2,000 Carriages. The unit cost is the sum of the weapon and carriage costs divided by the number of weapons.

Procurement quantities are minimums and estimates are based on price commitment curves on contract. Cost savings realized by program efficiencies added dollars for increased quantities.

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**13. Cost Variance Analysis:**

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	381.3	1405.0	-	1786.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.5	-2.5	-	-3.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.5	+33.7	-	+33.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.0	+31.2	-	+30.2
Total Changes	-1.0	+31.2	-	+30.2
Current Estimate	380.3	1436.2	-	1816.5

Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	366.3	1159.7	-	1526.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.4	+24.6	-	+24.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.4	+24.6	-	+24.2
Total Changes	-0.4	+24.6	-	+24.2
Current Estimate	365.9	1184.3	-	1550.2

This SAR reflects Increment I baseline requirements.

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Funds withheld for higher Air Force priorities. (Estimating)	-0.4	-0.5
	Inflation Adjustment (Economic)	N/A	-0.5
	<u>RDTE Subtotal</u>	<u>-0.4</u>	<u>-1.0</u>
(2)	<u>Procurement</u>		
	Includes dollars for increased quantities (Estimating)	+24.6	+33.7
	Inflation Adjustment (Economic)	N/A	-2.5
	<u>Procurement Subtotal</u>	<u>+24.6</u>	<u>+31.2</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	
0.074	--	--	--	--	+0.001	--	--	+0.001	0.075

The SDB System current procurement objective includes 24,000 Weapons and 2,000 Carriages.

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	
0.059	--	--	--	--	+0.001	--	--	+0.001	0.060

The SDB System current procurement objective includes 24,000 Weapons and 2,000 Carriages.

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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 A	N/A	AUG 2001	N/A	AUG 2001
Milestone B	N/A	OCT 2003	N/A	OCT 2003
Milestone C	N/A	APR 2005	N/A	APR 2005
IOC	N/A	SEP 2006	N/A	SEP 2006
Total Cost	N/A	1786.3	N/A	1816.5
Total Quantity	N/A	24070	N/A	24070
Prog Acq Unit Cost	N/A	0.1	N/A	0.1

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

This is the first time this contract is being reported.

**a. RDT&E --**

**SDB:**  
McDonnell Douglas, St. Louis, MO  
FA868204-C-0019, CPAF  
Award: October 17, 2003  
Definitized: November 30, 2003

Initial Contract Price		
Target	Ceiling	Qty
\$146.8	N/A	70

Current Contract Price		
Target	Ceiling	Qty
\$146.8	N/A	70

Estimated Price At Completion	
Contractor	Program Manager
\$146.8	\$146.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (01/29/04)	\$0.2	\$0.8
Net Change	\$0.2	\$0.8

**Explanation of Change:**

Variances for the Net Change are the result of the Contractor's Baseline Procurement Plan resulting in a positive variance in Cost and Schedule. The end result was more efficient use of hours and dollars spent.

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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 (FY06-21)</u>	<u>Total</u>
RDT&E	124.1	125.4	76.5	54.3	380.3
Procurement	-	-	29.3	1406.9	1436.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	124.1	125.4	105.8	1461.2	1816.5

b. Annual Summary -- SDB

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				28.9	29.0
2002				38.3	38.8
2003				54.9	56.3
2004				120.7	125.4
2005				72.6	76.5
2006				36.4	38.9
2007				14.1	15.4
2008					
2009					
2010					
2011					
2012					
2013					
2014					
2015					
2016					
2017					
2018					
2019					
2020					
2021					
Subtotal	70			365.9	380.3

This SAR reflects Increment I baseline requirements.

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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 \$
2005	158	1.5	26.1	27.6	29.3
2006	512	3.3	51.3	54.7	59.0
2007	1200	1.8	99.7	101.9	112.0
2008	1340	0.8	90.7	91.8	102.9
2009	1508	1.9	118.8	121.1	138.4
2010	1816	1.6	110.1	112.0	130.6
2011	2100	0.9	108.0	109.3	129.9
2012	2400	0.9	78.5	79.9	96.9
2013	2400	1.2	78.8	80.5	99.6
2014	2400	1.2	78.5	80.2	101.2
2015	2400	0.7	78.3	79.5	102.3
2016	1730	0.6	62.2	63.1	82.8
2017	1200	0.6	49.7	50.5	67.6
2018	1200	0.6	49.5	50.3	68.7
2019	1200	0.5	49.5	50.1	69.8
2020	436	0.4	31.3	31.8	45.2
2021					
Subtotal	24000	18.5	1161.0	1184.3	1436.2

The SDB System current Procurement Objective includes 24,000 Weapons and 2,000 Carriages. The Carriage quantities are as follows:

FY05 - 27  
 FY06 - 128  
 FY07 - 300  
 FY08 - 335  
 FY09 - 377  
 FY10 - 454  
 FY11 - 379  
 Total - 2,000

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	24070	18.5	1161.0	1550.2	1816.5

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**17. Delivery/Expenditure Information:**

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 136.1

Percent Total Program Expended: 7.5%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The SDB Operation and Support (O&S) cost estimate dated September 5, 2003 was based on the Joint Munitions O&S (JMOS) model. Assumptions used in the O&S cost estimate are as follows: The total SDB inventory used was 24,000 Weapons and 2,000 Carriage Systems. The warranty assumed was a 20 year extended repair warranty to cover all repairs except for government induced failures. The Milestone B estimate included calculations for 36 years.

There is no antecedent system for SDB.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

Cost Element	SDB Average Annual Cost per 24,070 weapons	No Antecedent System
Mission Pay & Allowances	0.5	N/A
Unit Level Consumption	3.5	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.7	N/A
Sustaining Support	2.1	N/A
Indirect Costs	0.3	N/A
Total	7.1	N/A

Total O&S Cost	SDB	No Antecedent
BY\$ (In Millions)	171.1	N/A
TY\$ (In Millions)	361.3	N/A

Report Creation Date: 05/28/2004 3:22:21 PM

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# A-14 JTRS CLUSTER 1

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: JTRS Cluster 1

AS OF DATE: December 31, 2003

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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:

Warfighter Information Network -	COL Thomas Cole
Tactical (WIN-T) Program Office	Assigned: July 25, 2001
Fort Monmouth, NJ 07703-5505	DSN 992-4740; COMM (732) 532-4740
	tom.m.cole@us.army.mil

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 1109 ICN 463300 (Navy) (Shared)	USMC
APPN 3080 ICN 837100 (Air Force) (Shared)	
APPN 2031 ICN AA0702 (Army)	
APPN 2035 ICN B90100 (Army)	
APPN 2035 ICN G86100 (Army) (Shared)	

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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (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 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 Current to Future transition path of the Transformation Campaign Plan (TCP).

## **7. Executive Summary:**

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. Cluster 1 currently addresses specific requirements for the Army Vehicular and Aviation Rotary Wing Platforms, United States Air Force Tactical Air Control Party (TACP) and the United States Marine Corps (USMC). The

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

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 is also required to provide 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 develop installation kits for ground vehicular configurations as directed. The PSC will provide for ancillary equipment and installation kits for the ground vehicles that will be used in program testing. The JTRS JPO will test the waveforms and JTRS Sets for SCA compliance.

The JTRS Waveform and Cluster 1 Program Milestone B Defense Acquisition Boards were conducted concurrently on June 3, 2002. The June 24, 2002 Acquisition Decision Memorandum (ADM) approved both programs to proceed into the System Development and Demonstration (SDD) phase.

After the successful Milestone B Review, a Cost Plus Award Fee (CPAF) contract was awarded to the Boeing Company of Anaheim, California on June 24, 2002 to initiate the System Development and Demonstration (SDD) Phase. This award also includes Low Rate Initial Production (LRIP) options using a Fixed Price Incentive (FPI) with successive targets contract approach.

The Joint Requirements Oversight Council approved the JTRS Operational Requirements Document (ORD) version 3.2 in April 2003. This document supercedes the JTRS ORD dated April 24, 2002. There were no JTRS Cluster 1 Key Performance Parameters affected, but lesser requirements were changed in the ORD.

A successful Software Preliminary Design Review (PDR) occurred in April 2003, and a Capstone Preliminary Design Review occurred in June 2003. The Capstone formally closed out all outstanding items resulting from the initial System PDR. The Critical Design Review (CDR) was conducted in phases with the initial meeting held in July 2003. The final phase of the CDR was successfully completed in December 2003.

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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 B Decision	JUN 2002	JUN 2002	JUN 2002
Contract Award	JUN 2002	JUN 2002	JUN 2002
Early Operational Assessment			
Start	APR 2004	APR 2004	DEC 2004 (Ch-1)
Complete	JUN 2004	JUN 2004	MAR 2005 (Ch-1)
Long Lead Item Procurement Option 1	SEP 2004	SEP 2004	APR 2005 (Ch-2)
Approval OIPT			
Delivery of Airborne B Kits to Aviation	AUG 2004	AUG 2004	MAR 2005 (Ch-1)
for Airworthiness Certification and Integration			
Development Test/Operational Test/ Limited User Test			
Start	FEB 2005	FEB 2005	SEP 2005 (Ch-1)
Complete	JUL 2005	JUL 2005	MAR 2006 (Ch-1)
Milestone C Decision	AUG 2005	AUG 2005	APR 2006 (Ch-1)
LRIP Option 1 Exercise	SEP 2005	SEP 2005	APR 2005 (Ch-2)
First Article Test			
Start	JAN 2006	JAN 2006	AUG 2006 (Ch-1)
Complete	APR 2006	APR 2006	NOV 2006 (Ch-1)
MOT&E			
Start	AUG 2006	AUG 2006	DEC 2006 (Ch-1)
Complete	OCT 2006	OCT 2006	APR 2007 (Ch-1)
Full Rate Production Contract Award	JAN 2007	JAN 2007	JUN 2007 (Ch-1)
First Unit Equipped (FUE)	JAN 2007	JAN 2007	APR 2007 (Ch-1)
Full Rate Production In Process Review	FEB 2007	FEB 2007	JUN 2007 (Ch-1)

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9a. Schedule (Cont'd):

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 change in Early Operational Assessment which caused the remaining milestones to be moved to the right 3 to 4 months:

Schedule Milestone:	Milestone Date From:	Milestone Date To:
Early Operational Assessment Start	Aug 2004	Dec 2004
Early Operational Assessment Complete	Nov 2004	Mar 2005
Delivery of Airborne B Kits to Aviation for Airworthiness Certification and Integration	Nov 2004	Mar 2005
Development Test/Operational Test/Limited User Test Start	May 2005	Sep 2005
Development Test/Operational Test/Limited User Test Complete	Nov 2005	Mar 2006
Milestone C Decision	Jan 2006	Apr 2006
First Article Test Start	Apr 2006	Aug 2006
First Article Test Complete	Jul 2006	Nov 2006
MOT&E Start	Aug 2006	Dec 2006
MOT&E Complete	Dec 2006	Apr 2007
Full Rate Production Contract Award	Apr 2007	Jun 2007
First Unit Equipped (FUE)	Jan 2007	Apr 2007
Full Rate Production In Process Review	Mar 2007	Jun 2007

(Ch-2) - The following are Current Estimate changes required to reinstate the schedule milestones which were reported as no longer applicable in the December 2002 SAR due to the removal of Long Lead Item language. It was since decided that these Milestones will remain as part of the APB with appropriate explanation provided:

Schedule Milestone:	Milestone Date From:	Milestone Date To:
Long Lead Item Procurement Option 1 Approval OIPT	Not Applicable	Apr 2005
LRIP Option 1 Exercise	Not Applicable	Apr 2005

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9b. Schedule (Cont'd):

The Long Lead Item Procurement Option 1 Approval OIPT Milestone remains with the following explanation: This schedule milestone will allow the government to exercise the LRIP option to allow the Prime contractor to procure materials required to build the LRIP hardware. The Prime contractor is authorized to begin building LRIP assets only after a successful Milestone C is achieved, and the contractor successfully passes First Article Test. Long Lead Item procurement is not applicable to this program.

The LRIP Option 1 Exercise Milestone remains with the following explanation: The original intent of this milestone was to reflect the option being exercised after the Milestone C. However, current contract language requires the option to be exercised when the procurement of LRIP Option 1 materials is required to begin in April 2005.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Have an internal growth capability	Open System Architecture IAW JTA; Modular, Scalable, Flexible Form Factors	Open / Open System / System Architecture / Architecture IAW JTA; / IAW JTA; Modular, / Modular, Scalable, / Scalable, Flexible / Flexible Form / Form Factors / Factors	TBD	Open System Architecture IAW JTA; Modular, Scalable, Flexible Form Factors
JTR set modes/capabilities configuration and reconfiguration via software	By operators in their operational environment	By oper-/ By oper- ators in/ ators in their / their operational / operational environment / environment	TBD	By Oper- ators in their operational environment
Multi-channel routing and retransmission	Objective wave-forms that are compatible in mode (voice,	Objec- / KPP tive / wave- / forms / that / are / compat- / ible in / mode / (voice, / video,	TBD	KPP wave-forms that are compatible in mode (voice, video,

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate 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 LINK-16 GPS + 6 (Vehic-ular), GPS + 8 (Air-borne) Ground and Airborne Domains
Operate on designated number of channels at the same time	GPS+8 (Vehic-ular), GPS+10 (Air-borne)	GPS+8 / GPS+6 (Vehic- / (Vehic-ular), GPS+10 / GPS + 8 (Air- / (Air-borne)	TBD	
Scaleable networking services	Maritime /Fixed Domain	Maritime/ Ground /Fixed / and Domain / Airborne / Domains	TBD	

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Network extension/ coverage	Across Organi- zational bound- aries	Across / Across Organi- / organi- zational/ zational bound- / bound- aries / aries	TBD	Across organi- zational bound- aries
JTR System network interoperability	Inter- operate with Allied/ Coali- tion and commer- cial works; satisfy 100% of top- level IERS	Inter- / Inter- operate / operate with / with Allied/ / Service Coali- / and tion / Joint and / net- commer- / works; cial / satisfy works; / 100% of satisfy / top- 100% of / level top- / IERS level / IERS /	TBD	Inter- operate 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

ACRONYMS:

APB	Acquisition Program Baseline
DAMA	Demand Assigned Multiple Access
EPLRS	Enhanced Position Location Reporting System
ESIP	Enhanced SINGARS Improvement Program
GPS	Global Positioning System
IAW	In Accordance With
IER	Information Exchange Requirement
JTA-A	Joint Technical Architecture-Army
JTR	Joint Tactical Radio
KPP	Key Performance Parameters
MIL-STD	Military Standard
SAR	Selected Acquisition Reporting
SATCOM	Satellite Communications
SINGARS	Single Channel Ground and Airborne Radio System
TACP	Tactical Air Control Party
TBD	To Be Determined
UHF	Ultra High Frequency
WNW	Wideband Networking Waveform

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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)	845.1	845.1	859.5
Procurement	13592.1	13592.1	14158.3
Flyaway	(11855.4)		(12203.8)
PDSS/SDT for Airborne/I	(160.9)		(147.3)
Data	(54.8)		(371.1)
Training	(305.8)		(306.1)
Mods	(438.9)		(341.4)
Fielding	(126.9)		(123.8)
Total Other Wpn Sys	(1087.3)		(1289.7)
Peculiar Support	(0.0)		(5.3)
Initial Spares	(649.4)		(659.5)
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	15017.8
Escalation	4675.7	4675.7	5504.6
Development (RDT&E)	(56.0)	(56.0)	(45.9)
Procurement	(4619.7)	(4619.7)	(5458.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	19112.9	19112.9	20522.4
b. Quantity --			
Development (RDT&E)	302	302	317
Procurement	108086	108086	108685
Total	108388	108388	109002

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 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	14437.2	15017.8	
(2) Quantity	108388	109002	
(3) Unit Cost	0.133	0.138	+3.76
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	13592.1	14158.3	
(2) Quantity	108086	108685	
(3) Unit Cost	0.126	0.130	+3.17

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	-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
Current Changes:				
Economic	-0.9	+377.4	-	+376.5
Quantity	-	+87.2	-	+87.2
Schedule	+1.3	+348.4	-	+349.7
Engineering	+22.4	-	-	+22.4
Estimating	+12.6	+185.4	-	+198.0
Other	-	-	-	-
Support	-	+486.5	-	+486.5
Subtotal	+35.4	+1484.9	-	+1520.3
Total Changes	+4.3	+1405.2	-	+1409.5
Current Estimate	905.4	19617.0	-	20522.4

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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	845.1	13592.1	-	14437.2
Previous 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
Current Changes:				
Quantity	-	+74.0	-	+74.0
Schedule	+0.6	+33.0	-	+33.6
Engineering	+21.2	-	-	+21.2
Estimating	+12.3	+195.8	-	+208.1
Other	-	-	-	-
Support	-	+325.3	-	+325.3
Subtotal	+34.1	+628.1	-	+662.2
Total Changes	+14.4	+566.2	-	+580.6
Current Estimate	859.5	14158.3	-	15017.8

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.9
Army Aviation change/realignment in annual funding for RAH-66 and for the MICD. (Schedule)	+0.6	+1.3
Army Aviation greater integration effort is required due to increased weight, space, and power requirements of the JTRS Cluster 1 B-Kit. (Engineering)	+21.2	+22.4
Army Aviation effort required to design and develop solutions caused by the deviations to the B-Kit. (Estimating)	+10.4	+11.3
Marine Corps adjustments to align with approved program. (Estimating)	-0.6	-0.6
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
JTRS Cluster 1 program adjustments consistent with current program. (Estimating)	+0.6	+1.0
Air Force estimating increase to align with approved program. (Estimating)	+1.7	+0.7
RDT&E Subtotal	+34.1	+35.4

(2) Procurement

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Revised escalation indices. (Economic)	N/A	+376.5
Economic adjustment for negative program change. (Economic)	N/A	+0.9
Total Quantity Variance associated with increase of 588 units. (Quantity)	+74.0	+87.2
Acceleration of annual procurement buy profile. (Schedule)	0.0	-1.3
Army Ground Stretchout of procurement profile within the years of FY05-FY25 due to a change in quantity for the following platforms: Future Combat Systems (FCS), HIMARS, Special Operations Forces, and the Table of Distribution and Allowances. (Schedule)	0.0	+291.1
Army Aviation adjustment to system engineering/program management resulting from changes to and extension of the A-Kit procurement schedule. (Schedule)	+14.1	+29.2
Marine Corps change in program to align with JTRS Cluster 1 requirements. Change in configuration from 5 channels to 4 and 6 channels. (Schedule)	+4.8	+7.1
Army Aviation additional platform non-recurring engineering dollars to integrate JTRS Cluster 1 B-Kit technical insertions. (Estimating)	+79.3	+90.2
Army Aviation adjustment to engineering change orders and system test and evaluation resulting from changes to and the extension of the A-Kit procurement schedule (Schedule)	+14.1	+22.3
Army Aviation net installation cost change resulting from an increase in 57 additional aircraft. (QR)(Estimating)	+35.2	+52.7
Army Aviation net installation cost change resulting from an increase of 716 cut-ins. (QR)(Estimating)	-38.7	-44.7
Army Aviation update of A-Kit procurement schedule to align with current platform schedules (to include an additional 57 aircraft). (QR)(Estimating)	+7.5	+27.4
Army Ground acceleration of vehicular and A2C2S A-kit installation costs to align with flyaway. (Estimating)	+115.8	+64.4
Air Force adjustment in procurement. (Estimating)	-3.3	-4.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Marine Corps change in initial spares, peculiar support, PDSS, and Modifications due to an increase of 588 radios (from 1025 to 1613). (QR)(Support)	+58.6	+66.1
Marine Corps change in data, training, and fielding due to program adjustments. (Support)	-4.2	-4.6
Army Aviation change in SDT, Data, training, and fielding associated with the change in the A-kit procurement schedule. (Support)	-21.5	-19.8
Army Ground change in initial spares and training due to change in vehicular configurations. (Support)	+15.7	+44.6
Army Ground change in modifications and Fielding due to a difference in the distribution of procurement quantities from FY05-FY25. (QR)(Support)	-42.6	-53.0
Army Ground change in data due to estimating error. Data previously calculated as 1/2% of recurring manufacturing when it should have been calculated as 5% of recurring manufacturing. (Support)	+319.3	+453.2
Procurement Subtotal	+628.1	+1484.9

Based on the complexity of the JTRS Cluster 1 Program, the PM has adjusted the computational model outputs to more accurately reflect the schedule variance for ground vehicular procurement. Current schedule variance takes into account recurring manufacturing costs for JTRS Cluster 1 Army B-Kits.

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	-0.001	-0.001	+0.008	+0.001	+0.001	--	+0.004	+0.012	0.188

**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	-0.001	--	+0.008	+0.001	--	--	+0.004	+0.012	0.180

**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	APR 2006
FUE	N/A	JAN 2007	N/A	APR 2007
Total Cost	N/A	19112.9	N/A	20522.4
Total Quantity	N/A	108388	N/A	109002
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		
Target	Ceiling	Qty
\$235.5	N/A	302

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$236.1	N/A	302	\$334.5	\$291.1

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.7	\$-6.3
Cumulative Variances To Date (12/18/03)	\$-28.4	\$-9.1
Net Change	\$-24.7	\$-2.8

Explanation of Change:

Net unfavorable cost and schedule variances are due to the contractor's attempt to achieve an aggressive schedule and difficulties in the design phase. Activities leading to the critical design review required more time and effort than planned. The PM is buying back schedule lost during the design phase by approving funding for schedule risk mitigation activities, such as additional test equipment, which is impacting the cost variance.

The PM has implemented an Over Target Baseline (OTB). The result will be improved managerial control over the execution of the remaining work and ensure meaningful Earned Value Management (EVM) metrics.

Contract Comments:

The contract information reflected herein includes the ground vehicular, Army Aviation Rotary Wing, and Tactical Air Control Party (TACP) 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 Target Price and Current Target Contract Price is due to the exercise of the Benign Fill option.

The Defense Acquisition Board (DAB) decision recognized the JTRS Cluster 1 aggressive schedule and associated cost risk. As a result, the DAB directed the program to be funded to reflect Joint Cost Position (JCP) which is higher than the contract price. As a result, the PM has funds to support the current projected estimates to complete the contract.

The Earned Value Management Reporting contained in Section 15 reflects performance against the contract's baselined plan.

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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	192.5	218.6	184.1	310.2	905.4
Procurement	-	1.9	137.3	19477.8	19617.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	192.5	220.5	321.4	19788.0	20522.4

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				5.0	5.2
2005				5.6	5.9
2006				2.6	2.8
Subtotal	25			13.2	13.9

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				69.3	69.9
2003				81.3	83.1
2004				202.1	209.1
2005				156.9	164.7
2006				109.8	117.2
2007				62.7	68.1
2008				46.1	51.1
2009				23.7	26.8
2010				9.8	11.3
2011				12.0	14.1
2012				5.3	6.4
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			796.5	840.0

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				4.2	4.3
2005				12.9	13.5
2006				4.1	4.4
2007					
2008				4.2	4.6
2009				0.3	0.3
2010					
Subtotal	28			49.8	51.5

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	83		16.4	20.9	22.3
2007	340		66.6	82.9	90.3
2008	290		55.5	72.4	80.4
2009	300		49.9	64.6	73.2
2010	300		49.9	64.5	74.5
2011	300		49.8	64.4	75.9
Subtotal	1613		288.1	369.7	416.6

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					

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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 \$
2006		5.3	11.8	17.8	19.1
2007		12.8	29.9	56.1	61.5
2008		6.2	34.6	49.3	55.1
2009		14.5	34.6	58.1	66.2
2010		23.9	27.7	65.0	75.6
2011		15.8	37.1	64.3	76.3
2012		20.8	33.2	67.7	81.9
2013		17.2	38.5	67.6	83.5
2014		23.2	32.9	67.6	85.1
2015		14.0	38.1	63.5	81.5
2016		12.1	30.6	54.0	70.7
2017		17.4	31.0	53.9	72.0
2018		31.1	21.1	53.9	73.4
2019		0.1	24.6	26.4	36.7
2020		0.1	19.3	21.0	29.8
2021		0.1	24.8	26.4	38.2
2022		0.1	19.7	21.3	31.4
2023		0.1	24.9	26.5	39.9
2024		0.1	19.6	21.2	32.6
2025		0.1	22.7	24.3	38.1
2026			4.7	4.7	7.5
Subtotal		216.8	561.4	912.4	1158.0

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. The Army Aviation Rotary Wing portion of the Cluster 1 program is to develop and procure A-Kits (installation kits) for the AH64, CH47, UH60, MH60, and SOA aircraft. Total Army Aviation A-Kit procurement is 2180. Army Aviation Rotary Wing A-Kits are being procured in all years except FY2004 and FY2026.

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	353	9.5	99.0	123.9	130.6
2006	647		142.1	166.6	178.6
2007	306		84.0	97.0	105.9
2008	287		81.5	90.7	101.0
2009	1088		191.4	217.6	247.2
2010	989		162.3	184.6	213.9

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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 \$
2011	973		158.0	179.7	212.4
2012	1838		294.5	337.4	406.7
2013	1875		293.3	336.7	414.0
2014	1893		290.8	334.5	419.5
2015	1895		289.9	334.1	427.4
2016	1950		289.6	335.0	437.1
2017	2003		287.2	332.8	442.9
2018	2313		291.8	337.9	458.6
2019	12610		1198.7	1369.7	1896.5
2020	12612		1176.5	1350.0	1906.6
2021	12612		1160.6	1337.2	1926.2
2022	12611		1148.1	1328.3	1951.7
2023	12585		1130.2	1314.1	1969.4
2024	12535		1110.5	1297.3	1983.2
2025	12540		1100.0	1291.3	2013.5
2026					
Subtotal	106512	9.5	10980.0	12696.4	17842.9

Total dollars and quantities above reflect the current Army Acquisition Objective (AAO) for JTRS Cluster 1 which includes the FCS total procurement of 12,750 radios. The funding source for FCS quantities has been divided between the Cluster 1 Manager and PM FCS. The Cluster 1 Manager is procuring 5,790 4-channel radios to satisfy the FCS Complementary requirements. PM FCS will fund the remaining 6,960 4-channel and 8-channel radios to satisfy the FCS Core requirement.

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		2.9	6.4	6.7
2006	39		12.4	16.9	17.9
2007	25		9.2	13.2	14.2
2008	167		41.7	48.3	53.1
2009	160		41.8	48.5	54.4
2010	162		40.0	46.5	53.2
2011					
Subtotal	560		148.0	179.8	199.5

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	1638		288.1	382.9	430.5
Army	106776	226.3	11541.4	14405.3	19840.9
USAF	588		148.0	229.6	251.0
Grand Total	109002	226.3	11977.5	15017.8	20522.4

**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): \$ 145.9

Percent Total Program Expended: 0.7%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

1. Costs estimated in accordance with Department of the Army Cost Analysis Manual, United States Army Cost and Economic Analysis Center (USACEAC), May 2001.
2. System life is estimated at 20 years.
3. Army quantities for Cluster 1 based on February 28, 2002 G-3 Memo and aviation quantity update.
4. Estimates based on the April 9, 2002 Cluster 1 Cost Analysis Requirements Description (CARD) and the Joint Program Office CARD.
5. JPO certification of Waveforms is required prior to vendor integration and test.
6. No changes in operator/maintainer personnel from Legacy Systems.
7. The JPO funds and manages development and maintenance of waveform software, validates hardware and software for Software Communications Architecture (SCA) compliance, and develops software emulations of crypto equipment.
8. Cluster 1 manager (Project Manager Warfighter Information Network-Tactical) 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.
9. Program Executive Office (PEO) Aviation is responsible for Rotary Wing Platform integration, installation and funding of A-kits.
10. Ground Vehicular Project Mangers are responsible for integration.

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JTRS Cluster 1, December 31, 2003

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

installation, and funding for A-kits.

11. Operating and Support Costs (O&S) in 18 b. reflect the average cost for all radios. Costs are reflected on a total unit basis.

12. There is no antecedent program to this system.

13. O&S costs, for Cluster 1, include the Military Pay, Operations and Maintenance, and Army Working Capital Fund appropriations.

14. O&S costs are calculated based on the recurring radio manufacturing. These costs will sustain the Cluster 1 radio after release into the field.

15. O&S costs in Section 18b are provided in dollars, thousands (\$K).

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

Cost Element	JTRS Cluster 1 Total Average Cost (All Radios)	N/A
Mission Pay & Allowances	2.0	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 Reparables	63.0	N/A
Consumable Material/Repa	1.0	N/A
Maintenance	2.0	N/A
Software Maintenance/Sup	1.0	N/A
Personnel Support	5.0	N/A
Other	7.0	N/A
Total	81.0	N/A

Total O&S Cost	JTRS Cluster 1	N/A
BY\$ (In Millions)	8788.7	N/A
TY\$ (In Millions)	14739.6	N/A

Report Creation Date: 03/19/2004 10:20:36 AM

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SELECTED ACQUISITION REPORTPROGRAM: BMDS

AS OF DATE: December 31, 2003

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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 Lt Gen 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&amp;E:

(U) PE 0603175C (FY02-09)  
 (U) PE 0603869C (FY03)  
 (U) PE 0603879C (FY04-09)  
 (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 0605502C (SBIR)  
 (U) PE 0901585C (FY02-09)  
 (U) PE 0901598C (FY02-09)

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Derived From: Multiple Sources  
 Declassification: March 18, 2029

**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 Revised Planning Estimate reflects the FY 2004 President's Budget submission. 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.

**6. (U) Mission and Description:**

(U) The mission of the MDA is to develop for deployment useful military capability 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 in all phases of flight. This capability will build on the planned initial BMDS and serve as a starting point for fielding improved, layered missile defense capabilities over time.

(U) The MDA program of work fulfills four key objectives, which are critical to satisfying the President's direction to field an initial capability as well as his direction to employ an evolutionary approach to missile defense development and deployment to improve our defenses over time. These objectives are:

- Complete, verify and test the Initial Defensive Capability,
- Put the Ballistic Missile Defense System on alert,
- Perform and sustain concurrent testing and operations, and
- Continue to enhance the BMDS capability.

(U) MDA is employing an evolutionary approach to missile defense development. The primary goals of the RDT&E program are:

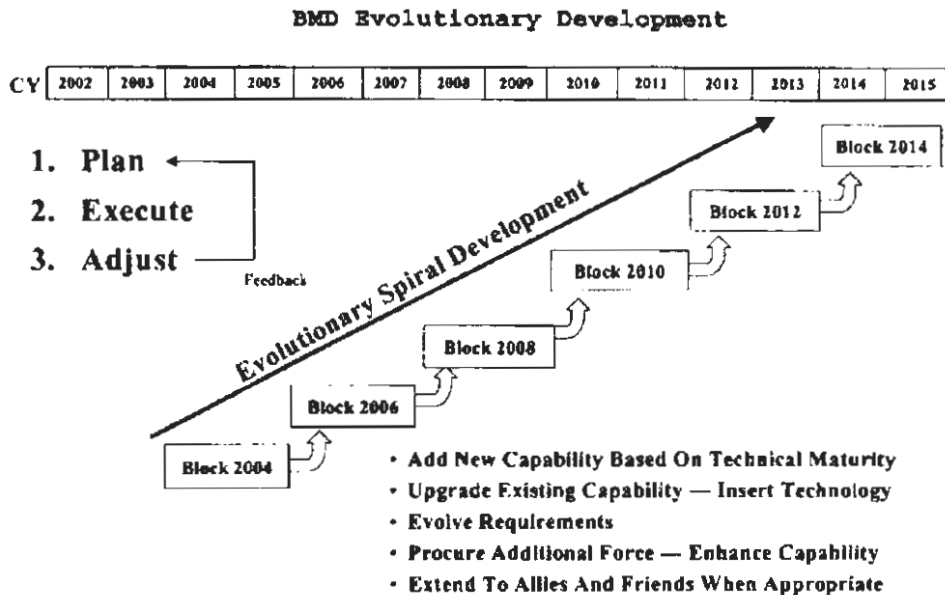
- Field an initial capability in 2004-2005 in accordance with the President's direction;
- Add networked, forward-deployed ground-, sea-, and space-based sensors to make the interceptors more effective in 2006-07;
- Add interceptors;
- Add layers of increasingly capable weapons and sensors, made possible by emerging technologies.

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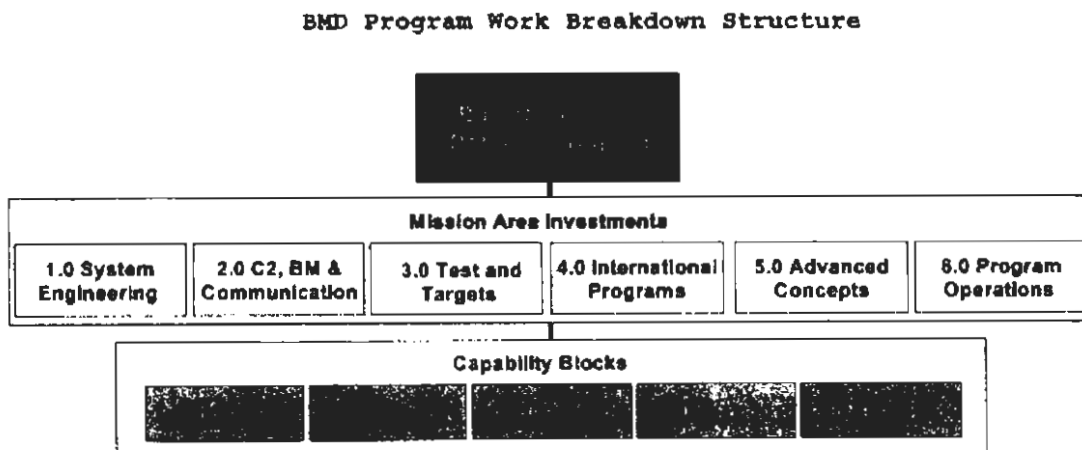
(U) This means there is no final or fixed missile defense architecture. Rather, the composition of missile defenses, including the number, type, and location of systems will change over time to meet the changing threat and take advantage of technological developments. The goal is to field an integrated, 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.

## 7. (U) Executive Summary:

(U) MDA continues to organize the BMDS Program into two-year time windows, or Blocks. The figure below illustrates how the Block concept works in an evolutionary manner to add incremental capability to the BMDS.



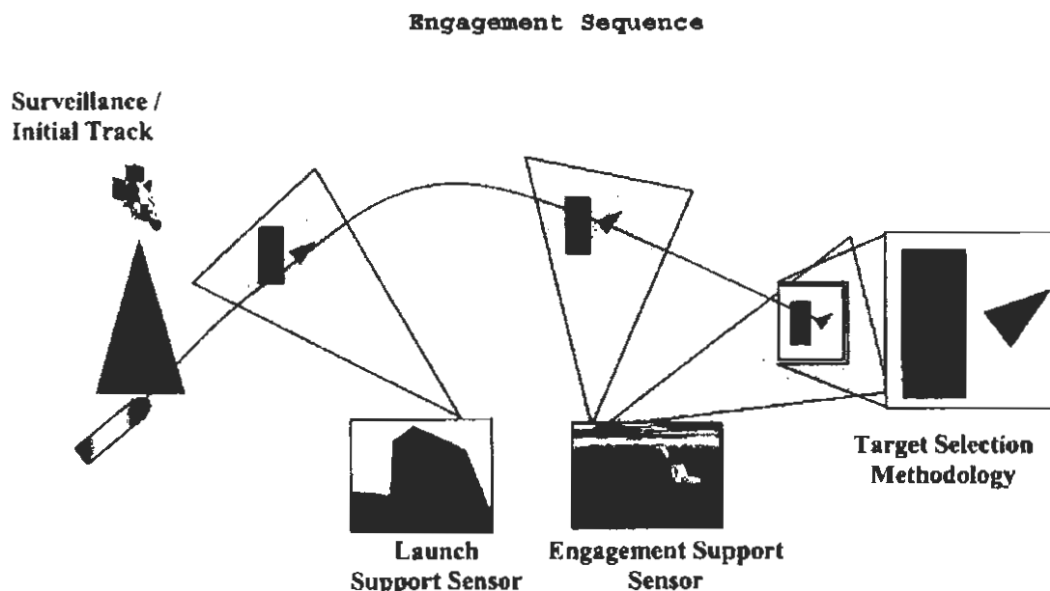
(U) MDA also continues to use the BMD Program Work Breakdown Structure (WBS) as the integrating structure for planning, budgeting and execution. This WBS, shown below, is the same as the one presented last year except for the addition of Block 2012.



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(U) The 2002 and 2003 Defense Authorization Acts require us to specify cost, schedule, testing and performance goals and developmental baselines in the President's Budget justification materials. Our goals, as reflected in the Statement of Goals (SOG), are expressed in terms required by the President's Management Agenda clearly linking budget (inputs) and performance (outputs and outcomes) measures. Additionally, the FY04 Defense Authorization Act requires the budget submission to include estimates for the cost of procuring and the performance criteria of BMDS elements for initial fielding. We reported this information in the FY05 budget justification material.

(U) As an engineering method to organize, synchronize, and maximize the system performance of the functions performed by each component and all the components combined, we formulated the concept of Engagement Sequence Groups (ESG). An Engagement Sequence (ES) is a unique combination of detect-control-engage functions performed by BMDS components (e.g. sensors, weapon and C2BMC equipment) used to engage a threat ballistic missile. They define the sequence of events, functions, and system components used to enable a weapon to engage a target, and provide the structure for measuring the level of performance and integration maturity of the BMDS. ESGs also relate multiple ways of engaging a target. The figure below provides a conceptual illustration of an engagement sequence.



(U) The ESG is prominent in our Statements of Goals (SOG). Actual ESGs are dependent on the elements and components available. For example, a Block 2004 ES is "GBI Engage on Cobra Dane Radar," in which the Ground Based Interceptor will receive its final target update from the Cobra Dane Radar. When the BMDS is limited in scope - i.e., limited number of elements and components - there are a limited number of ESGs. For an integrated BMDS comprised of multiple weapons and sensors, there can be various combinations of elements used to enable the engagement of hostile ballistic missiles. As additional sensors and weapons are integrated into the BMDS, the number of ESGs will increase, thereby increasing system capability, flexibility and robustness. System capability can also be improved by improving the

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performance of components of existing ESGs. More accurate information about the threat (from additional sensors/radars) and/or more opportunities to destroy the threat (from additional weapons types) will also result in enhanced system performance. The following is an example of an ESG format and category descriptions.

**Engagement Sequence Groups**

Engagement Sequence Group Title	Short title including BMDS Integration (e.g., Uncued, Cued, Launch on Aegis, Engage on Cobra Dane, Engage on UEW, etc.)
Engaging Weapon	The weapon component used in the engagement (e.g., GBI, SM3, ABL, KEI, THAAD, Patriot, etc.)
Surveillance/Initial Track	The sensor that initially detects the threat and provides track data used to initiate the engagement sequence (e.g., Defense Support Program (DSP), Aegis, Cobra Dane, etc.)
Launch Sensor	The dominant sensor used to supply data to launch the interceptor (e.g., Aegis, Cobra Dane, THAAD, etc.)
Engagement Support Sensor	The dominant off-board (not on interceptor) sensor used to supply data to consummate the engagement. (e.g., Aegis Cobra Dane, Sea-Based X-Band Radar (SBX), etc.)
Target Selection Methodology	Short-hand notation for the end-to-end process used to select and ultimately discriminate the threat object to be engaged. (e.g., EKV, EKV + UEW, Aegis System, THAAD System, etc.)

(U) The contribution of the research and development program, therefore, is measured both in terms of addition of elements and components (the columns in the Development SOG labeled Sensor, Command & Control, Battle Management, and Communications, and Weapon) which result in addition of ESGs to the system, and improvement of performance of existing elements and components which result in improvement of performance of existing ESGs. The Operational Alert Configuration SOG, in turn, provides performance goals resulting from a combination of inventory with the available ESGs. Together, Development SOGs and Operational Alert Configuration SOGs constitute the entirety of the BMD program goals.

(U) Further information on our Capability Blocks and Mission Area Investment efforts is provided in the following sections.

**(U) Block 2004.**

(U) The initial fielding of the Ballistic Missile Defense System (BMDS) Block 2004 capability will satisfy the Presidential direction received in December 2002. Our planning date for an IDO Alert Declaration is September 30, 2004, but we will recommend to the Secretary of Defense that he place the Ballistic Missile Defense System on alert as soon as there is a capability to defend against a single intercontinental ballistic missile. This Initial Defensive Capability (IDC) is the first increment of an evolutionary approach to missile defense development and deployment; it is not the final or fixed missile defense architecture.

(U) This Block program of work is focused on those capabilities directed by the President for operational use in 2004-05. During Block 2004, we plan to

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place on alert up to 20 ground-based interceptors at Fort Greely, Alaska and Vandenberg Air Force Base (AFB), California; an upgraded Cobra Dane radar on Shemya Island in Alaska; and upgraded early warning radars at Fylingdales in the United Kingdom and at Beale AFB in California. We are also planning to place on alert by the end of 2005 three Aegis cruisers with a fully BMD-capable weapon system and up to 10 SM-3 interceptors loaded aboard to permit sustained operations at sea. Additionally, 10 Aegis destroyers will be modified with improved SPY-1 radar for long-range surveillance and track capability. This initial capability would be added to theater/tactical defense capabilities provided by the PATRIOT PAC-3 system currently being fielded by the U.S. Army.

(U) We have reduced the number of SM-3 interceptors planned for delivery in Block 2004 consistent with a moderate risk approach. We also reallocated funding to ensure the Aegis Weapon System would be ready to support engagements in September 2004 as part of IDO.

(U) We have also restructured the Airborne Laser (ABL) program. In light of programmatic and schedule uncertainty, we determined that it is in the best interest of the program to undergo a restructure, remove concurrency, and focus on incremental technical progress towards successful demonstration of key milestones with appropriate risk mitigation.

(U) The C2BMC Element serves as the overall integrating function of the Block. The operational C2BMC Element will integrate BMD information from numerous sources, will provide the SECDEF and Combatant Commanders (COCOM) with an integrated picture of the BMD battlespace, and will provide global warning sensor information of a potential ballistic missile launch to the SECDEF, COCOMs, and BMDS assets. In response to an emerging ballistic missile threat from a potential adversary, United States Strategic Command (USSTRATCOM) in collaboration with the other COCOMs can employ the BMDS C2BMC capability to develop courses of action and associated resource allocations to negate the emerging ballistic missile threat. The C2BMC provides USSTRATCOM and the other COCOMs the deliberate planning and crisis action tools to evolve courses of action based upon a common view of the threat, available global BMD resources, and warning order objectives.

(U) The FY05 budget request also funds major RDT&E capability demonstrations, Integrated Flight Tests (IFT), 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.

**(U) Block 2006.**

(U) The primary thrust of the Block 2006 program of work is continued fielding and development to improve existing capabilities and further integration of new as well as existing capabilities to improve overall system performance. 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 sufficient to allow comprehensive and operationally realistic system integration and testing in the BMDS Test Bed. Much of the activity

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needed to prepare for continued fielding begins in FY 2005. By fielding additional weapons, sensors, and C2BM tools, we will provide greater protection for the U.S. homeland, as well as deployed forces, allies and friends. We will maintain the straightforward method for improving defenses in Block 2006:

- Add new radars that can be deployed overseas, close to the threat; add a moveable, sea-based midcourse radar to begin layering of radar sensors;
- Add GBIs at the Ft. Greely, Alaska site;
- Add sea-based capability in the form of more SM-3 interceptors and additional engagement platforms;
- Add THAAD interceptors for endoatmospheric and exoatmospheric layering against all ranges of threats as they transition from the midcourse to the terminal phase; and
- Network these capabilities by focusing on a C2BMC "backbone" to include an upgraded BMDS Battle Manager and C2 Planning capabilities that provide real-time sensor-netting to the warfighter for improved interoperability and decision-making capability. Additional BMDS C2BMC Suites and remote capability will be deployed to relevant COCOMs and other sites as the BMDS matures.

(U) Throughout this block, we will continue our demonstration and validation effort, which will focus on integrated flight tests with added realism and more stressing threat countermeasures.

(U) Additionally, beginning in Block 2006, we will take steps to ensure the infrastructure is in place to support further fielding decisions, as well as the necessary tests to maintain confidence in the operational system. In this regard, for instance, our Ground Based Midcourse Defense (GMD) program has been structured to produce interceptors at a minimum essential rate to support the development program and to make certain we can support future decisions on additional operational capability. It will also support continued development to allow evolutionary system improvements, and an extensive test program. Prior to these actions, the Ground Based Midcourse element focused on sustaining a level of engineering that would allow minimum essential capability improvements over time.

(U) The ABL Block 2006 program will continue to perform ground and flight tests of the first ABL weapon system. Our test objectives will be to expand the envelope of system performance by systematically stepping through knowledge points, and continuing ABL-specific technology maturation for integration and testing on subsequent blocks.

(U) In the Space Tracking and Surveillance System (STSS) Block 2006 program, we will launch two satellites into low earth orbit to demonstrate the contribution of a space-based infrared sensor to the BMDS, particularly to closing the fire control loop with BMDS interceptors.

**(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 introduce contingency

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boost capability, at which time we will have the capability to engage ballistic missile threats in all layers. This configuration will include C2BM components that enable integrated control of all system assets throughout the battle space. Our primary development projects for Block 2008 are:

- Improving the BMDS performance by adding a Boost phase weapon, the Airborne Laser to the Test Bed;
- Improving the performance of all weapons by integrating space sensor platforms and fusing multi-sensor discrimination products; and
- Demonstrating (through flight testing) increased system effectiveness against evolving threat countermeasures.

**(U) Block 2010.**

(U) The primary project in Block 2010 is the development of the boost/ascent phase capability of the kinetic energy BMDS Interceptor. Fielding a mobile, land based, boost/ascent capability will complement the ABL while enhancing the effectiveness of the BMDS. Mobility of the interceptor is an essential characteristic enhancing its military utility. The canisterized interceptor is being developed to be completely common to both land and sea basing and compatible with land and sea environments increasing the flexibility of the interceptor system.

(U) In this Block, we also will implement the C2BM and communications improvements to assimilate and exchange this highly resolved sensor data with all BMD System elements and users.

**(U) Block 2012.**

(U) Our Block 2012 program focuses on leveraging the Block 2010 mobile, land based boost/ascent capability to improve BMDS effectiveness in all phases of flight and all ranges of adversary capability. In Block 2012, we complete the transition from land to sea, inaugurating this capability from a Navy platform, likely a surface combatant or a submarine. We also begin testing the system's inherent midcourse capability during Block 2012, expanding the range and flexibility of the new BMDS interceptor. The Block 2012 strategy also includes ground-based risk mitigation projects to determine whether a space-based testbed is feasible and affordable.

**(U) Mission Area Investments.** 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 \$10.3 billion of the total funding request from FY 04-09. The following sections describe the Mission Area Investments program of work.

**(U) System Engineering:** Our core Systems Engineering function - which covers our government, National Team (SE), SETA and FFRDC personnel - defines, manages, and integrates all engineering development

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for the BMDS. This major effort also includes the core focus-team in Countermeasures/Counter-Countermeasures (CM/CCM), BMD Modeling and Simulation projects, and a corporate lethality program.

(U) The Missile Defense National Team Systems Engineering (MDNTS) uses an iterative and evolutionary system engineering and integration process to define successive Blocks of the BMDS. This process focuses on the definition, design, engineering, integration, risk management, configuration control, system analysis, and modeling and simulation of the BMDS. The detailed definition of a BMDS Block begins with high-level assessments based on key inputs and documentation from the developer, the users and threat communities. The MDNTS establishes a wide-range of possible threat scenarios to conduct risk analyses and to define system capability or performance gaps. These gaps present opportunities for subsequent investment and development to evolve the capability from previous Blocks. The MDNTS presents alternatives and analyses through a series of senior technical reviews (Alternative Review Board, Engineering Review Board, System Definition and Configuration Control Board) resulting in Block Technical Descriptions. The MDNTS translates approved descriptions into detailed engineering requirements, which are captured successively in the BMD System Capability Specification (SCS), Interface Capability Specification (ICS), and the Element Capability Specification (ECS), the latter of which is placed on contract for development and testing. The Systems Engineering (SE) process is controlled with a rigorous configuration control process, a risk management process that emphasizes implementation risks, systems analysis that supports all SE functions, and modeling and simulation that controls the models used in the SE process. The MDNTS, therefore, ensures that the capability delivered to the Combatant Commanders is a single, integrated, layered missile defense system.

(U) Command and Control, Battle Management and Communications (C2BMC): The C2BMC core program of work provides centralized technical and administrative management of the Command and Control, Battle Management, and Communications engineering effort, the Hercules project personnel, the Joint Warfighter Support team and the Joint National Integration Center (JNIC). Most funding for C2BMC activity has been moved to Capability Blocks within our WBS, so the C2BMC Element program of work is described under the appropriate Blocks.

(U) The RDT&E mission of the Joint National Integration Center (JNIC) is to develop and operate those portions of the Ballistic Missile Defense System (BMDS) Test Bed that comprise a robust suite of rapid prototyping and missile defense test and evaluation capabilities, which ensures BMDS elements are acquired and integrated into an interoperable, layered system.

(U) As the key-operating element of the BMDS Test Bed, the JNIC is a critical component of BMDS Block development that:

- Supports the development of the overarching Command and Control, Battle Management, and Communications (C2BMC) element of the BMDS

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- Is a "host center services provider" for BMDS elements; and supports a concurrent test and operations architecture as directed. Host Center Services include the following:
  - JNIC support to the GMD Mission Control Center Facility (MCCF) and the GMD Fire Control/Communications (GFC/C) Mission Operations Center (GMOC)
  - Operational support and connectivity of the C2BMC Integration and Test Center (BITC), and the C2BMC Experimentation Laboratory (X-Lab)
  - Development and support of the Interim BMDS Operations Center (IBOC) and the Missile Defense Communications Coordination Center (MDCCC)
  - Infrastructure support of the Satellite Tracking and Surveillance System (STSS) JNIC Satellite Control Facility (JSCF), Near Field Infrared Experiment (NFIRE) JNIC Mission Operations Center (JMOC), and sensor netting test bed
  - Development and support of a common satellite ground station for designated BMDS elements
  - Operation of the BMD Network Operations and Security Center (NOSC) for the MDA enterprise.
- Provides assured connectivity support to designated Combatant Commands (COCOMs)
- Provides MDA with worldwide secure communications connectivity throughout the missile defense community
- Plans, conducts, and supports BMDS testing and analysis
- Establishes a core capability for exercising, evaluating, analyzing and refining advanced missile defense concepts critical to effective integrated missile defense operations in an emerging, complex threat environment
- Provides the full spectrum of activities (senior leader seminars, workshops, demonstrations, wargames, and exercises) involved in developing integrated missile defense concepts of operation (CONOPS) and tactics, techniques and procedures (TTPs)
- Develops, conducts, and supports missile defense modeling and simulation for the overall BMDS, its segments and program elements
- Facilitates international cooperation and support for the BMDS through the development and execution of missile defense seminars, workshops, wargames, and other multinational activities
- Provides dedicated engineering and test support for emerging MDA capabilities, projects, experiments, and new-start programs.

(U) BMD Tests and Targets: The Test and Targets program 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. Block Specific efforts for both projects are addressed in earlier portions of this Overview. Core functions provide for implementing BMDS test and target capabilities across multiple Blocks; expanding BMDS capabilities in the Blocks beyond the FYDP; maintaining a core infrastructure that supports development and testing efforts and, developing capability not yet foreseen as part of a current or future block.

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(U) The BMDS Measurements Program augments the BMD System Test Program by providing critical data and analysis to support block development. Under the Measurements Program, all MDA data requirements are collected, prioritized, validated, and then allocated to Tests of Opportunity (TOOs) or used to develop dedicated flight tests designated as Critical Measurements and Countermeasure (CMCM) flight tests.

(U) The T&E Infrastructure program provides support to BMD System, element, and technology development programs by providing the full range of test resources necessary to support ground and flight-tests. These tests in turn enable the development programs to determine system capability, reduce program risk, and satisfy test milestones/exit criteria. This program includes the development and sustainment of state-of-the-art ground test facilities; test range infrastructure, and common use transportable instrumentation. The program also includes development of target requirements and certification of targets; and ensures compliance with all relevant facility, siting, and environment requirements for all MDA programs.

(U) The Targets and Countermeasures project provides core and mission support (base operations, rent, equipment, facility maintenance, etc.), travel, government civilian salaries, and technical and program management expertise critical to support each block development capability.

(U) International Programs: The President has underscored the importance of working with other countries to develop missile defenses to defend against the ballistic missile threat. We have taken this direction seriously and have funded programs in the following areas:

- We sustain cooperative R&D programs with Israel by continuing support for their Arrow program and with Japan for Standard Missile 3 improvements.
- We have begun the effort to upgrade the early warning radar at Fylingdales in the UK, and are investigating additional RDT&E projects with the United Kingdom. We are in discussions with Denmark on the subject of upgrading the radar at Thule.
- Studies and working groups are in progress or are being initiated with numerous countries to investigate the potential contributions that each could make to the US BMDS and protection of Allied territory. One example of such a study is the NATO Feasibility Study for Missile Defense of Territory and Population.
- Our objective is to encourage substantial participation by friends and allies in the development of alternate kinetic energy interceptor element components. In fiscal year 2005 we intend to award contracts for international industry development projects that produce viable alternate components for potential insertion during Block 2012 and succeeding Blocks.

(U) Advanced Concepts: In support of the President's decision to field a BMD System, the Advanced Systems Deputate (AS) is intensifying its efforts to increase BMD system effectiveness across the threat spectrum. The Multiple Kill Vehicle (MKV) program will increase midcourse firepower by placing multiple interceptors on a single

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booster. The Laser Technology and LADAR programs will develop state-of-the-art components for all BMD missions, and a compact, powerful LADAR for midcourse discrimination. The Advanced Discrimination Initiative will continue as a cross-Agency effort to modify BMD System weapons and sensors to defeat adversary countermeasures. Project Hercules will continue as a national effort to develop robust detection, tracking, and discrimination algorithms to counter off-nominal and evolving missile threats, as well as to develop a physics-based Decision Architecture applying advanced decision theory to future BMD System Command and Control, Battle Management, and Communications concepts. Advanced Systems' technology projects also include work on High Altitude Airship; early launch detection sensors, and multi-wavelength infrared focal plane arrays.

(U) Program Operations: Our Program Operations expenses are primarily for government personnel performing management support activities, contractors that assist in performing these activities, and O&M-like costs associated with facilities operations and maintenance, 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 PEO for Air and Missile Defense, the Navy PEO for Integrated Warfare Systems, and PMS 452, and several major Air Force Material Command Program Offices and Laboratories.

(U) Program-Wide Support allows consolidation, integration and efficiencies of common support functions across the program. Typical support includes accounting and financial management services, budgetary and fiscal policy (e.g., guidance on budget submissions, budget execution, and related financial reporting), program integration, centralized cost estimating, earned value management, the command's audit activity, contracting, information systems support, legal services, physical and program security (which has seen dramatic growth since 9/11), and mission assurance. Facilities maintenance includes all rents and utilities, supplies, equipment, safety, security (e.g., facility entry control, Closed Circuit Television, and alarm monitoring, badge issue), and service support for operational and maintenance activities. Program-Wide Support funds are allocated across multiple Program Elements in accordance with the Fiscal Year 1996 Authorization Act, which directed these funds be allocated to the programs being supported rather than managed from a single source.

**8. (U) Total Program BMDS Funding Summary**

**a. (U) Annual Summary - Total Program BMDS Funding Summary**

(U) Appropriation: RDT&E (FY02-09)

WBS Element	Total Program Base-Year \$M	Total Program Then-Year \$M
Block 2004	11804.3	12146.1
Block 2006	19923.8	20933.8

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Block 2008	7179.1	7944.6
Block 2010	7852.7	8553.2
Block 2012	2959.2	3286.0
Mission Area Investments	12493.6	13256.7
Subtotal	62212.6	66120.3

Notes: (1) RDT&E funds only, does not include MILCON totaling \$100.2M.  
 (2) Excludes PAC-3, MEADS, and Navy Area TBMD termination funding.

## b. (U) BMDS SAR Changes \$M (December 2002 compared to December 2003):

December 31, 2002 Selected Acquisition Report (PB04)	\$62,896.5
Revised escalation indices (Economic)	-\$84.1
Congressional FY04 enactment adjustments:	
Reduction to National Team (Industry) effort (Estimating)	-\$87.0
Increase to Israeli Arrow Program (Estimating)	\$80.0
Reduction to classified program (Estimating)	-\$73.9
Undistributed reductions (Estimating)	-\$86.9
Increase for test range upgrades (Estimating)	\$28.5
Miscellaneous technology reductions (Estimating)	-\$13.0
Increase for Advanced Research Center (Estimating)	\$7.5
Increase for Manuf./Producibility initiatives (Estimating)	\$8.4
STSS program reduction (Estimating)	-\$15.5
Reduction to Military and Civilian pay accounts (Estimating)	-\$7.6
Increase for additional GBIs (Engineering)	\$160.0
Move land-, sea- and space-based KEI one Block to the right; delay NFIRE launch 18 months (Schedule)	-\$182.0
OSD adjustment to Budget Change Proposal for Military and Civilian pay (Estimating)	-\$15.5
OSD reduction transferred to State Dept. (Estimating)	-\$15.0
Refined program estimate (Estimating)	\$28.0
Increase for Missile Defense Plan II (Engineering)	\$3,479.0
Increase for High Performance Computing (Engineering)	\$12.9
<b>Total Changes</b>	<b>\$3,223.8</b>
December 31, 2003 Selected Acquisition Report (PB05) (FY02-FY09)	\$66,120.3

Note: Missile Defense Plan II includes the following:

- Expand the GBI site at Ft. Greely, Alaska and add GBIs
- Add a third GBI site with GBIs
- Upgrade the Early Warning Radar at Thule Air Base in Greenland
- Increase the number of SM-3 interceptors and BMD-capable ships
- Add a THAAD fire unit with several missiles
- Add a midcourse radar
- Add several forward-deployed radars

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9. (U) Block 2004:

(U) Development and Operational Alert Configuration Statements of Goals -  
Block 2004

(U) The Block 2004 Development SOG is largely similar to the matrix presented in the December 2002 BMDS SAR. The only substantive change is the addition of the Engagement Sequence Groups (ESG) in the outcome column. The cost of Block 2004 Development is \$5.7B (FY04-06). The change in the cost of Block 2004 Development is driven largely by internal realignment among BMDS Elements.

(U) The Block 2004 Operational Alert Configuration SOG is also consistent with last year's submission when it was called the Block 2004 Initial Defensive Capability Goals. The cost of Block 2004 Operational Alert Configuration is \$1.7B above the development cost, for a total of \$7.4B (FY04-06).



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**(U) Block 2004 Recent Accomplishments and Highlights:**

- In the area of C2BMC element development, the Command and Control, Battle Management and Communications Directorate (BC) completed Spiral 4.1, is near completion of BMD System Level Testing of Spiral 4.2, and sent Spiral 4.3 (IDO spiral) to the JNIC for the start of BMD System Level Testing. Engineering design and specifications development for Spiral 4.4 is underway.
- BC also completed the IDO BMDS Communications Network design, established the Theater and Regional Communication Gateways, submitted the RFS documentation to DISA, and completed the Draft Annex K.
- The STRATCOM Site Installation Plan and the NORTHCOM Site Installation Plan were signed. This paves the way for building up the equipment at the respective sites for planned IDO on 9/30/04.
- BMDS Wargame IMD 03-2 was completed on 11/14/03. This wargame was a ground test component of the BMD System Test Program. Simulated BMDS Operator-in-the-Loop (OITL) data collected during the wargame will be used to assess OITL characterization issues in the BMD system verification loop. This wargame was the culminating event in the IMD 03-2 experiment series of events conducted in CY 2003. The series was designed to satisfy a set of IMD 03-2 prioritized themes and objectives developed by the stakeholder community that were oriented toward preparing the BMDS for Initial Defensive Operations (IDO).
- The Force Structure Integration and Deployment Directorate (TR) initiated and led development of BMDS integration and training with the COCOMs, Services, Joint Staff, and other senior decision makers in preparation for the Initial Defensive Operations (IDO). This was accomplished by directing, sponsoring and/or assuring effective system representation in seminars, workshops, tabletops and war games addressing key Battle Management and Command and Control issues and producing written plans and materials on Block activation.
- TR partnered with COCOMs, Allied forces and friends in overseas exercises (Joint Project Optic Windmill VII in Europe; Juniper Cobra 03 in Israel; RSOI/Foal Eagle in Korea; and Ulchi Focus Lens in Korea) to refine BMDS capabilities, especially in the areas of concept of operations (CONOPS) and C2BMC.
- Continued THAAD Missile, Radar, C2BMC, and Launcher hardware and software development.
- The THAAD program completed a Critical Design Review (CDR) and detailed designs for the missile and launcher. Fabrication of the first radar antenna was completed and fabrication of initial missile and launcher ground test units was started.
- The Airborne Laser (ABL) program completed integration and functional testing of the beam control/fire control (BC/FC) segment in the development lab. The ABL turret window was successfully coated, completing a five-year development effort of the largest piece of laser-quality glass ever manufactured. BMC4I Spiral 13 was completed and initial Link-16 message set successfully passed Air Force certification testing. The Active Ranger System (ARS) completed initial development and delivered to the BMC4I integration lab. The six high-energy laser modules were integrated into the Laser System Integration Lab and checked out at low-speed using inert chemicals. ABL infrastructure development progress included completion of

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chemical mixing facilities at Edwards AFB and production of the first laser fuel mix, full vacuum operation of the Ground Pressure Recovery Assembly, and qualification of optical coating vendors for large optics.

- Ground Based Interceptor accomplishments included integration of the booster with the Exoatmospheric Kill Vehicle (EKV), completion of ground and systems tests, and the successful conduct of an Integrated Flight Test, which culminated this series of developmental efforts. A successful Booster Verification flight test (BV-6) was also accomplished. Contract actions were initiated to refurbish two missile silos at Vandenberg AFB to support the flight test program.
- Sea-based missile defense capability will be provided by the Navy Aegis element. The first six Aegis destroyers to provide Long Range Surveillance and Track (LRS&T) capability were identified and allocated by Chief of Naval Operations. Three of these will be operational at IDO. The cruiser USS LAKE ERIE, participated in the Pacific Explorer exercises in the Western Pacific and exercised data links, communications, and procedures in support of Aegis BMD LRS&T external cueing to the BMDS. This test event allowed evaluation of IDO engagement sequence software, communications, and procedures and helped identify modifications needed to attain full IDO capability. The USS LAKE ERIE, the MDA dedicated test ship, conducted two SM-3 missile flight tests, FM-5 and FM-6, during this period. FM-5 resulted in a failed intercept due to an attitude control system malfunction. FM-6, which was conducted in a more operationally realistic scenario (i.e., no notice target launch, realistic CG patrol area, and use of external cues to the CG), resulted in the first intercept. Aegis BMD completed the Vertical Launching System (VLS) Phase I Preliminary Design Review (PDR) and the system-level All-Up-Round CDR for the SM-3 missile, Block 1.
- Development and acquisition of a Sea-Based X-Band (SBX) radar capability, a mid-course sensor asset for the BMDS, has been initiated. While system design and ground test program development to measure system effectiveness are on going, X-band radar components are being procured (i.e., sea-based radar platform, main radar structure, radar components) and operations and support facilities are under construction.
- Beale Early Warning Radar (EWR) Update facility modification design was completed and upgraded radar components were acquired.
- For the Ground-based Mid-course Defense (GMD) program, efforts are continuing in support of Environmental, Safety, and Occupational Health (ESOH) documentation and compliance requirements as well as National Environmental Policy Act (NEPA) Analyses. Cobra Dane Upgrades for the GMD program including facility modification and initial hardware and software installation were accomplished. Construction continued at Eareckson Air Station (Shemya) facilities. Construction of major facilities at Fort Greely was completed to include the readiness and control station, the entry control building, the missile assembly building, utility and water buildings, and interceptor storage igloo. Construction of some other facilities included EKV fuel storage and security positions. An Electronic Security System was completed and construction continues for site access, interior site roads, and drainage systems. Acquisition of a

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relocatable In-Flight Interceptor Communication System (IFICS) Data Terminal (IDT) for Vandenberg AFB was initiated. Lastly, a GMD Integrated Flight Test (IFT-9) was successfully completed.

- GMD operator training courses and the GMD Training and Exercise Center were developed and implemented and training started in June 2003. The first group of 28 GMD Operators completed their formal GMD Operator training on 12/18/03. 32 new GMD Operators started training on 1/5/04 and will complete the GMD Operator Advanced course in 3/04.
- The Targets and Countermeasures Directorate (TC) completed a reorganization to develop a new way of doing business. A product line organization and focus was implemented to reduce cycle time, contain costs, and provide better support for Element testing as the BMDS progresses through its Blocks. Following the release of a full and open competitive Request For Proposals, TC awarded a multi-year contract for a Prime Contractor to provide system engineering services, program management and required hardware systems to support the BMDS testing program.
- TC continued its support of the BMDS testing program. Successful target test launches include Aegis BMD FM-5 and FM-6. TC also conducted the Iron Bird drop for the Short Range Air-Launched Target, a target development program, and four Aerial Dispersion Experiments.

## (U) Cost (Block 2004):

### a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	10756.5	11804.3
Total FY 2002 Base-Year \$M	10756.5	11804.3
Escalation	308.6	404.8
Development (RDT&E)	(308.6)	(404.8)
Total Then Year \$M	11065.1	12146.1

Notes: (1) Figures shown above reflect RDT&E funding for FY02-06 only.  
(2) RDT&E funds only, does not include MILCON totaling \$63M.

(U) **Operations & Support Costs.** While decisions have not been made as to the lifetime quantity or fielding dates beyond establishing initial element capabilities, our budget includes funding for logistics development for the BMDS in FY 2005. Known as Contractor Logistics Support, this includes logistics funding for placing the system on alert; performing concurrent testing and operation of the system; and recurring maintenance of the operational system. The Services have responsibility for all recurring operations and support activity that is typical of base operations. Furthermore, after FY06, for any system on alert status, the Secretary of Defense has directed the Services, Combatant Commands, and Missile Defense Agency (MDA) will continue to refine estimates of O&S requirements and associated costs for FY06-11. The Services and MDA will program for these costs in their FY06-11 POMs.

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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	2438.1	2455.0
2003	2330.3	2373.4
2004	3558.8	3672.7
2005	3165.2	3313.3
2006	311.9	331.7
2007		
2008		
2009		
Subtotal	11804.3	12146.1

9. (U) Block 2006:

(U) Development and Operational Alert Configuration Statement of Goals - Block 2006

(U) In Block 2006, the Development SOG is focused on further integration of the BMDS. In this Block, there is a significant increase in the number of ESGs available to the system. The cost goal for achieving this capability is \$12.2B in the FYDP.

(U) The Block 2006 Operational Alert Configuration will increase the capability of the BMDS by expanding the GBI site Ft. Greely, Alaska and adding GBIs; upgrading the Early Warning Radar at Thule Air Base in Greenland; increasing the number of SM-3 interceptors; adding a THAAD fire unit with several missile, and adding radars. We will also begin to fully utilize some of the assets placed on alert in Block 2004. For instance, we will add ESGs for the Sea-Based X-Band Radar (SBX). The BMDS Battle Manager will be upgraded at the various COCOM facilities. The cost of the Block 2006 Operational Alert Configuration capability in the FYDP is \$16B, \$3.8B above the \$12.2B development cost.



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(U) Block 2006 Recent Accomplishments and Highlights:

- Block 2006 capabilities expand on basic capabilities provided in Block 04 by incorporating development opportunities to evaluate advanced sensors. For example, procurement was initiated for the Near Field Infrared Experiment (NFIRE) satellite, sensor payloads, and launch vehicle. Pathfinder units for the NFIRE tracking sensor payload and kill vehicle sensor were delivered and tested. Real-time fire control operations based on ballistic missile command and control exercises, simulated engagements, and real-world space launch and ballistic missile targets of opportunity were conducted. For the STSS program, we conducted program reviews for "Delta" system definition, preliminary design, and critical design. We also conducted further STSS integration with the BMDS Test Bed, conducted an inventory and checkout of Flight Demonstration System (FDS) satellite hardware required for Block 2006, and continued Surrogate Sensor Data Collection efforts.
- A contract was definitized to develop the Forward Deployable Radar (FDR). The contract also provides for using the TPS-X radar (made available from the THAAD program) as a risk reduction initiative for the FDR. Phase I of sensor architecture concepts focusing on current RF technologies was completed. Acceptance and testing of Hercules Suite I algorithms was initiated. With the completion of an initial communications system (build 1.0), a capability to send metric data to a surrogate battle manager was then demonstrated. This confirmed the ability to send state vector information of sufficient quality to support acquisition by a down range sensor.
- Draft Block 2006 Master Test Plan (MTP) has been submitted to the key BMDS elements for informal review and comment. The plan incorporates 11 proposed ESGs that are maturing as the document develops. POM budget inputs are in process of being prepared to support the test events indicated in this document.

(U) Cost (Block 2006):

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	15509.1	19923.8
Total FY 2002 Base-Year \$M	15509.1	19923.8
Escalation	715.6	1010.0
Development (RDT&E)	(715.6)	(1010.0)
Total Then Year \$M	16224.7	20933.8

Note: Figures shown above reflect RDT&E funding for FY02-09 only.

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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	2502.9	2520.2
2003	2312.9	2355.7
2004	2010.4	2074.8
2005	3300.7	3455.2
2006	4591.2	4884.1
2007	4988.4	5403.0
2008	171.3	189.1
2009	46.0	51.7
Subtotal	19923.8	20933.8

9. (U) Block 2008:

(U) Development Statement of Goals - Block 2008

(U) In Block 2008, the Development SOG is focused on the integration of additional sensors and radars into the BMDS. Again, there is an increase in the number of ESGs available to the system. The cost goal for achieving this capability is \$7.9B in the FYDP.



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(U) Block 2008 Recent Accomplishments and Highlights:

- MDNTS performed analysis to determine predicted capability of various weapons launching on EO/IR, THAAD, and/or UEWB data. Because of this work, these engagement sequences were added to the MDA goals for the block.
- MDNTS performed a review of technologies available to the BMDS in the block time frame and performed an assessment of their technical maturity. This information was fed into the Block 2008 definition effort.

(U) Cost (Block 2008):

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	15250.1	7179.1
Total FY 2002 Base-Year \$M	15250.1	7179.1
Escalation	1419.2	765.5
Development (RDT&E)	(1419.2)	(765.5)
Total Then Year \$M	16669.3	7944.6

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	11.1	11.2
2003	.3	.3
2004	19.3	19.9
2005	142.0	148.6
2006	470.3	500.3
2007	693.4	751.0
2008	3062.3	3381.7
2009	2780.4	3131.6
Subtotal	7179.1	7944.6

9. (U) Block 2010:

(U) Performance Characteristics and Schedule (Block 2010): To be developed.

(U) Block 2010 Recent Accomplishments and Highlights:

- In April 2003, we awarded two concept design contracts to develop mobile boost/ascent phase intercept concepts for land- and sea-based platforms. Through extensive modeling and simulation, risk reduction tests, and disciplined systems engineering, the concept design phase yielded significant payoffs in addressing technical and operational challenges.

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- In December 2003, we awarded a single, eight-year contract to Northrop Grumman Space and Missions Systems to begin work on a boost/ascent phase kinetic energy interceptor. Under the contract, we will develop test and acquire land- and sea-based launchers, interceptors, a sea-based platform, and C2BMC capabilities.

(U) Cost (Block 2010):

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	4509.8	7852.7
Total FY 2002 Base-Year \$M	4509.8	7852.7
Escalation	463.8	700.5
Development (RDT&E)	(463.8)	(700.5)
Total Then Year \$M	4973.6	8553.2

Note: Figures shown above reflect RDT&E funding for FY02-09 only.

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	231.2	232.9
2003	153.2	156.0
2004	130.3	134.5
2005	476.9	499.2
2006	1151.7	1225.1
2007	1829.7	1981.8
2008	2086.6	2304.2
2009	1793.1	2019.5
Subtotal	7852.7	8553.2

9. (U) Block 2012:

(U) Performance Characteristics and Schedule (Block 2012): To be developed.

(U) Cost (Block 2012):

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	2959.2	2959.2
Total FY 2002 Base-Year \$M	2959.2	2959.2
Escalation	326.8	326.8
Development (RDT&E)	(326.8)	(326.8)
Total Then Year \$M	3286.0	3286.0

Notes: (1) Figures shown above reflect RDT&E funding for FY05-09 only.

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(2) This is the initial SAR for Block 2012. Revised Planning Estimate reflects PB05 program.

b. (U) Annual Summary - **Block 2012**

(U) Appropriation: RDT&E (FY05 -09)

Fiscal Year	Total Program Base-Year \$M.	Total Program Then-Year \$M
2002		
2003		
2004		
2005	45.4	47.5
2006	123.0	130.9
2007	389.3	421.6
2008	857.5	946.9
2009	1544.0	1739.1
Subtotal	2959.2	3286.0

9. (U) Mission Area Investments

(U) Cost (Mission Area Investments):

a. Total Cost -

	Revised Planning Estimate	Current Estimate
Development (RDT&E)	13104.5	12493.6
Total FY 2002 Base-Year \$M	13104.5	12493.6
Escalation	859.3	763.1
Development (RDT&E)	(859.3)	(763.1)
Total Then Year \$M	13963.8	13256.7

Note: (1) Figures shown above reflect RDT&E funding for FY02-09 only.

(2) RDT&E funds only, does not include MILCON totaling \$37.3M.

(U) Mission Area Investments are other weapons systems support cost for the BMDS program that are not a part of Block costs. These costs are presented to allow the full presentation of the FY 2005 President's Budget.

(U) Mission Area Investments Recent Accomplishments and Highlights:

(U) Cooperative Programs

- Participation in Israel's Arrow missile defense program continued. Arrow underwent a successful test in December 2003 and planning for a U.S. test in summer 2004 continues. Israel signed a contract with Boeing for co-production of Arrow missile components in the U.S. A successful interoperability exercise, Juniper Cobra 03, included Israeli Arrow and Patriot batteries in a two-tier defensive system. The test provided valuable lessons learned for joint U.S. and coalition missile defense operations.
- SECDEF signed the first MOU for missile defense cooperation with the U.K. in June 2003. The MOU provides for upgrading Fylingdales Early

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Warning Radar, with completion estimated by September 2005. The MOU also provides a mechanism for U.S./U.K. collaboration on other RDT&E missile defense projects.

- Japan announced their intention to participate in U.S missile defense systems, so we began intensive consultations with them for an upcoming MOU. Areas of planned cooperation include: 1) Sea-based Aegis BMD, including 9 SM-3 missiles (Navy FMS); 2) PAC-3 missiles and related equipment (Army FMS); and 3) U.S./Japan joint analysis on future options for the defense of Japan and the U.S., including remote sensors, missile component improvements, improved SPY-1 radar for Aegis BMD, and C2BMC improvements.
- The technical effort on Russian American Observation Satellites (RAMOS) has progressed well over the past few years, despite being hampered by funding limitations and programmatic delays caused by the lack of a government-to-government agreement required to move the program out of the design phase and into fabrication. However, key members of the leadership of the Ministry of Defense of the Russian Federation have not expressed full support for the program, and the issues associated with the government-to-government agreement are matters of interagency and intergovernmental discussions that, at the moment, have no clear path to resolution. In light of the lack of strong support from the Russian government, and our inability to conclude the RAMOS government-to-government agreement, the Department has decided to bring the RAMOS program to an orderly conclusion prior to its Critical Design Review. MDA will continue to pursue other cooperative missile defense related efforts with the Russian Federation.

(U) Systems Engineering

- MDNTS cycled through four distinct capability based system engineering process improvement evolutions in two years. MDNTS also led the definition of Blocks 2004 through 2008 through the System Evolution Planning process. The National Team (SE) provided input on needed technology investments for future Block improvements to the MDA Strategic Planning process.
- MDNTS made numerous recent contributions, including the following:
  - Created and refined the concept of Engagement Sequence Groups to interconnect distributed sensors and interceptors to achieve the integrated BMDS capability.
  - Provided analysis, visualization, concept development and cost/benefit analyses that formed the basis of Missile Defense Plan II.
  - Used an objective filtering process, including Technology Readiness Levels, to intensely screen over 1000 technology candidates to search for candidate BMDS solutions.
  - Provided analysis and procurement support for the Kinetic Energy Interceptor initiative.
  - Using system analysis techniques identified the need for forward-based and mid-course sensors, as well as the need for mobility to fill coverage gaps.
  - Precipitated the realization of the Sensors and Sensor Network Directorate.
  - Provides ongoing risk management and mitigation across the BMDS.
  - Developed Block 2004 System Capability and Interface Capability Specifications.

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- Currently developing Block 2006 Data Package and System Capability Specification.
- Currently organizing and executing the IDC Integration Design Review, which is the similar to a Critical Design Review.

(U) Test and Targets

- We have been working with the appropriate independent operational test agencies (OTA) to ensure they are on board with our aims and processes. The operational testers' assessment of the effectiveness, suitability, and survivability of the BMDS is important feedback. System capabilities assessed for IDO will be based on test events planned for FY04. As our tests are planned, executed and evaluated, the MDA Combined Test Force (CTF), which brings together representatives from across the testing community, is combining requirements for both developmental and operational capability testing. The OTAs will use the combined developmental and operational capability testing to make independent operational assessments that will be fed into the system development. This involvement of independent testers early in BMDS development results in a test and evaluation process as rigorous as any other conducted in the Department.
- The High Altitude Observatory II (HALO II), a modified Gulf Stream IIB, aircraft has completed development and is a fully operational test asset. Work continues to improve capability, reliability and maintainability.
- The Widebody Airborne Test Platform (WASP), a modified DC-10, has cleared the flight envelope to 42,000 ft with the Captive Carry Sensor primary aerowindow door closed. The SM-3 and Japanese Cooperative Research sensor support equipment is installed and waiting for completion of the flight test program before final integration and test. The primary sensor system (PSS), similar to the HALO II sensor, is in development and has completed baseline characterization testing.
- The Test and Assessment Directorate (TE) supported the MDA Elements in Military (MILCON) and RDT&E construction efforts, completing 27 National Environmental Policy Act (NEPA) analyses to support MDA BMDS construction, testing, and fielding activities. TE took the lead for MDA activities on Wake Island to ensure the site is available for mission needs.
- Advanced Systems Flight Test-1A and 1B flight missions were both successfully conducted on 30 May and 2 June 2003, respectively. These two test scenarios support Project Hercules Program Corporate Clutter Working Group. Multiple clutter experiments were deployed for extended exoatmospheric periods on each mission. Thirty-four sensors were present to successfully collect signature/ phenomenology data in RF, Infrared, and Visible frequencies. The test data will be used to addresses critical countermeasures/counter-countermeasures issues and will be used to develop and test adaptive algorithms for the BMDS.
- TE conducted the Aerial Dispersion Experiment (ADE) campaign at White Sands Missile Range, with four successful launches of threat representative short-range liquid propellant ballistic missiles on 7 February, 22 February, 20 March, and 3 April 2003. The ADE campaign was developed to satisfy Defense Intelligence Agency (DIA) / Missile and Space Intelligence Center (MSIC), Missile Defense Agency (MDA), and user community requirements. ADE was designed to:
  - Launch and fly four liquid propellant rockets (LPR)
  - Perform debris dispersion experiments
  - Characterize debris footprint after ground impact

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(U) Targets and Countermeasures

- The Targets and Countermeasures (TC) Directorate completed two major actions to allow it to provide better support to the BMDS Elements as they continue their testing. First, the Directorate completed a reorganization to develop a new way of doing business. Key to this new business approach is the development of product lines that will reduce cycle time, contain costs and provide better support for Element testing as the BMDS progresses through its blocks. Second, following the release of a full and open competitive Request For Proposals, the Targets and Countermeasures Directorate awarded a multi-year contract for a Prime Contractor that will provide system engineering services, program management and required hardware systems to support the BMDS testing program.
- TC continued its successful support of the BMDS testing program throughout 2003. Successful target test launches include Aegis BMD FM-5 and -6. In addition, the directorate also conducted the Iron Bird drop for the Short Range Air-Launched Target (SRALT), a target development program, and four Aerial Dispersion Experiments.

(U) Advanced Concepts

- The Advanced Systems Directorate (AS) awarded a contract to Lockheed Martin for High Altitude Airship (HAA) Phase 2, Design and Risk Reduction Phase. Lockheed Martin will produce a full-scale prototype airship for possible deployment into the testbed.
- Army Measurement Optical Range (AMOR) testing of the Advanced Discriminating LADAR Technology (ADLT) was successful. AMOR successfully demonstrated a half-power breadboard. Range Resolved Doppler Images (RRDI) were also achieved for the target set.
- Multiple Kill Vehicles (MKV) Justification and Approval (J&A) was signed and a draft Request for Proposal (RFP) released to three contractor teams. Technical Interchange Meetings (TIMs) were held with MKV contractors. AS completed its Preliminary Design Review (PDR), conducted a limited competition among 3 vendors, and selected an MKV source. Award was made in early 2004 to Lockheed Martin for MKV development and testing.
- Project Hercules experienced very positive initial results from participation in Glory Trip-183 (GT-183) test flight. The project also conducted successful Red Dog flight tests 1a and 1b. Eight algorithms were selected to begin rigorous testing prior to insertion into fielded systems.
- AS commenced feasibility analysis phase of the Microsatellite Program, awarding contracts for initial design and analysis to SpaceDev, Inc., and Utah State University Research Foundation/Space Dynamics Laboratory. Also enlisted the services of the Air Force Research Laboratory. Feasibility analyses and conceptual designs will be used to rank-order microsatellite experiments in BMDS functionality, such as distributed sensing and cooperative orbiting targets. Developed both an acquisition strategy and plan for executing the project.
- AS implemented novel technology transition strategy consisting of standardized Technology Readiness Level (TRL) checklist and Technology Transition Agreements (TTA). The standardized TRL checklist provides comprehensive, objective criteria for evaluating technology development progress. TTAs document commitment between the BMDS Element and AS to develop, deliver, and integrate a technology/product into a BMDS Element. This strategy ensures optimal application of MDA technology

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development resources by accurately assessing technology development progress and securing commitment and support from potential users.

- AS implemented the Laser Technology Program, awarding 10 contracts to develop state-of-the-art components for BMDS upgrades.
- AS established the Advanced Discrimination Initiative (ADI), an effort to develop system level approaches to addressing threat uncertainties and likely countermeasures to Midcourse Defense. AS coordinated its activities with GMD and MDNTS in implementing change processes to the GMD system to incorporate these Advance Discrimination approaches. AS also demonstrated, using IFT flight data, the sensor sensitivity and resolution of Advanced Discrimination approaches using existing and planned GMD sensors, thus assuring the viability of these concepts.

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	1398.2	1407.8
2003	1532.6	1561.0
2004	1670.2	1723.6
2005	1607.6	1682.9
2006	1523.9	1621.1
2007	1559.5	1689.1
2008	1581.2	1746.2
2009	1620.4	1825.0
Subtotal	12493.6	13256.7

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

a. RDT&E --

(U) GMD:

Missile Defense Systems, Huntsville, AL

HQ0006-01-C-0001, CPAF

Award: December 22, 2000

Definitized: December 22, 2000

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$11,450.9	N/A	N/A	\$11,450.9	\$11,450.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-5.6	\$-67.2
Cumulative Variances To Date (12/03)	\$-170.5	\$-146.3
Net Change	\$-164.9	\$- 79.1

(U) Explanation of Change:

Cost Variance - Cost overruns in Boost Vehicle (BV) - 4, 5, and 6; Interceptor Integration, Assembly, Test and Checkout (IAT&C); Integrated Flight Test (IFT) 9, 14, 15, 16, and 17; and UEWR Software Development. Various technical problems and requirements and design changes led to

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delays in Integration and Assembly, which subsequently delayed qualification, pre-test, and test activities, leading to cost overruns.

Schedule Variance - Schedule delays in BV-5, IFT-13A, 13B, IFT-14, IFT-15. Various technical difficulties in the Ground-based Interceptor (GBI) and schedule slips in software deliveries led to delays in integration and assembly of the GBI, which subsequently delayed qualification and flight test activities.

(U) Contract Comments:

Date of last restructure: 31 October 2003

(U) <u>KEI Development and Test:</u> Northrop Grumman Space and Missions Systems, Reston, VA HQ0006-04-C-0004, CPAF Award: December 3, 2003 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$4,584.7	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>
\$4,584.7	N/A	N/A	\$4,584.7	\$4,584.7

(U) Contract Comments:

Cost Performance information is not available at this early stage of contract completion. Initial program baseline will be established in March 2004.

(U) <u>THAAD:</u> Lockheed Martin Space Systems Company, Missiles & Space Operations, Sunnyvale, CA DASG60-00-C-0072, CPAF/CPFF Award: June 28, 2000 Definitized: August 4, 2000	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$3,806.7	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>
\$4,464.5	N/A	N/A	\$4,464.5	\$4,464.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$15.0	\$23.0
Cumulative Variances To Date (12/03)	\$-4.0	\$10.0
Net Change	\$-19.0	\$-13.0

(U) Explanation of Change:

Cost Variance - The cumulative-to-date cost variance has deteriorated mainly due to problems in the Missile Component. The Divert Attitude Control System experienced unfavorable cost variances, primarily due to delays in the Air Force Research Lab test facility activation at Boeing. In addition, the Electrical, Structures and Propulsion Integrated Product Team (IPT) had a cumulative unfavorable variance. The Electrical Subsystems IPT variance is due to Laser Initiated Ordnance System redesign and cracked lens problems and investigation; the Kill Vehicle Battery Proof of Design failure investigation; and several cable

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redesigns. The Structures IPT cost variance was due to extensive rework, early hardware purchases, and increases in manufacturing labor and material cost. The Propulsion IPT variance was driven by problems with the Boost Motor Insulated Case trial windings and added design costs.

Schedule Variance - The favorable schedule variance in Radar software, which built up during the design and early code and unit test phase, eroded over the last several months due to the completion of Radar #1 and movement of Radar #2 manufacturing (which was ahead of schedule) to a later period. Unfavorable schedule variances in the Missile Component also contributed to the unfavorable schedule variances. The main drivers in the Missile Component were the Booster/Thrust Vector Actuator (TVA), Avionics, and Missile Systems Engineering. The Booster schedule variance was caused by late case-winding completions at Chemical Systems Division and final assembly delays caused by the 8 Aug 03 and 12 Sep 03 plant explosions resulting in a plant wide safety stand down that stopped all manufacturing operations. The TVA variance was a result of delays in TVA component design, TVA system testing, TVA manufacturing, and Special Test Equipment tooling. The Avionics schedule variance was due to delays in completing test equipment tasks because of brass board debugging and delays in Pathfinder I Design Verification Test resulting from debugging. Late completion of cable drawings along with modifications and late deliveries of cable also contributed to the unfavorable schedule variance. Schedule variances were also caused by the Booster Motor Initiator investigations and final Reliability Availability Maintainability-Testability closure actions. The Missile System Engineering unfavorable schedule variance was due to material being received late and slips in brassboard Engineering Development Unit Detailed Test Instruction stemming from hardware fidelity issues. The negative schedule variance was also driven by late hardware deliveries.

## (U) Contract Comments:

Estimate of Contract Price applicable to each block:

Block 2004:	\$3,242M
Block 2006:	908M
Block 2008:	314M
Total:	\$4,464M

Note: This breakout of contract price is an estimate. Any perturbation to the program, schedule, or funding will alter this estimated segregation. Block 2004 contains all sunk costs from contract award date in Aug 2000.

Date of last restructure: 4 Dec 03

	Initial Contract Price		
	Target	Ceiling	Qty
(U) ABL Block 2004 Restructure:	\$723.0	N/A	N/A
Boeing Company, The Defense & Space Group, Seattle, WA			
F29601-97-C-0001, CPFF/CPAF			
Award: November 12, 1996			
Definitized: N/A			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$2,194.6	N/A	N/A	\$2,194.6	\$2,194.6

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	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-77.4	\$-16.5
Cumulative Variances To Date (12/03)	\$-59.8	\$-46.3
Net Change	\$17.6	\$-29.8

(U) Explanation of Change:

Cost Variance - Variance improvement is due largely to the contract replan and establishment of an Over Target Baseline in Jul 03. Variance since that time is primarily driven by Air Vehicle Integration and Test (AVIT) System Integration Laboratory (SIL) and BC/FC End-to-End testing due to difficulties associated with complexity of Laser and Optic technologies; and technical difficulties with completing tasks on Turret and Optical Benches.

Schedule Variance - Primarily driven by Air Vehicle Integration and Test (AVIT) System Integration Laboratory (SIL) and BC/FC End-to-End testing due to difficulties associated with complexity of Laser and Optic technologies; and technical difficulties with completing tasks on Turret and Optical Benches.

(U) Contract Comments:

Date of last restructure: 12 Jun 2002 (from P00149 contract restructure mod); Over Target Baseline, July 2003 (P00206)

Other significant interest items/events: Contract currently being evaluated for potential restructure.

	<u>Initial Contract Price</u>		
(U) <u>AEGIS BMD SM-3 Dev. and Flight Test:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Missile Systems, Tucson, AZ	NTE \$881.4	N/A	N/A
N00024-03-C-6111, CPAF/CPIF			
Award: August 15, 2003			
Definitized: February 2004			

<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>
NTE \$881.4	N/A	N/A	NTE \$881.4	NTE \$881.4

(U) Contract Comments:

Cost Performance information is not available at this early stage of contract completion.

Estimate of Contract Price applicable to each block: \$856.2M of the NTE is Block 04 Cost. The remainder is the MDNTS/SE&I Support and FMS. As Block 2006 work is defined, it will be accomplished via LOE until ready for definitization under a completion contract.

	<u>Initial Contract Price</u>		
(U) <u>STSS:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Space Technology	\$868.7	N/A	N/A
Redondo Beach, CA			
F04701-02-C-0009, CPAF/CPFF			
Award: April 18, 2002			
Definitized: August 16, 2002			

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Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$871.1	N/A	N/A	\$871.1	\$871.1
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/03)			\$ 0.1	\$- 0.2
Net Change			\$-8.7	\$-19.9
			\$-8.6	\$-19.7

(U) Explanation of Change:

Cost Variance - The Raytheon Payload Subcontract, Satellite 1 Space Vehicle and Spacecraft Segment are the primary negative cost drivers with positive offsetting variances in Program Management and AT Efforts. The negative Cost Variance in the Raytheon Payload Subcontract is mainly in the Track Sensor area. The negative CV in the Space Segment is primarily due to FDS reactivation, ECR changes to the harness design and bus, and missing assembly hardware. The CPI is .97 and the TCPI is 1.02 and with \$72M in Management Reserve, the contract is expected to complete at or less than the contract cost.

Schedule Variance- The primary drivers of the negative variance are in the Raytheon Payload Subcontract and in the Satellite 1 Space Segment. The main drivers of the negative schedule variance in the Raytheon Subcontract are the additional review and rehearsal requirements on test procedures, and the Track Sensor. Delays from ECR changes and Build 4 and 5 delays are the main cause of the negative SV in the Space Segment. Northrop Grumman Space Technology (NGST) is working to a baseline schedule that is six months ahead of the contractual delivery requirement. NGST has developed a schedule metric (K-SPI) to determine the schedule performance to the contract delivery date. The Baseline SPI is .93 and the K-SPI as calculated is currently 1.04. This metric reflects that the program is ahead of the contractual delivery schedule even though there is a Schedule Variance to the baseline.

(U) Contract Comments:

Estimate of Contract Price applicable to each block: The majority of the Estimate of Contract Price is in Block 2006  
Date of last restructure: April 2003 (Tandem Launch Direction)  
Other significant interest items/events: Program was redirected by the MDA Director to launch the two satellites using a Tandem Launch Approach.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>Aegis BMD AWS:</u>	\$812.6	N/A	N/A
Lockheed Martin Maritime Systems & Sensors			
Moorestown, NJ			
N00024-03-C-6110, CPAF/IF			
Award: October 10, 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>
\$812.6	N/A	N/A	\$812.6	\$812.6

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## (U) Contract Comments:

Cost Performance information is not available at this early stage of contract completion. Estimate of Contract Price applicable to each block: \$413.2 (Block 2004 only)

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>Targets and CM Prime Contract:</u>			
Lockheed Martin Corp., Space Systems Comp.	\$210.7	N/A	N/A
Denver, CO			
HQ0006-04-C-0006, CPAF with one ID/IQ CLIN			
Award: December 9, 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>
\$210.7	N/A	N/A	TBD	TBD

## (U) Contract Comments:

Cost Performance information is not available at this early stage of contract completion.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>BMDs Radar:</u>			
Raytheon, Bedford, MA	NTE \$350	NTE \$350	N/A
HQ0006-03-C-0047, CPAF	\$323.5	\$323.5	
Award: April 1, 2003			
Definitized: November 14, 2003			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$326.5	\$326.5	N/A	\$326.5	\$341.0
				with TO #002

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/03)	\$1.3	\$2.6
Net Change	\$1.3	\$2.6

## (U) Contract Comments:

Cost Performance information is for the first month of reporting.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>MDNT SE&amp;I:</u>			
The Boeing Company, Huntsville, AL	\$149.0	N/A	N/A
HQ0006-02-9-0001, CPAF OTA			
Award: February 15, 2002			
Definitized: August 29, 2002			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$154.6	N/A	N/A	\$154.6	\$154.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.2	\$0.0
Cumulative Variances To Date (12/03)	\$10.7	\$0.0
Net Change	\$10.5	\$0.0

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(U) Explanation of Change:

Cost Variance - The under-run can be attributed to the accelerated staffing baseline established for Part 2 efforts. The Team had some difficulty during the start of Part 2 to accelerate to the definitized staffing baseline. The issues were corrected and Boeing was able to staff accordingly. Notwithstanding the initial shortfall, MDNTS(I) was able to fulfill its contractual obligations in a timely manner.

(U) Contract Comments:

Estimate of Contract Price applicable to each block: All work is Block 04

(U) <u>MDNT BMC2C:</u> Lockheed Martin Mission Systems Gaithersburg, MD 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>
\$143.8	N/A	N/A	\$143.8	\$143.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.0	\$-2.2
Cumulative Variances To Date (12/03)	\$9.9	\$-2.1
Net Change	\$7.9	\$-0.1

(U) Explanation of Change:

Cost Variance - As stated below in the Contract Comments, this contract was restructured in 2003. The CV as of March 2003 was \$4.6M and was set to zero as of April 2003. Since April 2003 the CV has grown to +\$9.9M. The CV since April 2003 is due to slower and less staffing in the I&T IPT. Also less labor required in A&SE and Program Control, specifically in the Spiral 4.4 CSCS and Business Mgmt areas, respectively.

Schedule Variance- As part of the restructuring process in 2003 the SV was set to zero as of April 2003. The SV as of March 2003 was -\$2.8M. Since April 2003 the SV has deteriorated to -\$2.1M. This deterioration is due to the delay in the delivery of Spiral 4.3 to Integration and Test due to integration and regression testing in support of Spiral 4.2 for the IMD 03 Wargame. Delivery of Spiral 4.3 to Integration and Test is expected in February 2004.

(U) Contract Comments:

Estimate of Contract Price applicable to each block: In Part 2A, approximately 95% of the work is Block 2004 and 5% of the work is Block 2006.

Date of last restructure: May 2003 - aligned SOW with goal of delivering an IDO capability.

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(U) The following contracts which were reported in our 2002 SAR will not be reported in our 2003 SAR because they are no longer among our largest contracts:

SM-3 Block 2004	N00024-98-C-5364
JNIC	F05604-95-D-9001
JNIC ICRDC	H95001-02-D-0001

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## ACRONYM LIST

ABL	AIRBORNE LASER
ABL HEL	ABL HIGH ENERGY LASER
ABL IRST & ARS	INFRARED SEARCH AND TRACK SENSOR & ACTIVE RANGING SYSTEM
ACD	ADVERSARY CAPABILITIES DOCUMENT
ADE	AERIAL DISPERSION EXPERIMENT
ADI	ADVANCE DISCRIMINATION INITIATIVE
ADLT	ADVANCE DISCRIMINATING LADAR TECHNOLOGY
AFB	AIR FORCE BASE
AMOR	ARMY MEASUREMENT OPTICAL RANGE
AN/MFQ-53	GEM/GEM+ RADAR
AN/MPQ-65	PAC-3 RADAR
ARS	ACTIVE RANGING SENSOR
AS	ADVANCED SYSTEMS DIRECTORATE
AVIT	AIR VEHICLE INTEGRATION AND TEST
BC/FC	BEAM CONTROL/FIRE CONTROL
BMC4I	BATTLE MANAGEMENT, COMMAND, CONTROL, COMMUNICATION, COMPUTERS, AND INTELLIGENCE
BMD	BALLISTIC MISSILE DEFENSE
BMDS	BALLISTIC MISSILE DEFENSE SYSTEM
BV	BOOSTER VERIFICATION
C2	COMMAND AND CONTROL
C2BM	COMMAND, CONTROL AND BATTLE MANAGEMENT
C2BMC	COMMAND, CONTROL, BATTLE MANAGEMENT, AND COMMUNICATION
CD	COBRA DANE
CDR	CRITICAL DESIGN REVIEW
CG	GUIDED MISSILE CRUISER
CLIN	CONTRACT LINE ITEM NUMBER
CM/CCM	COUNTERMEASURES/COUNTER-COUNTERMEASURES
CNO	CHIEF OF NAVAL OPERATIONS
COCOM	COMBATANT COMMAND
CONOPS	CONCEPT OF OPERATIONS
CPAF	COST PLUS AWARD FEE
CPAF OTA	COST PLUS AWARD FEE
CPFF	COST PLUS FIXED FEE
CPI	COST PERFORMANCE INDEX
CRIF	COST PLUS INCENTIVE FEE
CTO	CONCURRENT TEST & OPERATIONS
CV	COST VARIANCE
CVAP	CAPABILITY VERIFICATION AND ASSESSMENT PLAN
CVAR	CAPABILITY VERIFICATION AND ASSESSMENT REPORT
DDG	GUIDED MISSILE DESTROYER
DIA	DEFENSE INTELLIGENCE AGENCY
DISA	DEFENSE INFORMATION SUPPORT AGENCY
DOD	DEPARTMENT OF DEFENSE
DSP	DEFENSE SUPPORT PROGRAM
EKV	EXOATMOSPHERIC KILL VEHICLE
EO/IR	ELECTRO-OPTICAL / INFRARED
ESG	ENGAGEMENT SEQUENCE GROUP
ESH	ENVIRONMENTAL, SAFETY, AND HEALTH
EUCOM	EUROPEAN COMMAND
EWR	EARLY WARNING RADAR
FDR	FORWARD DEPLOYABLE RADAR
FDS	FLIGHT DEMONSTRATION SYSTEM
FFRDC	FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER

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FMS	FOREIGN MILITARY SALES
FYDP	FUTURE YEAR DEFENSE PROGRAM
GBI	GROUND BASED INTERCEPTOR
GBI (BV+)	LOCKHEED MARTIN GBI BOOSTER VEHICLE
GBI (OBV)	ORBITAL GBI BOOSTER VEHICLE
GEM/GEM+	PAC-2
GFC/C	GMD FIRE CONTROL & COMMUNICATIONS
GMD	GROUND BASED MIDCOURSE
GT	GLORY TRIP
HAA	HIGH ALTITUDE AIRSHIP
HALO	HIGH ALTITUDE OBSERVATORY
HEL	HIGH ENERGY LASER
IAT&C	INTEGRATION, ASSEMBLY, TEST AND CHECKOUT
ICBM	INTERCONTINENTAL BALLISTIC MISSILE
ICC/ECS	INFORMATION COORDINATION CENTRAL / ENGAGEMENT CONTROL STATION
ICS	INTERFACE CONTROL SPECIFICATIONS
ID/IQ	INDEFINITE DELIVERY, INDEFINITE QUANTITY
IDO	INITIAL DEFENSIVE OPERATIONS
IDT	IFICS DATA TERMINAL
IFICS	IN-FLIGHT INTERCEPTOR COMMUNICATION SYSTEM
IFT	INTEGRATED FLIGHT TEST
IMD	INTEGRATED MISSILE DEFENSE
IPT	INTEGRATED PRODUCT TEAM
IRBM	INTERMEDIATE RANGE BALLISTIC MISSILE
IRST	INFRARED SEARCH AND TRACK
J&A	JUSTIFICATION AND APPROVAL
JNIC	JOINT NATIONAL INTEGRATION CENTER
JNIC ICRDC	JOINT NATIONAL INTEGRATION CENTER RESEARCH AND DEVELOPMENT CENTER
KEI	KINETIC ENERGY INTERCEPTOR
K-SPI STSS	CONTRACTOR SCHEDULE PERFORMANCE INDEX
LADAR	LASAR DETECTION AND RANGING
LOE	LEVEL OF EFFORT
LPR	LIQUID PROPELLANT ROCKETS
LRBM	LONG RANGE BALLISTIC MISSILE
LRS&T	LONG RANGE SURVEILLANCE AND TRACK
MDA	MISSILE DEFENSE AGENCY
MDNT	MISSILE DEFENSE NATIONAL TEAM
MDNTS	MISSILE DEFENSE NATIONAL TEAM SYSTEMS ENGINEERING
MEADS	MEDIUM EXTENDED AIR DEFENSE SYSTEM
MILCON	MILITARY CONSTRUCTION
MKV	MULTIPLE KILL VEHICLE
MOU	MEMORANDUM OF UNDERSTANDING
MRBM	MEDIUM RANGE BALLISTIC MISSILE
MSIC	MISSILE AND SPACE INTELLIGENCE CENTER
MTP	MASTER TEST PLAN
NATO	NORTH ATLANTIC TREATY ORGANIZATION
NCR	NATIONAL COMMAND REGION
NEPA	ENVIRONMENTAL POLICY ACT
NFIRE	NEAR FIELD INFRA RED EXPERIMENT
NGST	NORTHROP GRUMMAN SPACE TECHNOLOGY
NORTHCOM	US NORTHERN COMMAND
NSPD	NATIONAL SECURITY PRESIDENTIAL DIRECTIVE
NTE	NOT TO EXCEED
OITL	OPERATOR-IN-THE-LOOP
PAC-3	PATRIOT ADVANCED CAPABILITY - 3

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PACOM	PACIFIC COMMAND
PAM	PLANNING AND ALLOCATION MATRIX
PDR	PRELIMINARY DESIGN REVIEW
PEO	PROGRAM EXECUTIVE OFFICER
PMS	PROGRAM MANAGEMENT, SEA SYSTEMS COMMAND
PSS	PRIMARY SENSOR SYSTEM
R&D	RESEARCH AND DEVELOPMENT
RDTE&E	RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
RF	RADIO FREQUENCY
RFP	REQUEST FOR PROPOSAL
SA	SITUATIONAL AWARENESS
SAR	SELECTED ACQUISITION REPORT
SBIR	SMALL BUSINESS INNOVATIVE RESEARCH
SBIRS GEO	SBIRS GEOSTATIONARY EARTH ORBIT
SBIRS HEO	SBIRS HIGHLY ELLIPTICAL ORBIT
SBX	SEA-BASED X-BAND RADAR
SCS	SYSTEM CAPABILITY SPECIFICATION
SE&I	SYSTEM ENGINEERING & INTEGRATION
SECDEF	SECRETARY OF DEFENSE
SETA	SCIENTIFIC ENGINEERING AND TECHNICAL ASSISTANCE
SIL	SYSTEM INTEGRATION LABORATORY
SM	STANDARD MISSILE
SOG	STATEMENTS OF GOALS
SOW	STATEMENT OF WORK
SPI	SCHEDULE PERFORMANCE INDEX
SPY-1	AEGIS RADAR
SRALT	SHORT RANGE AIR-LAUNCHED TARGET
SRBM	SHORT RANGE BALLISTIC MISSILE
STRATCOM	US STRATEGIC COMMAND
STSS	SPACE TRACKING AND SURVEILLANCE SYSTEM
SV	SCHEDULE VARIANCE
TBMD	THEATER BALLISTIC MISSILE DEFENSE
TC	TARGETS AND COUNTERMEASURES DIRECTORATE
TCPI	TOTAL COST PERFORMANCE INDEX
TE	TEST AND ASSESSMENT DIRECTORATE
THAAD	THEATER HIGH ALTITUDE AREA DEFENSE
TIM	TECHNICAL INTERCHANGE MEETING
TOG	TECHNICAL OBJECTIVES AND GOALS
TOO	TESTS OF OPPORTUNITY
TR	FORCE STRUCTURE INTEGRATION AND DEPLOYMENT DIRECTORATE
TRL	TECHNOLOGY READINESS LEVEL
TTA	TECHNOLOGY TRANSITION AGREEMENTS
TVA	THRUST VECTOR ACTUATOR
UEWR	UPGRADED EARLY WARNING RADAR
UK	UNITED KINGDOM
USD(AT&L)	UNDER SECRETARY OF DEFENSE (ACQUISITION, TECHNOLOGY AND LOGISTICS)
USFK	US FORCES KOREA
USSTRATCOM	UNITED STATES STRATEGIC COMMAND
VLS	VERTICAL LAUNCHING SYSTEM
WASP	WIDEBODY AIRBORNE TEST PLATFORM
WBS	WORK BREAKDOWN STRUCTURE
WMD	WEAPONS OF MASS DESTRUCTION

# N-11 E-2 ADV HAWKEYE

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

PROGRAM: E-2 AHE

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): E-2 Advanced Hawkeye (AHE)

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: October 1, 2002  
47123 Buse Road, Unit IPT DSN 757-7363; COMM (301) 757-7363  
Patuxent River, MD 20670-1547 robert.labelle@navy.mil

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

RDT&E:

(U) PE 0604234N Project E3051

PROCUREMENT:

(U) APPN 1506 ICN 0195 (Navy) (Shared)

(U) APPN 1506 ICN 0195 is shared with the E-2C Reproduction program, which is funded through FY07 and is reported in a separate SAR. E-2 AHE procurement funding begins in FY08, as shown in section 16.

AS AMENDED  
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E-2 AHE, December 31, 2003

5. (U) References:

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated June 13, 2003.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated June 13, 2003.

6. (U) Mission and Description:

(U) Advanced Hawkeye (AHE) is an all-weather, twin engine, carrier-based, Airborne Early Warning (AEW) aircraft designed to extend task force defense perimeters. It uses the E-2C HAWKEYE 2000 configuration as a baseline. Key AHE objectives include: improved battle space target detection and situational awareness, especially in the littorals; support of Theater Air and Missile Defense (TAMD) operations; and improved Operational Availability for the radar system. The AHE will replace the existing AN/APS-145 radar system and other aircraft systems components that are either obsolete or becoming unsupportable, and upgrade or replace other aircraft systems as required to support and enable the radar upgrade. The AHE mission is to provide advance warning of approaching enemy surface units and aircraft, to vector interceptors or strike aircraft to attack, and to provide area surveillance, intercept, search and rescue, communications relay, and strike/air traffic control. The AHE is intended to meet AEW surveillance, battle management, and TAMD needs as the United States Navy (USN) develops its "Sea Power 21" concepts in support of Joint Vision 2020.

7. (U) Executive Summary:

(U) The Advanced Hawkeye (AHE) is an Acquisition Category (ACAT) ID program based on planned Research, Development, Test, and Evaluation (RDT&E) and procurement funding. Milestone (MS) B occurred on June 6, 2003, at which time the Under Secretary of Defense (Acquisition, Technology and Logistics), approved the program to enter the System Development and Demonstration (SD&D) acquisition phase, and authorized the modification of two Hawkeye 2000 aircraft.

The AHE is the next upgrade in the long series of upgrades that the Department of Navy (DON) has successfully acquired for the E-2C Hawkeye platform since its first flight in 1971. The AHE will maintain open-ocean mission capability while providing the United States Navy (USN) with an effective Littoral Surveillance and Theater Air and Missile Defense (TAMD) capability using the currently fielded E-2C Hawkeye 2000 configuration as the baseline.

AHE Pilot Production begins in FY07. Low Rate Initial Production (LRIP) begins in FY09 and Initial Operational Capability (IOC) occurs in FY11. Authorization for the release of RDT&E funding for the AHE Pilot Production aircraft and FY08 long-lead procurement funding for the LRIP Lot 1 aircraft will be requested

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

from the Defense Acquisition Executive (DAE) at an In-Process Review (IPR) prior to Milestone C. Exit criteria for MS C, which is planned for FY09, was defined at MS B. The four Pilot Production aircraft will be delivered to the fleet for developmental test, risk mitigation, and operational test and evaluation. These aircraft are incrementally funded with RDT&E dollars, in accordance with the DoD Financial Management Regulation regarding funding for test articles.

The SD&D contract for the AHE program was awarded on August 4, 2003 to Northrop Grumman Corporation.

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	MAY 2003	MAY 2003	JUN 2003
Critical Design Review	NOV 2005	NOV 2005	NOV 2005
First Flight	AUG 2007	AUG 2007	AUG 2007
Milestone C	MAR 2009	MAR 2009	MAR 2009
Initial Operational Capability (IOC)	APR 2011	APR 2011	APR 2011
Full Rate Production	DEC 2012	DEC 2012	DEC 2012

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

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Operational	>= 0.98	>= 0.98 / >= 0.85	TBD	>=0.98
Availability (Ao)				(1)
Detection Range			TBD	
Tracking			TBD	

b. Current Change Explanations -- None

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	3183.0	3183.0	3218.7
Procurement	9042.0	9042.0	9175.2
Recurring Flyaway	(7576.2)		(7699.5)
Nonrecurring Flyaway	(276.4)		(279.5)
Total Flyaway	(7852.6)		(7979.0)
Other Weapon System Costs	(378.0)		(344.3)
Peculiar Support	(563.5)		(606.7)
Initial Spares	(247.9)		(245.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	12225.0	12225.0	12393.9
Escalation	2757.0	2757.0	2566.6
Development (RDT&E)	(307.0)	(307.0)	(249.2)
Procurement	(2450.0)	(2450.0)	(2317.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	14982.0	14982.0	14960.5
b. (U) Quantity --			
Development (RDT&E)	6	6	6
Procurement	69	69	69
Total	75	75	75

(U) The Low Rate Initial Production (LRIP) quantities were approved at the Defense Acquisition Board (DAB) at MS B on June 6, 2003.

The quantity of six includes two modified E-2 aircraft and four Pilot Production aircraft.

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

With a production ramp of 4-5-6-7 that begins in FY09, 22 aircraft (30% of the currently planned total buy of 75 aircraft) are planned for procurement in LRIP. This LRIP ramp provides the minimum quantity to maintain the industrial base.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (JUN 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	12225.0	12393.9	
(2) Quantity	75	75	
(3) Unit Cost	163.000	165.252	+1.38
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	9042.0	9175.2	
(2) Quantity	69	69	
(3) Unit Cost	131.043	132.974	+1.47

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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	3490.0	11492.0	-	14982.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.8	+0.4	-	-2.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.8	+0.4	-	-2.4
Current Changes:				
Economic	-3.1	+119.6	-	+116.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-16.2	-104.3	-	-120.5
Other	-	-	-	-
Support	-	-15.1	-	-15.1
Subtotal	-19.3	+0.2	-	-19.1
Total Changes	-22.1	+0.6	-	-21.5
Current Estimate	3467.9	11492.6	-	14960.5

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3183.0	9042.0	-	12225.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+51.0	+208.2	-	+259.2
Other	-	-	-	-
Support	-	+18.7	-	+18.7
Subtotal	+51.0	+226.9	-	+277.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-15.3	-81.8	-	-97.1
Other	-	-	-	-
Support	-	-11.9	-	-11.9
Subtotal	-15.3	-93.7	-	-109.0
Total Changes	+35.7	+133.2	-	+168.9
Current Estimate	3218.7	9175.2	-	12393.9

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-3.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Adjustment to offset inflation indices previously not available. (Estimating)	-1.7	-1.9
Below Threshold Realignment (BTR) of Funding. (Estimating)	-2.4	-2.4
Congressional Reductions and Rate Adjustments. (Estimating)	-8.7	-9.0
Reduction in indirect costs and Navy Working Capital Fund (NWCF) rates. (Estimating)	-0.7	-0.7
Miscellaneous Budget Adjustments. (Estimating)	-2.1	-2.5
RD&E Subtotal	<u>-15.3</u>	<u>-19.3</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+121.0
Economic adjustment for negative program change. (Economic)	N/A	-1.4
Adjustment to offset inflation indices previously not available (Estimating)	-81.2	-103.7
Reduction in indirect costs and Navy Working Capital Fund (NWCF) rates (Estimating)	-1.6	-1.8
Miscellaneous Budget Adjustments (Estimating)	+1.0	+1.2
Reduction in Initial Spares (Support)	-1.7	-2.5
Reduction in Peculiar Support Equipment and Training (Support)	-5.9	-7.3
Reduction in Production Support Costs (Support)	-4.3	-5.3
Procurement Subtotal	<u>-93.7</u>	<u>+0.2</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	
199.76	+1.55	+0.004	--	--	-1.64	--	-0.201	-0.287	199.47

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

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
166.55	+1.73	+0.008	--	--	-1.51	--	-0.219	+0.009	166.56

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	MAY 2003	N/A	JUN 2003
Milestone C	N/A	MAR 2009	N/A	MAR 2009
IOC	N/A	APR 2011	N/A	APR 2011
Total Cost	N/A	14982.0	N/A	14960.5
Total Quantity	N/A	75	N/A	75
Prog Acq Unit Cost	N/A	199.8	N/A	199.5

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

a. RDT&E --

(U) Advanced Hawkeye SD&D:

Northrop-Grumman Corp., Bethpage NY

N00019-03-C-0057, CPAF

Award: August 4, 2003

Definitized: August 4, 2003

Initial Contract Price

Target Ceiling Qty

\$1936.0 \$1936.0 0

Current Contract Price

Target Ceiling Qty  
\$1936.0 \$1936.0 0

Estimated Price At Completion

Contractor Program Manager  
\$1936.0 \$1936.0

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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 (12/31/03)	\$2.9	\$-3.5
Net Change	\$2.9	\$-3.5

Explanation of Change:

(U) The SAR reports the first full Earned Value Management (EVM) data that the program has received. The unfavorable schedule variance (SV) (-\$3.5M) results from a slow down in effort from Northrop Grumman Corporation's (NGC's) Radar sub-vendor as it delays (mutually agreed to by all parties) its Radar Program Decision Review (PDR) from February 2004 to April 2004, and from NGC's Antenna Sub-vendor as it is behind in ordering material and in drawing releases. The favorable cost variance (CV) (\$2.9M) is due to staffing constraints at NGC's sub-vendors and NGC's favorable overhead rates.

(U) Contract Comments:

This is the first time this contract is being reported. This contract was negotiated and awarded without the need for an undefinitized contractual action.

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 (FY02-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-19)</u>	<u>Total</u>
RDT&E	181.2	343.3	597.0	2346.4	3467.9
Procurement	-	-	-	11492.6	11492.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	181.2	343.3	597.0	13839.0	14960.5

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

b. Annual Summary -- E-2 AHE

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 \$
2002				73.7	74.2
2003				105.1	107.0
2004				332.8	343.3
2005				570.5	597.0
2006				572.9	609.2
2007				486.7	526.9
2008				564.9	623.5
2009				249.2	280.5
2010				133.9	153.8
2011				81.1	95.0
2012				35.3	42.2
2013				12.6	15.3
Subtotal	6			3218.7	3467.9

(U) The quantity of six includes two modified E-2 aircraft and four Pilot Production aircraft.

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 \$
2008				157.1	175.9
2009	4	12.9	522.6	652.9	745.6
2010	5	49.5	645.3	818.5	953.5
2011	6	15.7	687.0	887.6	1054.6
2012	7	15.8	778.4	915.7	1109.7
2013	8	15.7	868.7	1002.0	1238.7
2014	8	15.7	864.2	986.8	1244.3
2015	8	15.7	861.0	982.5	1263.6
2016	8	15.7	858.9	964.3	1265.0
2017	8	38.7	850.1	1006.7	1347.1
2018	7	36.3	763.3	753.3	1028.1
2019		47.8		47.8	66.5
Subtotal	69	279.5	7699.5	9175.2	11492.6

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E-2 AHE, December 31, 2003

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	75	279.5	7699.5	12393.9	14960.5

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 184.6

(U) Percent Total Program Expended: 1.2%

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
Total Number of Aircraft	65
Total Number of Operating Years	20
Date of estimate, February 2003	

Advanced Hawkeye Mission Pay & Allowances includes Squadron Personnel only.  
Indirect Costs do not include Fleet Readiness Squadron Support.

The total cost for Base Year (BY\$) Operating and Support (O&S) was based on an O&S model that accounted for attrition, pipeline, and squadrons. The total cost was NOT based on a Type/Model/Series (TMS) report. Current estimate is based on Acquisition Program Baseline (APB), a revised estimate is in work for Preliminary Design Review (PDR).

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

Cost Element	E-2 AHE Average Annual Cost Per Aircraft	E-2C Reproduction Average Annual Cost Per Aircraft
Mission Pay & Allowances	2.2	2.7
Unit Level Consumption	2.5	1.9
Intermediate Maintenance	0.5	0.5
Depot Maintenance	0.9	0.9

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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	E-2 AHE Average Annual Cost Per Aircraft	E-2C Reproduction Average Annual Cost Per Aircraft
Contractor Support	0.0	0.0
Sustaining Support	0.5	0.3
Indirect Costs	1.6	2.0
Total	8.2	8.3

Total O&S Cost	E-2 AHE	E-2C Reproduction
BY\$	10956.0	10848.1
TYS	20774.0	17308.7

Report Creation Date: 03/17/2004 8:41:25 AM

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N-6 COBRA JUDY

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

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): COBRA JUDY REPLACEMENT Program/CJR
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
Commander, Naval Sea Systems Command CAPT Alan Haggerty  
Attn: PEO IWS 2 (CAPT Haggerty) Assigned: November 23, 2002  
1333 Isaac Hall Ave., SE, Stop 2318 DSN 326-2055; COMM (202) 781-2055  
Washington Navy, DC 20376-2318 haggertyae@navsea.navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0303901N  
(U) PE 0305149N

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FOR OPEN PUBLICATION

MAR 25 2004

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-C-223  
B LK

~~Derived from OPNAVINST 55513.8B (5Apr99) Enclosure (82), PEO(IWS),  
03081-  
Downgrade instructions: Not Subject to Automatic Downgrade  
Declassify on: X1, X3~~

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CJR, December 31, 2003

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated October 1, 2003.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated October 1, 2003.

**6. (U) Mission and Description:**

(U) The COBRA JUDY REPLACEMENT (CJR) program replaces the capability of the current United States Naval Ship (USNS) Observation Island (OBIS), its COBRA JUDY radar suite, and other mission essential systems. CJR will fulfill the same mission as the current COBRA JUDY/OBIS. CJR will collect foreign ballistic missile data in support of international treaty verification.

(U) CJR represents an integrated mission solution (ship, radar suite, and other mission equipment). CJR will consist of a radar suite including active S-Band and X-Band phased array radars (PARs), a communications suite, and weather equipment. The radar suite will be capable of autonomous volume search and acquisition. The S-Band PAR will serve as the primary search and acquisition sensor and will be capable of tracking and collecting data on a large number of objects in a multi-target complex. The X-Band PAR will provide very high-resolution data on particular objects of interest. Both systems will employ a variety of waveforms and bandwidths to provide operational flexibility and high quality data collection. CJR's radar systems are projected to have a 30-year operating system life-cycle.

(U) The OBIS replacement platform will be a commercially designed and constructed ship, classed to American Bureau of Shipping standards, certified by the U.S. Coast Guard or Alternate Compliance Program, in accordance with Safety of Life at Sea, and in compliance with other commercial regulatory body rules and regulations, and other Military Sealift Command (MSC) standards. The ship will be U.S. flagged, operated by a Merchant Marine or MSC Civilian Mariner crew, with a minimum of military specifications. Projected service operating life of the ship will be 30 years.

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

(U) This is the initial SAR to be submitted for the COBRA JUDY REPLACEMENT program. The U.S. Navy (USN) will procure one CJR for the U.S. Air Force using only Research, Development, Test, and Evaluation funding. Significant decisions for the CJR program are as follows:

(U) The Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) approved Milestone A (MS A) on August 6, 2002, designated the USN to be Executive Agent, and allowed the system to enter Concept Exploration. Following MS A, the CJR Program Office was established under the Program Executive Office for Integrated Warfare Systems (PEO(IWS)), with the Major Program Manager (MPM) designated as PEO IWS 2.0, MPM, Above Water Sensors. A

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CJR, December 31, 2003

7. (U) Executive Summary (Cont'd):

ship lease versus buy study conducted by the Military Sealift Command (MSC) in November 2002 concluded that ship leasing would result in a significantly higher life cycle cost. An MSC study conducted in December 2002 concluded that the current ship is sustainable through FY 2012. USD(AT&L) approved MS B/C on October 1, 2003, and allowed the program to enter System Development and Demonstration and Production. Initial Operational Capability (IOC), defined as successful completion of operational evaluation, is planned for FY 2011.

(U) The Naval Sea Systems Command (NAVSEA) awarded a contract for the CJR mission equipment (ME) to Raytheon Company, Integrated Defense Systems (RTN) on December 18, 2003. Northrop Grumman Electronic Systems is a major subcontractor for the S-Band radar. As the prime contractor, RTN is responsible for the X-Band radar design and development, X-Band phased array/S-Band phased array integration and radar suite/ME integration onto the ship.

(U) CJR will be turned over to the U.S. Air Force at IOC for all operations and maintenance support.

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

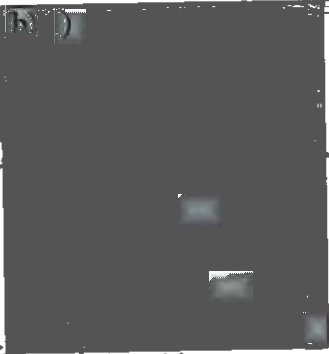




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10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
			TBD	
Propulsion Plant, Sustained and Loiter Speed The ship shall be capable of traveling 12,000 NM at 20 knots sustained speed	Ship Duration = 12,000 NM	Ship / Ship Duration/ Duration = 12,000/ = 12,000 NM / NM	TBD	Ship Duration = 12,000 NM
Mission Capable Rates and Inherent Availability (Ai) To achieve the FMC Ai rqmt, CJR system must be available at least 90% of the time. FMC for CJR is defined as both the platform and the mission equipment functioning	System Availa- bility = 90%	System / System Availa- / Availa- bility =/ bility = 90% / 90%	TBD	System Availa- bility = 90%
Interoperability All top-level Informa- tional Exchange Requirements (IERS) will be satisfied to the standards identi- fied in the threshold and objective values in CJR Top-Level Information Exchange Requirements Matrix	100% of all Top- Level IERS	100% of / 100% of all / Top- Top- / Level Level / IERS IERS / designa- / ted / critical / (IERS / 1-5)	TBD	100% of all Top- Level IERS
Receipt of higher authority direction - C2 - Ops guidance, directives, and orders			TBD	

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10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(1) 				
Receipt of mission guidance - C2 - Guidance, priorities, directives, orders, and plans		b(1) 	TBD	
Planning information				
Receipt of tip-off - Target Launch Warning and Information			TBD	
Raw and semi processed mission data-Metrics & Limited Signature			TBD	
Conduct Maritime Shipping, Distress, Search and Rescue - Voice, Data (Charts/Maps) / Send Node: Mil/Com/Private Ships, Shore and Aircraft / Receive Node: CJR			TBD	
Conduct Maritime Shipping, Distress, Search and Rescue - Voice, Data (Charts/Maps) / Send Node: CJR / Receive Node: Mil/Com/Private Ships, Shore and Aircraft			TBD	

(U) Acronyms and Abbreviations

A1 - Inherent Availability  
 C2 - Command and Control  
 CJR - COBRA JUDY REPLACEMENT  
 COM - Commercial  
 dB - Decibel  
 FMC - Full Mission Capability  
 hrs - Hours

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10a. (U) Performance Characteristics (Cont'd):

Hz - Hertz  
 IER - Information Exchange Requirement  
 km - Kilometer  
 m - Meter  
 MIL - Military  
 min - Minute  
 NM - Nautical Mile  
 Pd - Probability of Detection  
 PRF - Pulse Repetition Frequency  
 RCS - Radar Cross Section  
 sec - Second  
 SNR - Signal-to-Noise Ratio  
 Sq - Square  
 TBD - To Be Determined

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1365.0	1365.0	1378.4
Procurement	0.0	0.0	0.0
Total Sailaway			(0.0)
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 2003 Base-Year \$	1365.0	1365.0	1378.4
Escalation	99.0	99.0	96.1
Development (RDT&E)	(99.0)	(99.0)	(96.1)
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 \$	1464.0	1464.0	1474.5

(U) The U.S. Navy (USN) will use RDT&E, Navy funding to develop and deliver the COBRA JUDY REPLACEMENT (CJR). The USN will not receive procurement, Military Construction (MILCON), or Operations and Maintenance (O&M) funding. The CJR will be turned over to the U.S. Air Force at Initial Operational Capability in FY 2011 for all operations and maintenance support.

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11b. (U) Total Program Cost and Quantity (Cont'd):

b. (U) Quantity --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1	1	1
Procurement	N/A	0	0
Total	1	1	1

(U) Only one RDT&E unit will be acquired; no procurement units are planned.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	1365.0	1378.4	
(2) Quantity	1	1	
(3) Unit Cost	1365.000	1378.400	+0.98
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	1464.0	-	-	1464.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-3.7	-	-	-3.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+14.2	-	-	+14.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+10.5	-	-	+10.5
Total Changes	+10.5	-	-	+10.5
Current Estimate	1474.5	-	-	1474.5

(U) Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	1365.0	-	-	1365.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+13.4	-	-	+13.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.4	-	-	+13.4
Total Changes	+13.4	-	-	+13.4
Current Estimate	1378.4	-	-	1378.4

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-3.7
Adjustment for current and prior inflation. (Estimating)	-0.6	-0.6
Current President's Budget reflects revised estimate due to outyear estimating, however, a net funding shortfall exists through FY 2005. (Estimating)	+14.0	+14.8
RDT&E Subtotal	+13.4	+10.5

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	
N/A	--	--	--	--	--	--	--	--	1474.50

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 A	N/A	N/A	N/A	N/A
Milestone B	N/A	SEP 2003	N/A	OCT 2003
Milestone C	N/A	N/A	N/A	N/A
IOC	N/A	JUN 2011	N/A	JUN 2011
Total Cost	N/A	1464.0	N/A	1474.5
Total Quantity	0	1	0	1
Prog Acq Unit Cost	N/A	1464.0	N/A	1474.5

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --  
 (U) New Contract:  
 Raytheon Company IDS, Sudbury, MA  
 N00024-04-C-5340, Cost-type  
 Award: December 18, 2003  
 Definitized: N/A

			Initial Contract Price		
			Target	Ceiling	Qty
			N/A	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	N/A	0	N/A	N/A

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

None.

(U) Contract Comments:

A letter contract was awarded to Raytheon on December 18, 2003. The estimated contract definitization date is June 2004. The definitized contract will be a cost-type contract with an incentive fee structure that addresses both cost and technical/schedule performance with a base fee not to exceed 2%.

Formal Cost Performance Reporting is scheduled to begin in the fourth quarter of Fiscal Year 2004. Cost Performance data will be included in the next SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions):

<u>Appropriation</u>	<u>Prior Years</u> (FY03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-11)	<u>Total</u>
RDT&E	100.9	124.7	163.4	1085.5	1474.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	100.9	124.7	163.4	1085.5	1474.5

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- CJR

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Sailaway FY 2003 Dollars Nonrec	Sailaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				100.1	100.9
2004				122.1	124.7
2005				157.7	163.4
2006				238.7	251.3
2007				261.5	280.3
2008				230.6	252.0
2009				149.7	166.9
2010				68.8	90.0
2011				38.8	45.0
Subtotal	1			1368.0	1474.5

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1			1368.0	1474.5

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): \$ 28.6

(U) Percent Total Program Expended: 1.9%

(U) Expenditures to date reflect small contract costs only as of December 31, 2003. The major CJR Mission Equipment contract was awarded on December 18, 2003.

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

(U) Operating and Support costs reflect the Office of the Secretary of Defense's Cost Analysis Improvement Group's Independent Cost Estimate, which was included in the Milestone B/C Acquisition Program Baseline. System Operating life is 30 years. Quantity is one (1) unit.

b. (U) Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	CJR Average annual cost per year	COBRA JUDY (Costs not known at this time)
Mission Pay & Allowances	8270.0	N/A
Unit Level Consumption	5582.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	5742.0	N/A
Contractor Support	2794.0	N/A
Sustaining Support	7376.0	N/A
Indirect Costs	32.0	N/A
Indirect Costs	900.0	N/A
Total	30696.0	N/A

Total O&S Cost	CJR	COBRA JUDY
BY\$ (In Millions)	950.2	N/A
TY\$ (In Millions)	1522.8	N/A

Report Creation Date: 03/22/2004 5:35:35 PM

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# A-7 EXCALIBUR

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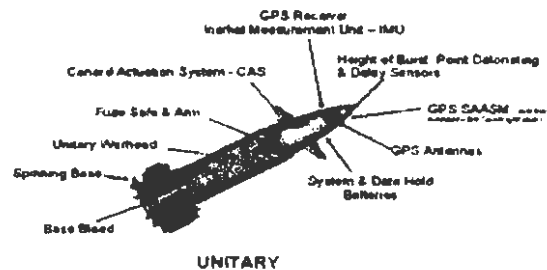
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) MAR 22 2004

PROGRAM: Excalibur (XM982)

AS OF DATE: December 2003  
SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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1. Designation and Nomenclature (Popular Name): EXCALIBUR XM982 155mm Extended Range Guided Artillery Projectile

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-AMO-CAS	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 654814 Project 708 (Shared)  
PROCUREMENT:  
APPN 2034 ICN E80103 (Army)

Excalibur's RDTE funding line supports the Excalibur Unitary variant. This funding line is also shared with the Spin Stabilized Sensor Fuzed Munition and future block upgrades.

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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:**

Excalibur provides improved fire support through a Precision Guided Extended Range family of munitions with greatly increased accuracy and reduced collateral damage in support of the Objective Force. The Excalibur will be compatible with the Future Combat Systems (FCS) Non-Line of Sight Cannon (NLOS-C) and the digitized Joint Lightweight 155mm (JLW155) howitzer. The Excalibur will allow greater standoff and faster defeat of potential threats, increasing soldier survivability while reducing the ammunition workload. Excalibur Unitary is an international program, teamed with the Kingdom of Sweden (KoS), who will contribute resources towards the development in accordance with an established Project Agreement. This system supports the Transformation Campaign Plan (TCP).

**7. Executive Summary:**

In May 2002, the Excalibur was designated an Acquisition Category (ACAT) ID program. The Defense Acquisition Executive subsequently delegated Milestone Decision Authority (MDA) to the Army Acquisition Executive (AAE). The Operational Requirements Document (ORD) was revised to change the firing platform from the Crusader, Paladin, and JLW155mm howitzers to the Future Combat Systems (FCS), Non Line of Sight cannon (NLOS-C), and the Dual Purpose Conventional Munition (DPICM) variant was replaced with a Discriminating variant. The current ORD revision requires that Excalibur be capable of being fired from the JLW155 and Paladin platforms in addition to NLOS-C. Joint Requirements Oversight Council (JROC) approval of the revised ORD and an update to the Approved Acquisition Program Baseline (APB) are planned for March 2004.

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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	MAY 1997	N/A	MAY 1997
Milestone C	JUN 2006	N/A	JUL 2006 (Ch-1)
Fielding (IC)	SEP 2006	N/A	SEP 2006 (Ch-2)
IOT&E	DEC 2008	N/A	MAR 2008 (Ch-3)
FRP IPR	JUN 2008	N/A	JUN 2008
IOC	SEP 2008	N/A	SEP 2008
IOC	JUN 2008	N/A	

Acronym List:

FRP IPR - Full Rate Production In-Process Review  
 IC - Initial Capability  
 IOC - Initial Operational Capability  
 IOT&E - Initial Operational Test and Evaluation

b. Current Change Explanations --

(Ch-1) The Milestone C changed from Jun 2006 to Jul 2006 to allow time for additional test assessment.

(Ch-2) The Fielding (IC) changed from Sep 2008 to Sep 2006 to accommodate the early fielding plan.

(Ch-3) The IOT&E changed from Dec 2008 to Mar 2008 to correct the previous SAR.

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9b. Schedule (Cont'd):

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Accuracy (CEP)	<= 10m	N/A	/ N/A	TBD	<=20m
Interoperability	All top- level IERs	N/A	/ N/A	TBD	All top-(Ch-1) level IERs
Reliability	N/A	N/A	/ N/A	TBD	
Effectiveness	N/A	N/A		TBD	>= (Ch-1) 155mm M107 (HE) Projec- tile

Acronym List:

CEP - Circular Error Probability

HE - High Explosive

IERs - Information Exchange Requirements

b. Current Change Explanations --

<= 10m All top-levels (IERs)

(Ch-1) New parameters added since last report.

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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)	640.7		807.4
Procurement	3357.0		2531.2
Recurring flyaway	(3341.6)		(2529.4)
Nonrecurring flyaway	(15.4)		(1.8)
Flyaway			(0.0)
Unknown			(0.0)
Total Flyaway	(3357.0)		(2531.2)
PIAFS			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Acquisition O&M	0.0		0.0
Total FY 2003 Base-Year \$	3997.7		3338.6
Escalation	801.0		604.3
Development (RDT&E)	(22.1)		(37.8)
Procurement	(778.9)		(566.5)
Construction (MILCON)	(0.0)		(0.0)
Acquisition O&M	(0.0)		(0.0)
Total Then Year \$	4798.7		3942.9
b. Quantity --			
Development (RDT&E)	269	N/A	269
Procurement	76408	N/A	61483
Total	76677	N/A	61752

Note: The proposed LRIP Quantity (FY05 through FY08) of 5598 is pending approval.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (N/A)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	0.0	3338.6	
(2) Quantity	N/A	61752	
(3) Unit Cost	N/A	0.054	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	N/A	2531.2	
(2) Quantity	N/A	61483	
(3) Unit Cost	N/A	0.041	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	-2.2	+36.7	-	+34.5
Quantity	-	-1057.5	-	-1057.5
Schedule	-	-17.4	-	-17.4
Engineering	+183.9	-	-	+183.9
Estimating	+0.7	-	-	+0.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+182.4	-1038.2	-	-855.8
Total Changes	+182.4	-1038.2	-	-855.8
Current Estimate	845.2	3097.7	-	3942.9

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	640.7	3357.0	-	3997.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-825.8	-	-825.8
Schedule	-	-	-	-
Engineering	+165.9	-	-	+165.9
Estimating	+0.8	-	-	+0.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+166.7	-825.8	-	-659.1
Total Changes	+166.7	-825.8	-	-659.1
Current Estimate	807.4	2531.2	-	3338.6

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-2.2
Addition of Block 1b of the spiral development previously unfunded. (Engineering)	+165.9	+183.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.7
RD&E Subtotal	+166.7	+182.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+36.7
Quantity decrease of 14,925 from 76408 to 61483. (Quantity)	-825.8	-1057.5
Accelerated schedule by 1 year (from FY 2006-2018 to FY 2005-2018). (Schedule)	0.0	-17.4
Procurement Subtotal	-825.8	-1038.2

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**14. Unit Cost and Other History (Then-Year Dollars in Millions):**

**a. Program Acquisition Unit Cost (PAUC) History**

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.063	+0.001	-0.003	--	+0.003	--	--	--	+0.001	0.064

**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	
0.054	+0.001	-0.005	--	--	--	--	--	-0.004	0.050

**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	JUL 2006
IOC	N/A	SEP 2008	N/A	SEP 2008
Total Cost	N/A	4798.7	0.0	3942.9
Total Quantity	N/A	76677	0	61752
Prog Acq Unit Cost	N/A	0.1	0.0	0.1

**15. Contract Information (Then-Year Dollars in Millions):**

**a. RDT&E --**

XM982 ER Projectile:

Raytheon, Tucson, AZ  
DAAE30-98-C-103, CPIF W/AF  
Award: January 23, 1998  
Definitized: N/A

Initial Contract Price  
Target Ceiling Qty

\$51.2 N/A 0

Current Contract Price

Target Ceiling Qty  
\$458.2 N/A 0

Estimated Price At Completion  
Contractor Program Manager  
\$458.2 \$458.2

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**15a. Contract Information (Cont'd):**

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.8	\$-2.7
Cumulative Variances To Date	<u>\$-0.4</u>	<u>\$-3.6</u>
Net Change	\$3.4	\$-0.9

**Explanation of Change:**

The major contributor to the favorable net change of the cost variance is the rebaselining of the contract in February 2003. The contract was rebaselined to reflect the merged Excalibur/Trajectory Correctable Munition (TCM) international program.

The major contributor to the unfavorable net change of the schedule variance was due to the Lanyard issue on the new Soft Recovery Vehicle which led to additional testing and delayed qualification.

**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 Conventional Munition (DPICM) projectile has increased to \$458.2 million for development of a precision guided projectile incorporating Global Positioning System (GPS) and Micro Electro-Mechanical Systems (MEMS) Internal Measurement Units (IMU) technology.

Note: Current contract TARGET price included \$21.2 million contractor share which is not included in the ceiling price.

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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 (FY06-18)</u>	<u>Total</u>
RDT&E	221.4	116.2	126.3	381.3	845.2
Procurement	-	-	17.0	3080.7	3097.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	221.4	116.2	143.3	3462.0	3942.9

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				9.5	9.0
1999				7.9	7.6
2000				10.2	10.0
2001				28.9	28.6
2002				59.4	59.3
2003				100.9	102.1
2004				113.4	116.2
2005				121.5	126.3
2006				108.3	114.4
2007				88.7	95.4
2008				55.8	61.2
2009				60.4	67.6
2010				35.7	40.7
2011				1.7	2.0
Subtotal	269			807.4	845.2

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>
2005	183	0.3	16.0	16.3	17.0
2006	805	0.5	50.6	51.1	54.4
2007	1320		73.8	73.8	80.0
2008	3290		157.9	157.9	174.5
2009	5746		253.3	253.3	285.5
2010	5749	0.3	240.6	240.9	277.0

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Excalibur (XM982), December 31, 2003

16b. Program Funding Summary (Cont'd):

Appropriation: 2034 - Procurement of Ammunition, Army

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2011	3891	0.7	161.3	162.0	190.0
2012	4071		165.5	165.5	198.0
2013	4027		161.4	161.4	197.0
2014	5530		216.9	216.9	270.0
2015	5789		223.7	223.7	284.0
2016	5830		222.4	222.4	288.0
2017	7307		274.3	274.3	362.3
2018	7945		311.7	311.7	420.0
Subtotal	61483	1.8	2529.4	2531.2	3097.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	61752	1.8	2529.4	3338.6	3942.9

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): \$ 202.7

Percent Total Program Expended: 5.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The Army Cost Position (ACP) was approved on February 26, 2004. The Army is coordinating an Acquisition Program Baseline (APB) that includes the ACP for approval that includes a formal cost position defining the operating and support cost estimate. The following is provided as an interim measure until the APB is approved, at which time this data will be updated accordingly. The Operating and Support ACP is based on a system operating life of 20 years and operating quantity of 61,483.

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Excalibur (XM982), December 31, 2003

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)

Cost Element	Excalibur XM982 (Average Annual Cost For All Projectiles)	NA
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
Sustaining Support	N/A	N/A
Stockpile Surveillance	1.0	N/A
Demilitarization	0.6	N/A
Total	1.6	N/A

Total O&S Cost	Excalibur XM982	NA
BY\$ (In Millions)	33.2	N/A
TY\$ (In Millions)	53.4	N/A

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A-12 HIMARS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: HIMARS

AS OF DATE: December 31, 2003

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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 Earnest D. Harris
Precision Fires Rocket & Missile Sys	Assigned: October 2, 2003
ATTN: SFAE-MSL-PF	DSN 746-1195; COMM 256-876-1195
Redstone Arsenal, AL 35898-8000	earnest.harris@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 C03001 (Army)

(U) APPN 2032 ICN CA0288 (Army)

MILCON:

(U) PE TBD

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FOR OPEN PUBLICATION

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

~~Classified by: [redacted] Security Classification: [redacted], 8 Oct 98  
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5. (U) References:

SAR Baseline (Production Estimate):

(U) Army Acquisition Executive (AAE) Approved Acquisition Program Baseline, dated March 20, 2003.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 20, 2003.

6. (U) Mission and Description:

(U) The HIMARS fully supports the Army transformation to a more deployable, affordable, and lethal expeditionary force. HIMARS is a wheeled, indirect fire launcher system that is capable of firing all rockets and missiles in the current and future Multiple Launch Rocket System (MLRS) Family of Munitions (MFOM). The HIMARS launcher is mounted on a modified Family of Medium Tactical Vehicles (FMTV) 6X6 all-wheel drive 5-ton truck chassis. HIMARS will provide rocket/missile capability to joint, current and future forces through a lighter weight, more deployable system in both early and forced entry scenarios. The HIMARS mission, as part of the 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 Force Unit of Action (UA)/Unit of Employment (UE) support. HIMARS, as part of the Future Force, will provide fires that shape the battlefield, isolate the UA, and shield the force. HIMARS will replace all MLRS M270 launchers not upgraded to M270A1s and selected M198 Howitzers organic to Light Corps Artilleries.

HIMARS is an evolutionary system planning to spiral in Future Combat Systems technology as it matures. The basic requirements are identified in the Block I performance characteristics, as are the Block II key performance parameters (KPPs) such as increased crew protection, improved initialization, and sensor-to-effects capability. The Joint Requirements Oversight Council (JROC) approved all Block II KPP requirements and identified them as Block I objective requirements. However, this SAR only reflects funding for Block I requirements. The costs of the Block II KPPs (Block I objective requirements) have yet to be determined.

7. (U) Executive Summary:

(U) 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 Technology 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. These ACTDs performed successfully during their deployment in Operation Iraqi Freedom. Congress and the Army have accelerated the HIMARS First Unit Equipped (FUE) to 2QFY05. The program's System Development and

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7. (U) Executive Summary (Cont'd):

Demonstration Developmental and Operational Test results have been excellent and the system has demonstrated all KPPs. HIMARS is a Future Combat System complimentary weapon system that supports joint expeditionary forces and is 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. The Army Acquisition Executive (AAE) approved entrance into Low Rate Initial Production (LRIP) in March 2003. A Long Lead Item (LLI) contract, to support the LRIP, was awarded in 1QFY03.

The Path Through Operational Test (OT) Contract was awarded in May 2003. This 19-month contract is for testing before and during OT; expected cost is \$20M.

Two LRIP contracts have been awarded to Lockheed Martin Missiles and Fire Control - Dallas. LRIP I was awarded on March 27, 2003 for 30 HIMARS launchers (28 Army and 2 US Marine Corps (USMC)), and LRIP II was awarded on December 18, 2003 for 25 HIMARS launchers (24 Army and 1 USMC). Cabs and chassis will be provided as government furnished equipment to the contractor through Project Manager, Medium Tactical Vehicles.

The Maturation Launchers have been upgraded to the LRIP configuration including integration of the Low Cost Fire Control Panel (LCFCP) and the Improved Weapon Interface Unit (IWIU) which gives HIMARS the capability to fire Guided Multiple Launch Rocket Systems (GMLRS). Launcher software has been upgraded from Version G to Version H to accommodate the hardware upgrades. Launcher/GMLRS integration testing is ongoing and has been successful thus far.

The JROC approved the HIMARS Operational Requirements Document (ORD) and validated both Block I and Block II KPPs on January 5, 2004.

A Joint C-130/HIMARS deployment exercise and live fire event was successfully conducted on November 19, 2003 between Redstone Arsenal and Ft. Sill utilizing an LRIP configured combat loaded HIMARS launcher. The joint exercise was supported by Air Force air and ground crews, a USMC Fire Direction Center, and an Army "combat loaded" HIMARS and launcher crew.

A successful Extended System Integration Test II was conducted in December 2003 at Redstone Arsenal utilizing two production representative HIMARS launchers. Scoring Conference was conducted in January 2004. Event reliability will be evaluated during the Corrective Action Review Team and Reliability, Availability, and Maintainability (RAM) Assessment Meetings to be conducted in February 2004.

The Joint HIMARS Operations Mode Summary flight demonstration was conducted in January 2004. One HIMARS launched 180 rounds at the Operational Mode Summary/Mission Profile (OMS/MP) rate over a 2-day period. There were three system aborts experienced over the 180 rounds fired. Scoring Conference was conducted in January 2004. Event reliability will be evaluated during the Corrective Action Review Team and RAM Assessment Meetings to be conducted in February 2004.

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7. (U) Executive Summary (Cont'd):

Program is on schedule to meet critical initial OT date (4QFY04) and FUE (2QFY05).

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 B	DEC 1999	DEC 1999	DEC 1999
Milestone C	MAR 2003	MAR 2003	MAR 2003
LRIP Contract Award	APR 2003	APR 2003	APR 2003
FUE	MAR 2005	MAR 2005	MAR 2005
IOTE			
Start	SEP 2004	SEP 2004	SEP 2004
Finish	DEC 2004	DEC 2004	DEC 2004
FRP IPR	JUN 2005	JUN 2005	JUN 2005

(U) Acronym List:

FRP - Full Rate Production  
FUE - First Unit Equipped  
IOTE - Initial Operational Test and Evaluation  
IPR - Interim Program Review  
LRIP - Low Rate Initial Production

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9b. (U) Schedule (Cont'd):

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate	
(b)(1)	(b)(1)				
Reaction Time Total Mission Cycle (Rockets) (Min)					
Reload Cycle Time (min)					
Transportability (fully combat loaded)					
C130 Load (min)	25	25 / 45	15	15	(Ch-1)
C130 Off-Load (min)	5	5 / 20	15	15	
Fire All Current and Future MFOM	No de- grada- tion in MFOM effec- tiveness	No de- grada- tion in MFOM effec- tiveness	No de- grada- tion in MFOM effec- tiveness	Effec- tiveness equiv- alent to M270/M27 OA1 demon- strated perfor- mance	No degrada- tion in MFOM effect- iveness
Interoperability w/FA Voice and Digital Systems	Use AFATDS	Use / Use AFATDS / AFATDS	Use AFATDS used	Use AFATDS	
Block II Enhanced C2	Perform techni- cal and tactical fire control using JVMF opera- ting on the T1	Perform / Receive techni- / and cal and / execute tactical/ fire fire / mission control / digital- using / ly from JVMF / FA opera- / Sensor ting on / the / T1 /	TBD	Perform techni- cal and tactical fire control using JVMF opera- ting on the T1	
Block II Increased Crew Protection	Cab survives direct hit by Artil- lery: 155 frag @ 60m;	Cab / Cab survives/ survives direct / direct hit by / hit by Artil- / Artil- lery: / lery: 155 / 155 frag @ / frag @ 60m; / 80m;	TBD	Cab survives direct hit by Artil- lery: 155 frag @ 60m;	

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10a. (U) Performance Characteristics (Cont'd):

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
	<u>Ammo:</u>	<u>Ammo:</u> / <u>Ammo:</u>		<u>Ammo:</u>
	7.62mm x	7.62mm x/ 7.62mm x		7.62mm x
	51 AP,	51 AP, / 39 API		51 AP,
	7.65mm x	7.65mm x/		7.65mm x
	54R API	54R API /		54R API
Block II Improved	Transi-	Transi- / Transi-	TBD	Transi-
Initialization	tion	tion / tion		tion
	from	from / from		from
	power-on	power-on/ power-on		power-on
	to an	to an / to an		to an
	opera-	opera- / opera-		opera-
	tional	tional / tional		tional
	ready	ready / ready		ready
	state in	state in/ state in		state in
	5.5 mins	5.5 mins/ 4 mins		5.5 mins
	given a	given a / given a		given a
	stored	stored / stored		stored
	heading,	heading, / heading,		heading,
	valid	valid / valid		valid
	location	location/ location		location
	and	and / and		and
	valid	valid / valid		valid
	GPS keys	GPS keys/ GPS keys		GPS keys
Block II Reliability				
Mean Time Between	45	45 / 34	TBD	45
Essential Function				
Failures (MTBEFF)				
(hrs)				
Mean Time Between	81	81 / 58	TBD	81
System Aborts				
(MTBSA) (hrs)				

(U) Demonstrated performance values were collected during System Development and Demonstration (SDD) testing and Production Qualification Testing (PQT) II.

Acronym List:

AFATDS - Advanced Field Artillery Tactical Data System  
 API - Armor Piercing Incendiary  
 FA - Field Artillery  
 frag - fragmentation  
 GPS - Global Positioning System  
 JVMP- Joint Variable Message Format  
 MFOM - Multiple Launch Rocket System Family of Munitions

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10b. (U) Performance Characteristics (Cont'd):

b. Current Change Explanations --

(U) (Ch-1) The performance characteristic for Transportability (fully combat loaded), C-130 Load (Min) changed from 25 to 15 based on timeline achieved/recorded at a HIMARS/C-130 deployment exercise conducted in November 2003.

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	206.3	206.3	203.4
Procurement	3421.1	3421.1	3574.1
Recurring Rollaway	(3024.1)		(3125.7)
Nonrecurring Rollaway	(23.0)		(21.7)
Total Rollaway	(3047.1)		(3147.4)
Other Weapon Systems	(194.8)		(210.5)
Peculiar Support	(33.8)		(69.1)
Initial Spares	(145.4)		(147.1)
Construction (MILCON)	84.2	84.2	77.4
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	3711.6	3711.6	3854.9
Escalation	676.8	676.8	786.4
Development (RDT&E)	(0.1)	(0.1)	(-0.4)
Procurement	(653.8)	(653.8)	(762.7)
Construction (MILCON)	(22.9)	(22.9)	(24.1)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4388.4	4388.4	4641.3
b. (U) Quantity --			
Development (RDT&E)	6	6	6
Procurement	888	888	888
Total	894	894	894

(U) In March 2003, the AAE authorized an LRIP quantity of 89 HIMARS launchers which equals the 10% guideline established in 10 U.S.C. 2400, Federal Acquisition Streamlining Act.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	3711.6	3854.9	
(2) Quantity	894	894	
(3) Unit Cost	4.152	4.312	+3.85
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	3421.1	3574.1	
(2) Quantity	888	888	
(3) Unit Cost	3.853	4.025	+4.46

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	206.4	4074.9	107.1	4388.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+2.9	+0.1	+3.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+2.9	+0.1	+3.0
Current Changes:				
Economic	-0.3	+30.3	+2.0	+32.0
Quantity	-	-	-	-
Schedule	-	+57.8	-	+57.8
Engineering	-	-	-	-
Estimating	-3.1	+108.7	-7.7	+97.9
Other	-	-	-	-
Support	-	+62.2	-	+62.2
Subtotal	-3.4	+259.0	-5.7	+249.9
Total Changes	-3.4	+261.9	-5.6	+252.9
Current Estimate	203.0	4336.8	101.5	4641.3

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	206.3	3421.1	84.2	3711.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	+2.7	-	+2.8
Other	-	-	-	-
Support	-	+0.8	-	+0.8
Subtotal	+0.1	+3.5	-	+3.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+30.0	-	+30.0
Engineering	-	-	-	-
Estimating	-3.0	+67.6	-6.8	+57.8
Other	-	-	-	-
Support	-	+51.9	-	+51.9
Subtotal	-3.0	+149.5	-6.8	+139.7
Total Changes	-2.9	+153.0	-6.8	+143.3
Current Estimate	203.4	3574.1	77.4	3854.9

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Revised program estimate to reflect budget adjustments. (Estimating)	-3.3	-3.4
RDT&E Subtotal	-3.0	-3.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+30.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.0
Refinement of estimate based on actuals for engineering services (Estimating)	+24.6	+32.2
Refinement of estimate due to change in production profile (Estimating)	+42.0	+75.5
Stretchout of annual procurement buy profile based on budgetary reductions which result in fielding delays. (Schedule)	+30.0	+57.8
Refinement of estimate for Initial Spares (Support)	+1.7	+2.7

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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>
Refinement of estimate for Peculiar Support (resupply vehicle and resupply trailer) (Support)	+35.3	+42.4
Refinement of Other Weapon Systems estimate for Life Cycle Contractor Support (LCCS) requirements (database development and management system requirements) (Support)	+14.9	+17.1
Procurement Subtotal	<u>+149.5</u>	<u>+259.0</u>

(3) MILCON

Revised escalation indices. (Economic)	N/A	+2.0
Revised program estimate due to facility upgrade to accommodate HIMARS in FY 06 not being funded. (Estimating)	-6.8	-7.7
MILCON Subtotal	<u>-6.8</u>	<u>-5.7</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	
4.82	--	--	--	--	-0.011	--	+0.099	+0.088	4.91

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	
4.91	+0.036	-0.001	+0.065	--	+0.113	--	+0.070	+0.283	5.19

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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	
4.63	--	--	--	--	-0.137	--	+0.100	-0.037	4.59

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	
4.59	+0.034	--	+0.065	--	+0.126	--	+0.070	+0.295	4.88

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	DEC 1999	DEC 1999
Milestone C	N/A	MAR 2003	MAR 2003	MAR 2003
FUE	N/A	MAR 2005	MAR 2005	MAR 2005
Total Cost	N/A	4312.9	4388.4	4641.3
Total Quantity	N/A	894	894	894
Prog Acq Unit Cost	N/A	4.8	4.9	5.2

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
 (U) HIMARS LRIP I:  
 Lockheed Martin, Dallas, TX  
 DAAH0103C0005, FFP/CPFF  
 Award: March 27, 2003  
 Definitized: June 30, 2003

Initial Contract Price		
Target	Ceiling	Qty
\$103.8	N/A	30

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$104.2	N/A	30	\$104.2	\$104.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP/CPFF contract.

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HIMARS, December 31, 2003

15. (U) Contract Information (Cont'd):

(U) Contract Comments:

The increase to Target Price of the LRIP I contract is due to additional effort to repair defective government furnished equipment.

The HIMARS LRIP I contract contains CLINs that are Cost Plus Fixed Fee (CPFF); however, the majority of the contract is Firm Fixed Price (FFP). Long Lead Items (LLIs), awarded in December 2002, are included in this contract. The USMC portion for LRIP I is \$6.6M including \$2.0M for LLIs.

The total quantity of 30 includes 28 HIMARS for the Army and 2 for the USMC.

(U) HIMARS LRIP II: Lockheed Martin, Dallas, TX DAAH0103C0005, FFP/CPFF Award: December 18, 2003 Definitized: December 18, 2003	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$88.9	N/A	25

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$88.9	N/A	25	\$88.9	\$88.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP/CPFF contract.

(U) Contract Comments:

The HIMARS LRIP II contract contains CLINs that are CPFF; however, the majority of the contract is FFP.

The total quantity of 25 includes 24 HIMARS for the Army and 1 for the USMC.

The USMC portion for LRIP II is \$3.2M.

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HIMARS, December 31, 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 (FY99-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-23)</u>	<u>Total</u>
RDT&E	171.9	20.6	10.5	-	203.0
Procurement	133.6	130.7	173.3	3899.2	4336.8
MILCON	-	-	-	101.5	101.5
O&M	-	-	-	-	-
Total	305.5	151.3	183.8	4000.7	4641.3

b. Annual Summary -- HIMARS

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 2003 Dollars Nonrec	Rollaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				5.5	5.3
2000				35.6	34.8
2001				47.9	47.4
2002				55.7	55.6
2003				28.5	28.8
2004				20.1	20.6
2005				10.1	10.5
Subtotal	6			203.4	203.0

(U) FY 01 and FY 02 RDTE reflects actuals.

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 \$
2003	28	5.7	116.2	130.7	133.6
2004	24		103.0	126.1	130.7
2005	37		144.0	164.5	173.3
2006	41	4.5	160.0	185.6	199.1
2007	51	10.3	186.3	216.9	237.2
2008	58	1.2	194.4	219.6	244.9
2009	60		195.1	222.6	253.2
2010	62		199.7	224.8	260.8
2011	62		197.4	225.5	266.9
2012	61		191.9	219.1	264.5
2013	61		192.5	217.1	267.4

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HIMARS, December 31, 2003

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 \$
2014	54		170.6	203.0	255.0
2015	54		169.2	202.2	259.1
2016	56		175.6	200.4	261.9
2017	57		176.2	200.3	267.0
2018	57		176.1	200.2	272.2
2019	65		377.5	223.8	310.4
2020				52.5	74.2
2021				37.0	53.4
2022				51.6	76.0
2023				50.6	76.0
Subtotal	888	21.7	3125.7	3574.1	4336.8

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Rollaway FY 2003 Dollars Nonrec	Rollaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2013				5.2	6.5
2014				15.5	19.7
2015				15.5	20.1
2016				15.5	20.4
2017				15.5	20.8
2018				10.2	14.0
Subtotal				77.4	101.5

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	894	21.7	3125.7	3854.9	4641.3

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): \$ 194.4

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HIMARS, December 31, 2003

17b. (U) Delivery/Expenditure Information (Cont'd):

(U) Percent Total Program Expended: 4.2%

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, 33 launchers for Table of Distribution and Allowances (TDA) requirements at the training facilities, and a HIMARS service life of 20 years. The reflected O&S costs were estimated in the March 2003 Army Cost Position (ACP). The ACP 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 Army Cost Position. Life Cycle Contractor Support (LCCS) is planned for HIMARS. The basis to calculate a cost per battalion (BN) will change by using the 45 tactical BN times their service life of 20 years which will then be divided into the total O&S costs. This results in a revised total annual cost per BN of \$11.6M (\$10,469.2/(45\*20)).

The MLRS M270 Launcher is the antecedent system for the HIMARS.

b. (U) Costs -- (FY 2003 Constant (Base-Year) Dollars in Millions)

Cost Element	HIMARS Avg Annual Cost Per Battalion	MLRS M270 Avg Annual Cost Per Battalion
Mission Pay & Allowances	9.4	17.7
Unit Level Consumption	1.0	0.3
Intermediate Maintenance	0.1	0.3
Depot Maintenance	0.1	1.5
Contractor Support	0.1	N/A
Sustaining Support	0.3	N/A
Indirect Costs	0.6	1.2
Total	11.6	21.0

Total O&S Cost	HIMARS	MLRS M270
BY\$ (In Millions)	10469.2	29201.0
TY\$ (In Millions)	18451.2	44339.8

Report Creation Date: 03/19/2004 10:49:54 AM

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N-2 AGM-88E

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: AGM-88E AARGM

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): AGM-88E Advanced Anti-Radiation Guided Missile (AARGM)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

PEO(W)

Attn: PMA-242, Bldg 2272, R252

47123 Buse Road, Unit IPT

Patuxent River, MD 20670-1557

CAPT Mark Converse

Assigned: June 19, 2003

DSN 757-7422; COMM 301-757-7422

mark.converse@navy.mil

AS AMENDED  
IS AMENDED  
FOR OPEN PUBLICATION

MAR 25 2004

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4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U) PE 0205601N Project A2185

PROCUREMENT:

(U) AARGM 1507 10N 232700 (Navy) (Shared)

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-C-209  
B. R. H.

~~Derived from AARGM Security Classification Guide  
Downgrade instructions  
Declassify on: X3~~

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04-C-0714

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated July 29, 2003.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 29, 2003.

**6. (U) Mission and Description:**

(U) The AGM-88E Advanced Anti-Radiation Guided Missile (AARGM) program will field a major system upgrade to the AGM-88 High Speed Anti-Radiation Missile (HARM) inventory. AARGM will provide a significant enhancement to Naval operational capability in the Offensive Counter Air/Suppression of Enemy Air Defenses (SEAD) mission area by technological upgrade to the HARM guidance system to counter enemy use of simple, cheap countermeasures and tactics such as mobility and radar shutdown. AARGM will be employed in the Offensive Counter Air/SEAD role in direct support of all mission areas within the objective force (e.g., Strike Warfare, Amphibious Warfare, Anti-Surface Ship Warfare, Command and Control Warfare and Information Warfare) providing a rapid, organic response to air defense threats ranging from Smaller Scale Contingencies (SSC) to Major Theater War (MTW). It will be employed by Naval aircraft operating from both sea and land bases.

The AGM-88E AARGM missile provides a new multi-mode guidance section and modified control section mated with existing HARM propulsion and warhead sections. The new guidance section will have a passive anti-radiation homing (ARH) receiver and associated antennae, a Global Positioning System/Inertial Navigation System (GPS/INS) and millimeter wave (MMW) radar for terminal guidance capability. AARGM will also have the capability to transmit terminal (end game) data via a Weapon Impact Assessment (WIA) transmitter to national satellites just before AARGM impacts its target. Additionally, a provision to receive off-board targeting information, via the Integrated Broadcast System (IBS), is incorporated in the weapon system.

AARGM is the acquisition upgrade to HARM, the Navy's only Defense Suppression missile. Acquisition of AARGM is critical to addressing the limitations and shortcomings of HARM including: (1) counter shutdown capability, (2) limited lethality against advanced threat air defense units, (3) limited captive carry life, (4) no impact reporting capability and (5) no off-board targeting reception capability.

The AGM-88E AARGM has been selected by the Navy for use on the F/A-18C/D and will be compatible with the F/A-18E/F, EA-6B (and follow-on aircraft), F-16C/J and JSF external carriage (post IOC).

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AGM-88E AARGM, December 31, 2003

7. (U) Executive Summary:

(U) AARGM successfully transitioned from the Advanced Technology Demonstration (ATD)/Advanced Concept Technology Demonstration (ACTD) phases into System Development and Demonstration (SD&D) at Milestone B in June 2003. Low Rate Initial Production (LRIP) (Milestone C) is scheduled for 2008. Full Rate Production and Deployment Phase is scheduled for 2010-2015. A total of 1750 AARGMs are planned for production with Initial Operational Capability (IOC) in 2009.

Per the USD(AT&L) letter dated August 6, 2002, the AARGM SD&D is designated as an Acquisition Category (ACAT) 1C due to the total funding for the program (expended in ATD and projected expenditures) and strong Congressional interest in the program.

The AGM-88E AARGM has been selected by the Navy for use on the F/A-18C/D and will be compatible with the F/A-18E/F, EA-6B (and follow-on aircraft), F-16C/J and JSF external carriage (post IOC).

A successful System Design Review (SDR) was held in October. The contractor, ATK Missile Systems Company, LLC (AMSC), has successfully completed allocation of the requirements to the approved functional baseline.

In October, a Request for Proposal (RFP) went to AMSC for the exercising of the Quick Bolt receiver contract option. A proposal was received, negotiations have completed and the contract modification is expected to be on contract in March 2004.

In December, an Integrated Baseline Review (IBR) was held with AMSC. The Program Management Baseline (PMB) was established and all Earned Value Management (EVM) reporting will be measured against this baseline once IBR action items have been closed out. Reporting to the PMB will begin in Spring of 2004.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone B Decision	APR 2003	APR 2003	JUN 2003 (Ch-1)
SD&D Contract Award	MAY 2003	MAY 2003	JUN 2003 (Ch-1)
Beginning of TECHEVAL	MAR 2007	MAR 2007	MAR 2007
Beginning of OPEVAL	DEC 2007	DEC 2007	MAY 2008 (Ch-2)
Milestone C Decision (LRIP)	MAR 2008	MAR 2008	MAR 2008
FRP Decision	AUG 2009	AUG 2009	AUG 2009
FRP Contract Award	JAN 2010	JAN 2010	JAN 2010
IOC	MAY 2010	MAY 2010	SEP 2009 (Ch-3)

(U) ACRONYMS:

FRP	Full Rate Production
IOC	Initial Operational Capability
LRIP	Low Rate Initial Production
OPEVAL	Operational Evaluation
SD&D	System Development and Demonstration
TECHEVAL	Technical Evaluation

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9b. (U) Schedule (Cont'd):

b. Current Change Explanations --

(U) (Ch-1) Milestone B Decision changed from Apr 2003 to Jun 2003 and SD&D Contract Award changed from May 2003 to Jun 2003 to reflect actual dates.

(Ch-2) Beginning of OPEVAL changed from Dec 2007 to May 2008 to reflect updated draft Test and Evaluation Master Plan (TEMP) projections.

(Ch-3) IOC changed from May 2010 to SEP 2009 to reflect Fiscal Year 2005 President's Budget (PB05) revisions.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (CAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Interoperability			BD	(S)
(S) Probability of Kill w/threat shutdown			BD	
(S) Availability (Ao)			BD	-1)
(S) Probability of Correct ID of a Valid Target Emitter			BD	-1)
(S) Frequency Range			BD	-1)
(S) Probability of Emitter Identification			BD	

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AGM-88E AARGM, December 31, 2003

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (CAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Probability of Emitter Identification	[REDACTED]			(U) [REDACTED]
(S) Probability of Emitter Identification	[REDACTED]			[REDACTED]

(U) ACRONYMS:

Ao	Availability
GHz	Giga Hertz
ID	Identification
IER	Information Exchange Requirements
P-kf	Probability of Firepower Kill
P-kk	Probability of Catastrophic Kill
TBD	To be Determined

b. Current Change Explanations --

(U) (Ch-1): To reflect engineering projections of current design performance, the following performance characteristics were changed:

Performance Characteristic

(S) Availability (Ao)  
Probability of Correct ID of a  
Valid Target Emitter



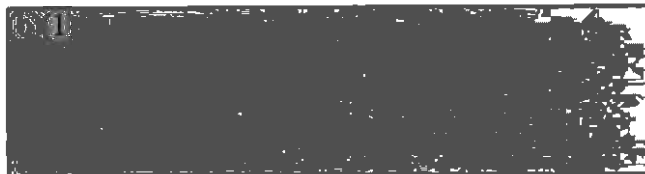
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10b. ~~(S)~~ Performance Characteristics (Cont'd):

~~(S)~~ Frequency Range



11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	533.3	533.3	551.5
Procurement	806.5	806.5	838.6
Missile Hardware	(618.9)		(628.3)
System Program Mgmt	(89.4)		(91.3)
Special Test Equipment	(21.5)		(21.9)
ECOs	(17.7)		(18.1)
Non-Recurring Flyaway			(18.6)
Total Flyaway	(747.5)		(778.2)
Data	(5.9)		(5.9)
Fleet Support	(17.7)		(18.2)
Total Other Wpn Sys	(23.6)		(24.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(35.4)		(36.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2003 Base-Year \$	1339.8	1339.8	1390.1
Escalation	171.1	171.1	140.1
Development (RDT&E)	(4.7)	(4.7)	(-10.0)
Procurement	(166.4)	(166.4)	(150.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1510.9	1510.9	1530.2
b. (U) Quantity --			
Development (RDT&E)	40	40	40
Procurement	1750	1750	1750
Total	1790	1790	1790

(U) No Low Rate Initial Production (LRIP) quantity decision has been made to date.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (JUL 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	1339.8	1390.1	
(2) Quantity	1790	1790	
(3) Unit Cost	0.748	0.777	+3.88
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	806.5	838.6	
(2) Quantity	1750	1750	
(3) Unit Cost	0.461	0.479	+3.90

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	538.0	972.9	-	1510.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-14.0	-20.2	-	-34.2
Quantity	-	-	-	-
Schedule	-	-1.1	-	-1.1
Engineering	-	-	-	-
Estimating	+17.5	+35.7	-	+53.2
Other	-	-	-	-
Support	-	+1.4	-	+1.4
Subtotal	+3.5	+15.8	-	+19.3
Total Changes	+3.5	+15.8	-	+19.3
Current Estimate	541.5	988.7	-	1530.2

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	533.3	806.5	-	1339.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+18.2	+30.7	-	+48.9
Other	-	-	-	-
Support	-	+1.4	-	+1.4
Subtotal	+18.2	+32.1	-	+50.3
Total Changes	+18.2	+32.1	-	+50.3
Current Estimate	551.5	838.6	-	1390.1

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-14.0
Adjustment for Current and Prior Inflation. (Estimating)	+6.5	+6.2
Restoration and rephasing of program funding. (Estimating)	+11.7	+11.3
RDT&E Subtotal	+18.2	+3.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-20.2
Acceleration of annual procurement buy profile by increasing FY08 quantity buy. (Schedule)	0.0	-1.1
Revised estimate due to acceleration of IOC from FY10 to FY09. (Estimating)	+30.7	+35.7
Increase in initial spares cost. (Support)	+0.9	+0.9
Increase in Fleet Support cost. (Support)	+0.5	+0.5
Procurement Subtotal	+32.1	+15.8

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**14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):**

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.844	-0.019	--	-0.001	--	+0.030	--	+0.001	+0.011	0.855

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	
0.556	-0.012	+0.001	-0.001	--	+0.020	--	+0.001	+0.009	0.565

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	APR 2003	N/A	JUN 2003
Milestone C	N/A	MAR 2008	N/A	MAR 2008
IOC	N/A	MAY 2010	N/A	SEP 2009
Total Cost	N/A	1510.9	N/A	1530.2
Total Quantity	0	1790	0	1790
Prog Acq Unit Cost	N/A	0.8	N/A	0.8

**15. (U) Contract Information (Then-Year Dollars in Millions):**

a. RDT&E --

(U) AGM-88E AARGM SD&D:

ATK Missile Systems Co, Woodland Hills CA

N00019-03-C-0353, CPIF

Award: June 19, 2003

Definitized: June 19, 2003

Initial Contract Price		
Target	Ceiling	Qty
\$222.6	N/A	31

Current Contract Price

Target	Ceiling	Qty
\$222.6	N/A	31

Estimated Price At Completion

Contractor	Program Manager
\$222.6	\$222.6

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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 (12/31/03)	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

None.

(U) Contract Comments:

Integrated Baseline Review (IBR) closeout planned for Spring 2004. Earned Value Reporting (EVM) reporting to approved Program Management Baseline (PMB) will begin in Spring 2004.

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> (FY93-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-15)	<u>Total</u>
RDT&E	254.8	31.2	61.4	194.1	541.5
Procurement	-	-	-	988.7	988.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	254.8	31.2	61.4	1182.8	1530.2

b. Annual Summary -- AGM-88E AARGM

Appropriation: 0002 - Research & Development, Navy, Other

<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>
1993				11.2	9.6
1994				14.2	12.4
1995				2.9	2.6
1996				36.6	33.1
1997				35.6	32.6
1998				35.5	32.8
1999				21.6	20.2
2000				26.4	25.0
2001				22.7	21.8
2002				18.9	18.3
2003				47.2	46.4
2004				31.3	31.2

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AGM-88E AARGM, December 31, 2003

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 0002 - Research & Development, Navy, Other

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				60.8	61.4
2006				72.5	74.4
2007				90.2	94.2
2008				23.9	25.5
Subtotal	40			551.5	541.5

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2003 Dollars Nonrec	Flyaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008	25	12.6	22.4	37.5	40.5
2009	50		34.8	38.6	42.5
2010	100		62.0	67.6	75.9
2011	200		100.7	108.9	124.8
2012	290	0.4	125.8	135.6	158.5
2013	400	1.2	154.1	166.4	198.3
2014	400	2.2	148.7	161.9	196.8
2015	285	2.2	111.1	122.1	151.4
Subtotal	1750	18.6	759.6	838.6	988.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1790	18.6	759.6	1390.1	1530.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	9	9
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 227.3

(U) Percent Total Program Expended: 14.9%

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AGM-88E AARGM, December 31, 2003

**18. (U) Operating and Support Costs:**

a. (U) Assumptions and Ground Rules --

All costs were estimated in constant FY2003 dollars. The date of the O&S estimate is April 16, 2003.

For this estimate, full benefit of concurrency with HARM is assumed with this estimate concentrating on the AARGM unique components (guidance and control sections). Common costs for System Engineering and Program Management, Support Equipment, Container procurement and repair and Technical Data management costs for the HARM AGM-88 are assumed to be included under the HARM program.

O&S costs were modeled using the AIR-4.2 Joint Munitions Operating and Support (JMOS) Cost Model, which has been tailored for AARGM Unique requirements. This model is structured to follow the work breakdown structure guidance provided in the Operating and Support Cost-Estimating Guide issued from the Office of the Secretary of Defense Cost Analysis Improvement Group, May 1992.

Weapon Service Life is 15 years per AARGM All-Up Round (AUR).

b. (U) Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	AGM-88E AARGM Avg Annual Cost for All Missiles	AGM-88 HARM Avg Annual Cost for All Missiles
Mission Pay & Allowances	173.0	66.5
Unit Level Consumption	1687.0	591.9
Intermediate Maintenance	107.0	776.0
Depot Maintenance	407.0	444.0
Contractor Support	0.0	0.0
Sustaining Support	3233.0	1811.0
Indirect Costs	20.0	6.7
Total	5627.0	3696.1

Total O&S Cost	AGM-88E AARGM	AGM-88 HARM
BY\$ (In Millions)	84.3	73.9
TY\$ (In Millions)	129.7	127.4

Report Creation Date: 04/22/2004 4:23:03 PM

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N-13 EA-18G

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: EA-18G

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): EA-18G
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:  
Bldg 2272, Suite 445, NAVAIRSYSCOMHQ CAPT Donald Gaddis  
47123 Buse Road, Unit IPT Assigned: May 30, 2003  
Patuxent River, MD 20670-1547 DSN 757-7669; COMM 301-757-7669  
donald.gaddis@navy.mil
4. (U) Program Elements/Procurement Line Items:  
RDT&E:  
(U) PE 0604270N Project E3063

**AS AMENDED**  
FOR OPEN PUBLICATION

MAR 25 2004 7

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-C-224  
3-1-04

~~Derived from: Security Classification Guide for EA-18G dated July 14 2003  
Downgrade instructions: X2  
Declassify on: X3~~

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04-C-0721

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Defence Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) December 18, 2003.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated December 18, 2003.

6. (U) Mission and Description:

(U) The EA-18G will be the fourth major variant of the F/A-18 family of aircraft. The EA-18G will serve as the Navy's replacement for the EA-6B providing a capability to detect, identify, locate, and suppress hostile emitters. The EA-18G will provide organic accurate emitter targeting for employment of onboard suppression weapons such as High-Speed Anti-Radiation Missile (HARM). The EA-18G aircraft will be a missionized F/A-18F airframe. This is coupled with the integration of its primary Airborne Electronic Attack (AEA) systems that include the ALQ-99 Tactical Jamming System (TJS) pods, AN/ALQ-218 Receiver, Communication Countermeasures Set (CCS) with functionality equivalent to the USQ-113, and the Multi-Mission Advanced Tactical Terminal (MATT).

7. (U) Executive Summary:

(U) This report is the initial SAR for the EA-18G.

The EA-18G received a Milestone B decision on December 18, 2003. Subsequent to the Milestone approval, the program awarded a System Development and Demonstration (SDD) contract to Boeing. Boeing's major subcontractor for the Airborne Electronic (AEA) capability is the Northrop Grumman Corporation (NGC). This contract strategy will enable the program to achieve synergy from Boeing's F/A-18F aircraft experience and NGC's vast AEA mission capability understanding.

The second F/A-18E/F aircraft multi-year procurement, (MYP II), will cover the purchase of 210 F/A-18E/F aircraft in program years FY05-FY09 under a single, five-year fixed price type contract. Of the 210 aircraft procured under MYP II, 56 are anticipated to be converted to EA-18G aircraft upon receipt of the necessary approvals. The contract was approved by Congress in the FY04 Defense Appropriations Act and in the FY04 Defense Authorization Act. The contract was awarded on December 29, 2003 with the obligation of cost reduction initiatives and advanced procurement dollars, and the establishment of prices and contract terms and conditions for program years FY05-FY09. This MYP strategy has been structured to achieve significant savings/cost avoidance (\$1,052M) from the single year price while providing quantity flexibility for emergent requirements.

The second F/A-18E/F MYP II has a minimum and currently funded quantity stream of 42 aircraft per year. It contains a variation in quantity clause, which

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7. (U) Executive Summary (Cont'd):

allows for the addition of up to six aircraft in each of the last four years of the contract (FY06-FY09). This provision provides the government the ability to increase quantities to procure emergent requirements for more aircraft without breaking the MYP or disturbing the savings/cost avoidance already established in the baseline. Should any aircraft, either F/A-18E/F or EA-18G, be taken out of any one year to pay bills, the multi-year contract would be broken and the Navy would be forced into a single-year procurement scenario. A reduction in aircraft would force an increase in aircraft unit price due to learning curve impacts and economies of scale. Prices would also increase because of reduced business base and the loss of multi-year procurement benefits. For example, the contractor would not have a guaranteed stabilized business base and there would be yearly production line planning and yearly procurement costs associated with a single year procurement scenario, that only occur once in a multi-year procurement scenario.

The EA-18G procurement costs and quantities were included in the 2002 F/A-18E/F SAR. Since that time, the EA-18G received a Milestone B decision and its procurement costs and quantities were split out into its own Program Element and Budget Line Item separate from the F/A-18E/F. With this budget, procurement of EA-18G and F/A-18E/F have been separated into this budget line and a separate line item titled 'F/A-18E/F'. Since the Department is only requesting Advance Procurement funding in FY 2005, the full funding budget exhibits for EA-18G are not being submitted.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone B	NOV 2003	NOV 2003	DEC 2003
Critical Design Review (CDR)	APR 2005	APR 2005	APR 2005
Milestone C	APR 2007	APR 2007	APR 2007
OPEVAL (Start)	SEP 2008	SEP 2008	SEP 2008
Full Rate Production (FRP)	APR 2009	APR 2009	APR 2009
Initial Operational Capability (IOC)	SEP 2009	SEP 2009	SEP 2009

(U) ACRONYM

OPEVAL - Operational Evaluation

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf.	Current Estimate
<del>1</del> Radar Signal Receive Frequency Range	(b)(1)		TBD	(b)(1)
<del>1</del> Communications Signals Receive Frequency Range			TBD	
<del>1</del> Selective Reactive Jamming Response			TBD	
<del>1</del> Engagement Radars			TBD	
<del>1</del> Early Warning and/or Acquisition Radars			TBD	
<del>1</del> Other Radars			TBD	
Receive Azimuth Coverage			TBD	
Operational Availability	>=0.98	>=0.98 / >=0.85	TBD	>=0.98

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10b. (U) Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1632.1	1632.1	1623.8
Procurement	6030.5	6030.5	6103.5
Recurring Flyaway	(5550.9)		(5568.5)
Nonrecurring Flyaway	(76.8)		(77.3)
Net AP			(3.4)
Total Flyaway	(5627.7)		(5649.2)
Total Other Wpn Sys			(0.0)
Peculiar Support	(258.5)		(264.3)
Initial Spares	(144.3)		(190.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2004 Base-Year \$	7662.6	7662.6	7727.3
Escalation	759.0	759.0	764.1
Development (RDT&E)	(75.5)	(75.5)	(72.2)
Procurement	(683.5)	(683.5)	(691.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	8421.6	8421.6	8491.4

(U) In reference to the development (RDT&E) Current Estimate, the EA-18G exhibit in the FY05 President's Budget includes contract and government costs for pre-SDD efforts, as well as program efforts in the SDD phase. Pre SDD FY02 and FY03 costs have been excluded.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	90	90	90
Total	90	90	90

(U) Note: 30 LRIP aircraft were approved on December 18, 2003 at the Milestone B decision. This represents 33% of the total number of aircraft. This is needed to avoid a break in the production line.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2004 BY\$)	7662.6	7727.3	
(2) Quantity	90	90	
(3) Unit Cost	85.140	85.859	+0.84
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2004 BY\$)	6030.5	6103.5	
(2) Quantity	90	90	
(3) Unit Cost	67.006	67.817	+1.21

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1707.6	6714.0	-	8421.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-2.6	+0.2	-	-2.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.0	+24.9	-	+15.9
Other	-	-	-	-
Support	-	+56.4	-	+56.4
Subtotal	-11.6	+81.4	-	+69.8
Total Changes	-11.6	+81.4	-	+69.8
Current Estimate	1696.0	6795.4	-	8491.4

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 2004 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1632.1	6030.5	-	7662.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-8.3	+21.5	-	+13.2
Other	-	-	-	-
Support	-	+51.5	-	+51.5
Subtotal	-8.3	+73.0	-	+64.7
Total Changes	-8.3	+73.0	-	+64.7
Current Estimate	1623.8	6103.5	-	7727.3

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices (Economic)	N/A	+2.8
Program Execution Adjustment in FY04 (Estimating)	-8.3	-9.0
Adjustment for Current and Prior Inflation (Economic)	N/A	-5.4
RDT&E Subtotal	<u>-8.3</u>	<u>-11.6</u>
(2) <u>Procurement</u>		
Revised Inflation Indices (Economic)	N/A	+0.2
Revised AESA Estimate for Milestone C (Estimating)	+38.0	+51.8
Update for Current and Prior Escalation Beyond the Multiyear (Estimating)	-16.5	-27.0
Increase in Peculiar Support (Support)	+5.8	+6.1
Increase in Initial Spares (Support)	+45.7	+50.3
Procurement Subtotal	<u>+73.0</u>	<u>+81.4</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	
93.57	-0.027	--	--	--	+0.176	--	+0.627	+0.776	94.35

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
74.60	+0.002	-0.001	--	--	+0.276	--	+0.627	+0.904	75.50

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	NOV 2003	N/A	DEC 2003
Milestone C	N/A	APR 2007	N/A	APR 2007
IOC	N/A	SEP 2009	N/A	SEP 2009
Total Cost	N/A	8421.6	N/A	8491.4
Total Quantity	N/A	90	N/A	90
Prog Acq Unit Cost	N/A	93.6	N/A	94.3

15. (U) Contract Information (Then-Year Dollars in Millions):

a. DATES --

(U) EA-18G SDD:

McDonnell Douglas, St Louis, MO

N00019-04-C-0005, CPAF

Award: December 29, 2003

Definitized: December 29, 2003

Initial Contract Price

Target      Ceiling      Qty

\$979.0

\$

Current Contract Price

Target      Ceiling      Qty

\$979.0

\$

Estimated Price At Completion

Contractor      Program Manager

\$979.0

\$

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15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

(U) Contract Comments:

Initial EVM data expected 4th Quarter FY04.

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>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-11)</u>	<u>Total</u>
RDT&E	-	215.4	357.5	1123.1	1696.0
Procurement	-	-	8.2	6787.2	6795.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	215.4	365.7	7910.3	8491.4

b. Annual Summary -- EA-18G

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 2004 Dollars nonrec</u>	<u>Flyaway FY 2004 Dollars rec</u>	<u>Total Program base-year \$</u>	<u>Total Program Then-Year \$</u>
2004				213.6	215.4
2005				349.5	357.5
2006				391.7	407.1
2007				348.5	368.7
2008				246.9	266.3
2009				73.6	81.0
Subtotal				1623.8	1696.0

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2004 Dollars Nonrec	Flyaway FY 2004 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				7.9	8.2
2006	4	17.3	245.0	346.5	364.9
2007	12	5.4	739.1	857.6	920.3
2008	18	7.5	1105.3	1253.7	1371.9
2009	22	9.7	1349.5	1457.5	1626.9
2010	20	9.1	1239.8	1261.5	1436.2
2011	14	28.3	893.4	918.8	1067.0
Subtotal	90	77.3	5571.9	6103.5	6795.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	90	77.3	5571.9	7727.3	8491.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0.4

(U) Percent Total Program Expended: 0.0%

19. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
Assumptions and Ground Rules:

Current Program: EA-18G

Flight Hours per aircraft per month: 30

Number of aircraft per squadron: 5

Consumption rate, gallons per hour: 1,039 POL Cost, JP-5 per gallon (FY04\$):  
0.86

Antecedent Program: EA-6B

Flight Hours per aircraft per month: 32

Number of aircraft per squadron: 4

Consumption rate, gallons per hour: 1,053 POL Cost, JP-5 per gallon FY04\$:  
0.93

Date of Estimate: October 2003

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EA-18G, December 31, 2003

18a. (U) Operating and Support Costs (Cont'd):

Source: AIR 4.2 Operating & Support Cost Estimate

b. (U) Costs -- (FY 2004 Constant (Base-Year) Dollars in Millions)

Cost Element	EA-18G AVG Annual Cost Per A/C	EA-6B AVG Annual Cost Per A/C
Mission Pay & Allowances	2.6	9.6
Unit Level Consumption	1.9	5.5
Intermediate Maintenance	0.4	N/A
Depot Maintenance	1.1	7.8
Contractor Support	0.0	122.8
Sustaining Support	0.3	1.7
Indirect Costs	1.0	0.4
Total	7.3	147.8

Total O&S Cost	EA-18G	EA-6B
BY\$ (In Millions)	11071.0	N/A
TY\$ (In Millions)	17709.0	N/A

Report Creation Date: 03/21/2004 5:35:22 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: ASDS

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): Advanced SEAL Delivery System (ASDS)

2. (U) DoD Component: Navy

Joint Participants:  
SOCOM

3. (U) Responsible Office and Telephone Number:

COMMANDER, NAVAL SEA SYSTEMS COMMAND CAPT J FALLONE  
1333 ISAAC HULL AVENUE SE STOP 2501 Assigned: February 9, 2002  
WASHINGTON, DC 20376-2501 DSN 326-7240; COMM 202 781-7240  
FalloneJM@navsea.navy.mil

4 (U) Program Elements/Procurement Line Items:

NOTES:

(U) PE 1160404BB Project S0417

PROCUREMENT:

(U) APPN 0300 ICN 204000000 (DoD)

(U) APPN 0300 ICN 204100000 (DoD)

MILCON:

(U) PE 1120222BB

(U) PE 1120493BB

O&M:

(U) PE 1160404BB (Shared)

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MAR 25 2004

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ASDS, December 31, 2003

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated July 29, 2003.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 29, 2003.

**6. (U) Mission and Description:**

(U) The Advanced SEAL Delivery System (ASDS) is the first dry combatant submersible developed for the clandestine insertion and extraction of special operations forces (SOF) and their equipment. The ASDS provides significantly increased range, payload, and endurance over current submersibles. The ASDS provides for conduct of a greater scope of missions while keeping the embarked SOF dry during transit, allowing them to function in a broader range of climatic conditions. The central element of the ASDS is a 65-foot, 60.0 long ton battery powered manned submersible. Two operators pilot the submersible. The ASDS will carry special operations forces (SEALs) in a dry environment to a close-in launch position. The second element is a Land Transport Vehicle on which the ASDS is maneuvered around on land sites for routine maintenance or to airfield facilities for C17/C5 transport to remote sites and subsequent mating to a host submarine. The third element is a special field/depot maintenance support facility, which includes training vans, special support equipment and service facilities. Concept plans also identify the future transport of ASDS to the deployment area by surface combatants.

**7. (U) Executive Summary:**

(U) ASDS was designated an Acquisition Category IC Program in April 2003. The program is preparing the necessary documentation to support a Milestone C decision in Spring 2004. Additionally, the program is preparing for procurement of Long Lead Time Material (LLTM) for the second ASDS, ASDS-2, with funds included in the budget for Fiscal Year 2004.

The lead ASDS, ASDS-1, has been delivered and successfully completed Operational Evaluation (OPEVAL) in accordance with a Director, Operational Test and Evaluation (DOT&E) approved test plan. The OPEVAL report was issued on September 4, 2003 and rated ASDS operationally suitable and operationally effective.

NAVSPECWARCOM on November 3, 2003 declared that Initial Operating Capability (IOC) was achieved. IOC is defined as completion of sea trials, TECHEVAL, and OPEVAL, ASDS and host ship crew certification, USAF certification of airlift capability, and commencement of interim contractor logistics support. The first proof of concept deployment was completed in late CY2003.

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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
Preliminary Design Contract Award	NOV 1992	NOV 1992	NOV 1992
Preliminary Design Review	MAY 1993	MAY 1993	MAY 1993
Phase I COEA	MAY 1994	MAY 1994	MAY 1994
Milestone II	SEP 1994	SEP 1994	SEP 1994
Detailed Design/Manufacturing	SEP 1994	SEP 1994	SEP 1994
Development Contract Award			
Critical Design Review	JUN 1996	JUN 1996	JUN 1996
Preliminary Conditional Acceptance	AUG 2001	AUG 2001	AUG 2001
Follow-on Unit Contract Award	OCT 2005	OCT 2005	OCT 2005
Start Host Ship Operational Testing	NOV 2001	NOV 2001	NOV 2001
Complete Host Ship Operational Testing	MAY 2003	MAY 2003	MAY 2003
Organic Support Capability Date	AUG 2003	AUG 2003	AUG 2003
Initial Operational Capability	JUN 2003	JUN 2003	NOV 2003 (Ch-1)
Milestone C	DEC 2003	DEC 2003	MAY 2004 (Ch-2)

(U) Acronyms:

COEA - Cost and Operational Effectiveness Analysis

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9b. (U) Schedule (Cont'd):

b. Current Change Explanations --

(U) (Ch-1) IOC changed from June 2003 to November 2003 awaiting issuance of the written OPEVAL report. NAVSPECWARCOM on November 3, 2003 declared that IOC was achieved.

(Ch-2) Milestone C changed from December 2003 to May 2004. Current estimate of Milestone C in May 2004 reflects current status of JROC approval of ORD, Navy Independent Cost Estimate and other Milestone C document approval.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Minimum Combat Range (NM)	(b)			
Minimum Cruise Speed (submerged) (kts)				
Transport Depth (submarine host) (ft)				
Transport Speed (submarine host) (kts)				
Number of combat divers to be locked out/in concurrently				
Operating Temperature (F)	29-95	29-95 / 29-95	29-95	29-95
Storage Temperature (F)	0-140	0-140 / 0-140	0-140	0-140
Survivability	MILS901C	MILS901C/ MILS901C	TBD	MILS901C
Vibration	MIL-S810	MIL-S810/ MIL-S810	MIL-S810	MIL-S810
Crew	2	2 / 2	2	2
Passengers	(1)			
Endurance (hrs)				
External Payload				
Transportability				

(U) Vehicle Signatures

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10a. (U) Performance Characteristics (Cont'd):

	Development	Approved	Demon-	Current
	<u>Estimate (SAR)</u>	<u>Program (APB)</u>	<u>strated</u>	<u>Estimate</u>
		<u>Obj/Threshold</u>	<u>Perf</u>	
Interoperability	HF, VHF,	HF, VHF, / HF, VHF,	HF, VHF,	HF, VHF,
	UHF, UHF	UHF, UHF/ UHF, UHF	UHF, UHF	UHF, UHF
	SATCOM-	SATCOM- / SATCOM-	SATCOM	SATCOM
	DAMA	DAMA / DAMA	(DAMA)	(DAMA)

(U) ACRONYMS:

DAMA	Dual Assigned Multiple Access
db	Decibel
HF	High Frequency
kts	Knots
NM	Nautical Miles
RCS	Radar Cross Section
SATCOM	Satellite Communications
UHF	Ultra High Frequency
VHF	Very High Frequency

b. Current Change Explanations -- None

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	450.7	450.7	453.2
Procurement	1325.6	1325.6	1313.1
Sailaway	(1124.8)		(1043.5)
Other Wpn Sys Spt Costs	(115.7)		(173.3)
Peculiar Support	(17.4)		(16.2)
Initial Spares	(67.7)		(80.1)
Construction (MILCON)	24.6	24.6	24.6
Acquisition O&M	37.0	37.0	37.8
Total FY 2003 Base-Year \$	1837.9	1837.9	1828.7
Escalation	131.4	131.4	128.0
Development (RDT&E)	(-16.9)	(-16.9)	(-19.3)
Procurement	(145.1)	(145.1)	(144.3)
Construction (MILCON)	(-1.2)	(-1.2)	(-1.2)
Acquisition O&M	(4.4)	(4.4)	(4.2)
Total Then Year \$	1969.3	1969.3	1956.7
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	5	5	5
Total	6	6	6

(U) There are no approved Low-Rate Initial Production (LRIP) quantities for the ASDS program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (JUL 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2003 BY\$)	1837.9	1834.2	
(2) Quantity	6	6	
(3) Unit Cost	306.317	305.700	-0.20
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2003 BY\$)	1325.6	1313.1	
(2) Quantity	5	5	
(3) Unit Cost	265.120	262.620	-0.94

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	433.8	1470.7	23.4	41.4	1969.3
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Economic	-0.9	+1.8	-	+0.2	+1.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+1.0	-92.9	-	+0.4	-91.5
Other	-	-	-	-	-
Support	-	+77.8	-	-	+77.8
Subtotal	+0.1	-13.3	-	+0.6	-12.6
Total Changes	+0.1	-13.3	-	+0.6	-12.6
Current Estimate	433.9	1457.4	23.4	42.0	1956.7

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 2003 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	450.7	1325.6	24.6	37.0	1837.9
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+2.5	-81.3	-	+0.8	-78.0
Other	-	-	-	-	-
Support	-	+68.8	-	-	+68.8
Subtotal	+2.5	-12.5	-	+0.8	-9.2
Total Changes	+2.5	-12.5	-	+0.8	-9.2
Current Estimate	453.2	1313.1	24.6	37.8	1828.7

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+0.9
Added funding due to prior year actual adjustments and budget adjustments. (Estimating)	+1.6	+0.1
RDT&E Subtotal	+2.5	+0.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+2.0
Economic adjustment for negative program change. (Economic)	N/A	-0.2
Added funding due to prior year actual adjustments and budget adjustments. Reflects revised program estimate for ASDS-5 and ASDS-6 procured in FY10-FY11. (Estimating)	-81.3	-92.9
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Change in Initial Spares. (Support)	+12.4	+16.4
Change in Peculiar Support. (Support)	-1.2	-1.4

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Change in Other Wpn Sys Spt Costs. (Support)		+57.4	+62.6
Procurement Subtotal		-12.5	-13.3
(3) O&M			
Revised escalation indices. (Economic)		N/A	+0.2
Added funding for program office acquisition support due to prior year actual adjustments and PB05 adjustments. (Estimating)		+0.8	+0.4
O&M Subtotal		+0.8	+0.6

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
328.22	+0.183	-0.003	--	--	-15.25	--	+12.97	-2.10	326.12

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
294.14	+0.360	--	--	--	-18.58	--	+15.56	-2.66	291.48

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	SEP 1994	N/A	SEP 1994
Milestone C	N/A	DEC 2003	N/A	MAY 2004
IOC	N/A	JUN 2003	N/A	NOV 2003
Total Cost	N/A	1969.3	N/A	1956.7
Total Quantity	N/A	6	N/A	6
Prog Acq Unit Cost	N/A	328.2	N/A	326.1

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15. (U) Contract Information (Then-Year Dollars in Millions):

(U) Contract N00024-94-C-6200 with Northrop Grumman ES&S, Annapolis, Maryland is over 90% complete. There is no change in status or estimated price at completion from that reported in the June 2003 SAR. Therefore, this contract is no longer being reported.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY91-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-14)</u>	<u>Total</u>
RDT&E	409.1	15.6	1.6	7.6	433.9
Procurement	93.1	33.8	40.8	1289.7	1457.4
MILCON	23.4	-	-	-	23.4
O&M	2.5	3.3	3.3	32.9	42.0
Total	528.1	52.7	45.7	1330.2	1956.7

b. Annual Summary -- ASDS

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 2003 Dollars Nonrec</u>	<u>Sailaway FY 2003 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991				17.8	14.9
1992				3.5	3.0
1993				6.7	5.9
1994				30.1	27.1
1995				30.5	27.9
1996				29.6	27.6
1997				26.5	25.0
1998				64.4	61.3
1999				71.1	68.4
2000				46.3	45.2
2001				35.9	35.5
2002				42.2	42.1
2003				25.0	25.2
2004				15.3	15.6
2005				1.5	1.6
2006				1.5	1.6
2007				1.6	1.7
2008					
2009					
2010				1.8	2.1
2011				1.9	2.2

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 0400 - RDT&E, Defense Wide

Fiscal Year	Qty	Sailaway FY 2003 Dollars Nonrec	Sailaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	1			453.2	433.9

Appropriation: 0300 - Procurement, Defense Wide

Fiscal Year	Qty	Sailaway FY 2003 Dollars Nonrec	Sailaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				4.6	4.4
1998				2.8	2.7
1999				9.4	9.2
2000				14.3	14.1
2001				10.6	10.5
2002				22.8	22.9
2003				28.9	29.3
2004				32.8	33.8
2005				39.0	40.8
2006	1		224.5	180.1	191.7
2007				90.2	97.8
2008	1		221.7	247.0	273.2
2009	1		223.3	180.7	203.9
2010	1		186.6	259.7	298.9
2011	1		187.4	158.9	186.5
2012				19.8	23.7
2013				11.5	14.0
Subtotal	5		1043.5	1313.1	1457.4

Appropriation: 0500 - Military Construction, Defense Wide

Fiscal Year	Qty	Sailaway FY 2003 Dollars Nonrec	Sailaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				0.4	0.4
1995				0.4	0.4
1996				0.5	0.5
1997				14.0	13.1
1998				7.6	7.3
1999				1.7	1.7
Subtotal				24.6	23.4

(U) MILCON in FY94-FY99 provided for construction of an ASDS facility at Pearl City, HI. The program manager, NAVSPECWARCOM and USSOCOM are preparing a facility management plan in preparation for conduct of a detailed facility

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16b. (U) Program Funding Summary (Cont'd):

requirement study, which will address potential future facilities at Little Creek, VA. Upon issuance of firm requirements, the program manager will identify a revised cost estimate and take appropriate action.

Appropriation: 0100 - Operation & Maintenance, Defense Wide

Fiscal Year	Qty	Sailaway FY 2003 Dollars Nonrec	Sailaway FY 2003 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				2.5	2.5
2004				3.2	3.3
2005				3.2	3.3
2006				3.1	3.3
2007				3.2	3.4
2008				3.2	3.5
2009				3.2	3.6
2010				3.3	3.7
2011				3.2	3.7
2012				3.2	3.8
2013				3.2	3.9
2014				3.3	4.0
Subtotal				37.8	42.0

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	6		1043.5	1828.7	1956.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 16.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 461.4

(U) Percent Total Program Expended: 23.6%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Preliminary O&S cost estimates were prepared by the program office and Navy Cost Analysis Division (NCAD) for the Independent Cost Estimate (ICE). These estimates range between \$6295M and \$7052M in Then Year dollars. O&S costs will be incorporated into the next SAR following adjudication of the estimates.

ASDS has no antecedent system.

b. (U) Costs -- (FY 2003 Constant (Base-Year) Dollars in Thousands)

Cost Element	ASDS	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	ASDS	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 04/22/2004 11:25:42 AM

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AF-14 JDAM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: JDAM

AS OF DATE: December 31, 2003

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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 Direct Attack  
System Program Office - JDAM  
102 W D Ave 1st Floor  
Eglin AFB, FL 32542-6807

Col James R. McClendon  
Assigned: December 1, 2003  
DSN 872-7321 Ext 2253  
COMM 882-7321 Ext 2253  
james.mcclendon@eglin.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604618F (Shared)  
PE 0604618N (Shared)

PROCUREMENT:

APPN 1507 ICN 014800 (Navy)  
APPN 1507 ICN 0550 (Navy)  
APPN 3011 ICN 353620 (Air Force)

FOR OPEN PUBLICATION

MAR 23 2004 5

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

Air Force RDT&E JDAM funding includes the Product Improvement Program (PIP). Air Force RDT&E funding excludes the Joint Programmable Fuze dollars. The Navy RDT&E Dollars do not include PIP or Hornet Autonomous Real Time Targeting (HART) funding.

Air Force procurement funding does not include PIP funding. Navy Procurement funding includes BLU-109 warheads but not Joint Programmable

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**4. Program Elements/Procurement Line Items (Cont'd):**

Fuze (JPF).

**5. References:**

SAR Baseline (Production Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 23, 2001.

Approved Program:

AFAE 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 Acquisition Category (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 against mobile hard, mobile soft, fixed hard, fixed soft, and maritime targets. JDAM is integrated with the B-52H, B-2A, B-1B, F-15E, F-16C/D, F-14B/D, and F/A-18C/D/E/F aircraft. Follow-on integration will be on the F/A-22, F-117A, A/OA-10, F-35, X-45 Joint Unmanned Combat Air System (JUCAS), AV-8B, MQ-9 (Predator), P-3 and S-3 aircraft.

**7. Executive Summary:**

The Lot 7 JDAM production award was completed in March 2003 for 2000 lb and 1000 lb tail kits. The 500 lb (MK-82) tail kits were included as an option in this contract. The option was exercised in July 2003.

The MK-82/B-2 development flight test program was successfully completed in 2003. The capstone event was an 80 weapon ripple off the B-2. The B-2 operational test and evaluation flight test program remains on schedule and will commence mid March 2004. Development delays in the Navy BRU-55 carriage program, as well as range and test aircraft availability, have caused an eleven month schedule slip from June 2003 to May 2004 for the MK-82 (500 lb) flight test effort on the FA-18C/D.

The Operational Test and Evaluation/Operational Evaluation (OT&E/OPEVAL) final report for the 1000 lb variant on the FA-18C/D was completed in July 2003 with the release of the Multi-service Operational Test and Evaluation (MOT&E) report. The 1000 lb variant was determined to be operationally effective and suitable.

The production ramp to 3000 tail kits per month was achieved by July 2003. Boeing has delivered over 66,000 tail kits as of December 31, 2003.

The JDAM program awarded a two-year \$35M development contract to Boeing in

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**7. Executive Summary (Cont'd):**

February 2003 for Selective Availability Anti-Spoofing Module (SAASM) Global Positioning System (GPS) and anti-jam capabilities. Production Lot 9 (FY05) and subsequent lots will be GPS SAASM equipped. The production mix of the anti-jam variant to be procured in FY05 - FY09 lot buys is yet to be determined.

Foreign Military Sales (FMS) deliveries include tail kits for the Government of Israel. Deliveries are projected to be completed by May 2004.

Israeli Peace Marble V, F-15I, and F-15AUP aircraft integration is in progress.

**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

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9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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			
Award Lot 3 (LRIP)	JUN 1999	JUN 1999	JUN 1999
OT&E/OPEVAL Complete (1000 lb Kit/FA-18C/D)	N/A	JAN 2003	JUL 2003 (Ch-1)
Initial Production (500 lb kit)	N/A	MAR 2003	JUL 2003 (Ch-2)
Initial Operational Capability (IOC) (500 lb kit on FA-18C/D)	N/A	DEC 2004	DEC 2004
Required Assets Availability (RAA) (500 lb on B-2)	N/A	JAN 2005	DEC 2004 (Ch-3)
Selective Availability Anti-Spoofing Module (SAASM)/GPS Anti-Jam Production	N/A	MAR 2005	MAR 2005
Award			
Milestone III (1000 lb on FA-18C/D)	FEB 2002	N/A	N/A
Milestone I JDAM PIP	SEP 2002	N/A	N/A
OT&E/OPEVAL Complete (1000 lb Kit/ FA-18C/D)	JUL 2001	N/A	N/A

ACRONYMS:

AUR - All Up Round  
Dem/Val - Demonstration/Validation  
DT&E - Developmental Test and Evaluation  
EMD - Engineering, Manufacturing and Development  
GPS - Global Positioning System  
IOT&E - Initial Operational Test and Evaluation  
LRIP - Low Rate Initial Production  
OPEVAL - Operational Evaluation  
OT&E - Operational Test and Evaluation  
PIP - Production Improvement Program  
Tech Eval - Technical Evaluation

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**9b. Schedule (Cont'd):**

**b. Current Change Explanations --**

(Ch-1) Current estimate for OT&E/OPEVAL Complete (1000 lb kit/FA-18C/D) updated from May 2003 to July 2003 based on actual release of Multi-service Operational Test and Evaluation (MOT&E) final report.

(Ch-2) Current estimate for Initial Production (500 lb kit) changed from March 2003 to July 2003 to reflect the actual production award of tail kits. The MK-82 production was added to the basic FY03 JDAM production contract as an option to allow time to complete more flight tests prior to committing funding.

(Ch-3) Current estimate for Required Assets Availability (RAA) (500lb on B-2) has been revised from January 2005 to December 2004 - Smart Bomb Rack Assembly (SBRA) projected completion July 2004, testing projected completion July 2004, MK-82 RAA weapons projected available September 2004, and Satellite Communications (SATCOM) projected completion December 2004.

**10. Performance Characteristics:**

**a. Performance --**

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
	<u>Adverse</u>	<u>Adverse / Adverse</u>	<u>Adverse</u>	<u>Adverse</u>
Weather Capability				
Accuracy (CEP)				
(Meters)				
GPS Available,	13	5 / 13	7.60	13
Impact Angles >	Horizon-	Horizont-		Horizon-
60 Deg	tal	al /		tal
	Targets	targets /		Targets
Inflight Re-targeting	Yes	Yes / Yes	Yes	Yes
Capability (captive				
carry)				
Carrier Operability	Yes	Yes / Yes	Yes	Yes
Warhead Compatibility	MK-82/BL	MK-82/BL/ BLU-109,	BLU-109,	BLU-109, (Ch-1)
	U-111,	U-111, / MK-84,	MK-84,	MK-84,
	MK-83,	MK-83, / MK-83	MK-83	MK-83
	Improved	Improved/ (F-22)	(F-22)	(F-22)
	1000-lb,	1000-lb,/	MK-82	MK-82
	BLU-113/	BLU-113//		
	116/117	116/117 /		
Aircraft				
Compatibility				
Bomber	B-1B,	B-1B, / B-52H	Yes	B-52H
	B-2	B-2 /		
Fighter Attack	F-16C/D,	F-16C/D,/ F/A-18C/	Yes	FA-18C/
	F/A-18E/	F/A-18E// D, F-22		D,
	F,	F, / (MK-83),		F-22A,
	F-117A,	F-117A, / AV-8B &		AV-8B
	F-15E,	F-15E, / F/A-18C/		
	F-14A/B/	F-14A/B// D		

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10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	D, P-3, S-3, JSF, A-10	D, P-3, / (MK-83) S-3, / JSF, / A-10 /		
Mission Reliability	.90	.90 / .90	.943	.90
JDAM PIP Accuracy (CEP) (Meters)	3	N/A / N/A	N/A	N/A
JDAM PIP Weather Capability	Adverse	N/A / N/A	N/A	N/A
JDAM PIP Warhead Compatibility	MK-82, MK-83	N/A / N/A	N/A	N/A
Interoperability	N/A	Satisfy / Satisfy 100% of / 100% of critical/ critical IERS / IERS	Satis- fied	Satis- fied

ACRONYMS:

CEP - Circular Error Probable  
 DEG - Degree  
 GPS - Global Positioning System  
 OPEVAL - Operational Evaluation  
 OT&E - Operational Test and Evaluation  
 PIP - Product Improvement Program

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.

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**10a. Performance Characteristics (Cont'd):**

(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/D, F-15E, F-16C/D, and F/A-18C/D/E/F aircraft. Follow-on integration with F/A-22, F-117A, A/OA-10, F-35, X-45 Joint Unmanned Combat Air System (JUCAS), AV-8B, MQ-9 (Predator), P-3 and S-3 aircraft is in process. The A-6E aircraft was deleted by Chief of Naval Operations (CNO) Letter, Serial Number N880D5/4UG59112, dated February 2, 1994. The F-111F has been deleted (Reference AF/XOR Message 260111Z January 1994).

(6) 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.

**b. Current Change Explanations --**

(Ch-1) The current estimate changed from BLU-109, MK-84, MK-83 to BLU-109, MK-84, MK-83, MK-82 to reflect the completion of MK-82 program.

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11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	490.3	575.1	560.7
Procurement	1810.0	4307.5	4112.8
Hardware	(1555.7)		(3788.7)
Tooling & Test Equipmen			(0.0)
System Engineering & Pr			(0.0)
Containers			(0.0)
Warranty			(0.0)
Engineering Change Orde	(37.9)		(57.8)
Lot Acceptance Test	(3.3)		(6.0)
Nonrecurring Flyaway	(76.5)		(97.1)
Total Flyaway	(1673.4)		(3949.6)
Warhead	(34.0)		(26.0)
Product Support Cost	(68.6)		(79.7)
Total Other Wpn Sys	(102.6)		(105.7)
Peculiar Support	(34.0)		(57.5)
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 \$	2300.3	4882.6	4673.5
Escalation	306.4	748.2	628.0
Development (RDT&E)	(27.0)	(29.2)	(25.4)
Procurement	(279.4)	(719.0)	(602.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2606.7	5630.8	5301.5

All total program costs in section 11 do 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.

b. Quantity --

Development (RDT&E)	630	778	804
Procurement	88435	221091	208948
Total	89065	221869	209752

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

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**11b. Total Program Cost and Quantity (Cont'd):**

Acquisition Decision Memorandum (ADM) at Milestone II, September 20, 1995, 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, \$34.1M  
Purpose: Procure 660 JDAMs and support.

Israel (IS-D-YET) Case signed September 9, 2002, \$22.1M  
Purpose: Procure 1000 JDAMs.

Israel (IS-D-QCI) Case signed July 28, 2003, \$13.2M  
Purpose: Integration support.

Kingdom of Oman (MU-D-YEI) Case signed May 2, 2002, \$6.3M  
Purpose: Procure 80 JDAMs and support.

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, \$1.9M  
Purpose: Integration support.

Denmark (DE-D-YME) Case signed December 20, 2002, \$14.1M  
Purpose: Procure 274 JDAMs and support.

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11c. Total Program Cost and Quantity (Cont'd):

United Arab Emirates (AE-D-SAA) Case signed June 15, 2002, \$2.3M.  
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

Chile (CI-D-SGB) Case signed November 14, 2003, \$2.0M  
Purpose: Integration support.

Poland (PL-D-SAC) Case signed April 18, 2003, \$15.7M  
Purpose: Procure 270 JDAMs and support.

d. Nuclear Costs --  
None.

12. Unit Cost Summary:

	UCR Baseline (OCT 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	4882.6	4673.5	
(2) Quantity	221869	209752	
(3) Unit Cost	0.022	0.022	0.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	4307.5	4112.8	
(2) Quantity	221091	208948	
(3) Unit Cost	0.019	0.020	+5.26

Section 12's unit cost calculations are rounded to three decimal places, depicting an APUC change of 5.26%. Expanding the APUC to four decimal places results in the actual percent change of +1.04% versus +5.26%, since the UCR APUC is 0.1948 and the Current Estimate APUC is 0.1968 when shown to four decimal places.

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**13. Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	517.3	2089.4	-	2606.7
Previous Changes:				
Economic	+3.5	-21.2	-	-17.7
Quantity	-	+2022.5	-	+2022.5
Schedule	-	-90.5	-	-90.5
Engineering	-	-	-	-
Estimating	+77.8	+1125.3	-	+1203.1
Other	-	-	-	-
Support	-	+31.3	-	+31.3
Subtotal	+81.3	+3067.4	-	+3148.7
Current Changes:				
Economic	-0.4	-19.1	-	-19.5
Quantity	-	-385.1	-	-385.1
Schedule	-	+17.6	-	+17.6
Engineering	-	-	-	-
Estimating	-12.1	-55.9	-	-68.0
Other	-	-	-	-
Support	-	+1.1	-	+1.1
Subtotal	-12.5	-441.4	-	-453.9
Total Changes	+68.8	+2626.0	-	+2694.8
Current Estimate	586.1	4715.4	-	5301.5

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	490.3	1810.0	-	2300.3
Previous Changes:				
Quantity	-	+1674.2	-	+1674.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+81.3	+953.6	-	+1034.9
Other	-	-	-	-
Support	-	+25.6	-	+25.6
Subtotal	+81.3	+2653.4	-	+2734.7
Current Changes:				
Quantity	-	-308.4	-	-308.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.9	-43.2	-	-54.1
Other	-	-	-	-
Support	-	+1.0	-	+1.0
Subtotal	-10.9	-350.6	-	-361.5
Total Changes	+70.4	+2302.8	-	+2373.2
Current Estimate	560.7	4112.8	-	4673.5

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13b. Cost Variance Analysis (Cont'd):

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
Economic adjustment for negative program change. (Economic)	N/A	-0.7
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
Funding decrease in FY02 - FY07 (Navy) (Estimating)	-12.6	-13.9
Funding Increase in FY03 and FY04 (AF) (Estimating)	+1.8	+1.9
RDT&E Subtotal	-10.9	-12.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-24.5
Economic adjustment for negative program change. (Economic)	N/A	+5.4
Total Quantity Variance associated with decrease of 8946 units (Navy).	-170.8	-215.7
Quantity decrease of 8946 units (Navy). (Quantity)	-155.7	-196.9
Allocation to Schedule variance resulting from Quantity Change (Navy). (QR)(Schedule)	0.0	+1.6
Allocation to Estimating variance resulting from Quantity Change (Navy). (QR)(Estimating)	-15.1	-20.4
Total Quantity Variance associated with decrease of 8283 units (AF).	-158.0	-195.9
Quantity decrease of 8283 units (AF). (Quantity)	-152.7	-188.2
Allocation to Schedule variance resulting from Quantity Change (AF). (QR)(Schedule)	0.0	+1.5
Allocation to Estimating variance resulting from Quantity Change (AF). (QR)(Estimating)	-13.7	-18.3
Stretchout of annual procurement buy profile (Navy). (Schedule)	0.0	+11.3
Stretchout of annual procurement buy profile (AF). (Schedule)	0.0	+3.2
Adjustment for Current and Prior Inflation (Navy). (Estimating)	+2.4	+2.7
Decrease in Non Recurring due to methodology changes (Navy) (Estimating)	-18.7	-22.0
Adjustment for Current and Prior Inflation (AF). (Estimating)	+3.9	+4.5
Decrease in Non Recurring as a result of quantity decrease (AF). (QR)(Estimating)	-2.0	-2.4

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Change in Product Support Cost (Navy). (Support)	-1.9	-2.2
Adjustment for Current and Prior Inflation (AF). (Support)	+0.2	+0.2
Change in Peculiar Support (AF). (Support)	-5.1	-6.1
Change in Product Support Cost (AF). (Support)	+7.8	+9.2
Procurement Subtotal	-350.6	-441.4

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	
0.029	--	-0.009	--	--	+0.005	--	--	-0.004	0.025

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

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	NOV 2000	NOV 2000	MAR 2001
IOC	SEP 1999	SEP 1999	NOV 2000	FEB 2001
Total Cost	681.5	3392.3	2606.7	5301.5
Total Quantity	378	88126	89065	209752
Prog Acq Unit Cost	1.8	0.0	0.0	0.0

(U) NOTE: SAR Planning Estimate (PE) total cost and total quantity only

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14. Unit Cost and Other History (Cont'd):

reflect RDT&E values.

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
JDAM Lot 7:  
Boeing, St. Louis, MO  
F08635-03-C-0055, FFP  
Award: March 20, 2003  
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$689.5	N/A	35169

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$705.3	N/A	35620	\$711.4	\$711.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

Previously reported contract F08635-01-C-0027 for Lots 5 & 6 Production is over 90 percent complete and will no longer be reported.

This is the first time contract F08635-03-C-0055 is being 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	550.9	35.2	-	-	586.1
Procurement	2023.8	682.6	672.9	1336.1	4715.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2574.7	717.8	672.9	1336.1	5301.5

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16b. Program Funding Summary (Cont'd):

b. Annual Summary -- JDAM

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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				24.5	27.1
2003				13.9	15.5
Subtotal	114			182.7	192.0

The Navy RDT&E Dollars do not include Product Improvement Program (PIP) or Hornet Autonomous Real Time Targeting (HART) funding.

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				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
2000				10.5	11.3
2001				9.8	10.7
2002				13.3	14.7
2003				15.2	17.0
2004				31.1	35.2
Subtotal	690			378.0	394.1

Air Force RDT&E funding includes the Product Improvement Program (PIP). Air Force RDT&E funding excludes the Joint Programmable Fuze dollars.

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16b. Program Funding Summary (Cont'd):

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	9.3	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	6.0	45.6	59.4	65.5
2002	14551	8.1	261.8	270.7	302.4
2003	12280	7.1	215.3	223.5	251.7
2004	12326	7.0	218.4	226.1	258.0
2005	6620	5.4	124.5	130.5	151.1
2006	4250	5.3	81.0	86.9	102.4
2007	3430	3.7	66.7	71.0	85.1
2008	2850	4.7	56.3	61.7	75.5
2009	4380	5.3	88.2	94.1	117.3
Subtotal	65220	69.9	1198.3	1308.8	1500.8

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.

Navy procurement funding includes BLU-109 warheads but not Joint Programmable Fuze (JPF).

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 \$161.1M 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	0.8	16.4	21.6	22.8
1998	1828	0.8	31.5	36.7	39.2
1999	3778	1.4	67.4	73.7	79.6
2000	8725	1.3	165.0	173.3	189.2
2001	8904	1.6	172.3	184.5	203.5
2002	14392	2.5	256.7	269.5	301.0
2003	23340	4.0	406.2	423.7	477.1
2004	20244	3.4	355.4	372.1	424.6
2005	23137	4.2	436.1	450.6	521.8
2006	18008	3.3	343.8	358.1	421.8

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JDAM, December 31, 2003

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 \$
2007	12873	2.4	251.2	265.0	317.7
2008	3966	0.8	79.2	90.7	110.9
2009	3596	0.7	73.0	84.5	105.4
Subtotal	143728	27.2	2654.2	2804.0	3214.6

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 \$252.2M in DERF funds for delivery acceleration, facilitization 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	65334	69.9	1198.3	1491.5	1692.8
USAF	144418	27.2	2654.2	3182.0	3608.7
Grand Total	209752	97.1	3852.5	4673.5	5301.5

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	778	778
Procurement	66099	66464

Percent Total Program Quantities Delivered: 32.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1644.8

Percent Total Program Expended: 31.0%

Deliveries are as of December 31, 2003. Quantities procured with Defense Emergency Response Funds are not included in this total.

Expenditures reflect program office records as of December 31, 2003.

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JDAM, December 31, 2003

# **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 88,569 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 88,569 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
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

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JDAM, December 31, 2003

18b. Operating and Support Costs (Cont'd):

Total O&S Cost	JDAM	No Antecedent
BY\$	232.6	N/A
TY\$	421.3	N/A

Report Creation Date: 3/23/2004 9:14:30 AM

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N-14 EFV (AAAV)

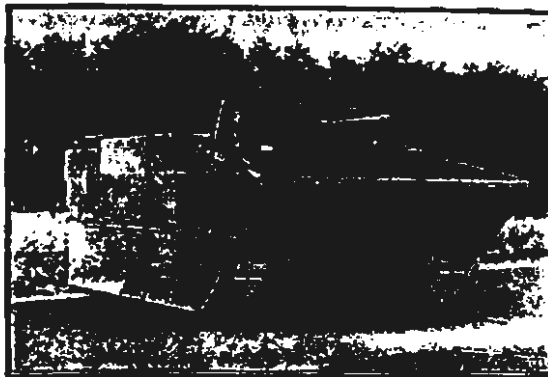
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: EFV (Formerly AAAV)

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): Expeditionary Fighting Vehicle (EFV)

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  
14041 Worth Avenue DSN N/A; COMM (703) 492-3300  
WOODBRIDGE, VA 22192-4123 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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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

04-C-225  
B. Fitz

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04-C-0722

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EFV (Formerly AAV), December 31, 2003

## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Acquisition Program Baseline (APB) dated December 8, 2000.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 21, 2003.

## **6. Mission and Description:**

The Expeditionary Fighting Vehicle (EFV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The EFV will provide the principle 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 EFV will provide the Marine Corps with the capability to execute the full spectrum of military missions from humanitarian operations to conventional combat operations.

The EFV is a self deploying, high water-speed, amphibious, armored, tracked vehicle. The EFV provides essential command, control, communications, and intelligence (C4I) functions for embarked personnel and EFV units. The EFV 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 EFV will provide Marine Corps Warfighters with the tactical mobility required to spearhead the concepts within the Expeditionary Maneuver Warfare capstone. In addition, the EFV provides significant improvements in survivability, lethality, and mobility over the legacy AAV7A1.

The EFV is the Marine Corps' number one priority ground system acquisition program as well as the only ACAT-ID program managed by the Marine Corps. Acquisition of the EFV is critical to the Marine Corps' transformation effort. EFV transitioned to the SDD phase in November 2000 after 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 EFVs will be produced with Initial Operational Capability (IOC) scheduled for 2008 and Full Operational Capability (FOC) scheduled for 2018.

## **7. Executive Summary:**

On August 19 2003, the Commandant of the Marine Corps renamed the Advanced Amphibious Assault Vehicle to the Expeditionary Fighting Vehicle (EFV). The renaming of the vehicle is in keeping with the United States Marine Corps (USMC) cultural shift from a 20th-Century force defined by amphibious operations to a 21st-Century force focusing on a broadened range of employment concepts and possibilities across a spectrum of conflict. A formal renaming

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EFV (Formerly AAV), December 31, 2003

**7. Executive Summary (Cont'd):**

ceremony was held at the Worth Avenue Technology Center on September 10, 2003.

The Test and Evaluation Master Plan was revised incorporating additional developmental testing and a more robust operational assessment and was approved by OSD on July 22, 2003.

On August 26 2003, General Dynamics Land Systems announced the selection of a site on Possum Point in Prince William County, Virginia, as the integration and assembly site for the EFV and the Lima Army Tank Plant in Lima, Ohio, as the structure and fabrication site for the program's production phase.

This period continued the fabrication, assembly and integration, shakedown testing, and entry into developmental testing of additional System Development and Demonstration (SDD) prototypes. Eight EFV SDD prototypes are currently in shakedown or developmental testing. The final two SDD prototypes are in design and fabrication. The EFV SDD prototypes are being built using production representative manufacturing processes and prototype production tooling.

SDD Developmental Testing (DT) commenced in September 2003. Successful DT efforts occurred in areas of toxic gases, maneuverability on grades and slopes, acceleration and braking, driver/vehicle commander vision, track durability, internal heat, and communication nets. Additional positive insights were gained in the areas of ride quality, whole body vibration, and internal noise. During water mobility testing conducted at Amphibious Vehicle Test Branch (AVTB) on December 11, 2003, the improvements of counter-rotating waterjets were validated. The vehicle reached speeds of 21 knots in a sea state 3 with significant wave heights of 3.8 feet.

Program Definition, Risk Reduction (PDRR) limitations pertaining to firing on the move, the feed system, and ready rounds have been corrected and validated in subsequent developmental testing. PDRR design concerns raised by Director, Operational Test and Evaluation (DOT&E) pertaining to mobility, track durability, automotive and electronic cooling, and human factors engineering have been corrected in the SDD design and are currently undergoing validation in developmental testing.

Operational Testing (OT) of the SDD prototypes is planned to commence in January 2005 with the Milestone C Operational Assessment (OA).

The EFV program continues to move forward on planning for a successful transition to Low Rate Initial Production (LRIP). Emphasis has been on contract activities for Special Tooling/Special Test Equipment (ST/STE) in support of the LRIP builds and production and logistics planning for the production phase of the program. The program is fully funded and on track to demonstrate all Key Performance Parameters.

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EFV (Formerly AAV), December 31, 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 --

	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
Milestone II DAB Review	DEC 2000	DEC 2000	DEC 2000
Award of EMD Contract	APR 2001	APR 2001	APR 2001
SDD Prototype Deliveries			
Start	JUN 2003	JUN 2003	JUN 2003
Complete	JUN 2004	JUN 2005	JUN 2005
Developmental Testing II			
Start	JUN 2003	JUN 2003	SEP 2003 (Ch-1)
Complete	AUG 2005	JUL 2008	JUL 2008
Milestone C OA			
Start	N/A	DEC 2004	JAN 2005 (Ch-2)
Complete	N/A	APR 2005	MAY 2005 (Ch-2)
Milestone C	N/A	SEP 2005	SEP 2005
Award of LRIP	NOV 2003	N/A	NOV 2005
LRIP Vehicle #1 Delivery	MAY 2005	MAY 2007	MAY 2007
IOT&E			
Start	AUG 2005	AUG 2007	AUG 2007

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EFV (Formerly AAV), December 31, 2003

9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	MAR 2006	APR 2008	APR 2008
Complete			
Live Fire (FUSL)			
Start	MAY 2004	NOV 2005	NOV 2005
Complete	DEC 2005	SEP 2007	SEP 2007
Full Rate Production Decision	AUG 2006	AUG 2008	AUG 2008
IOC	SEP 2006	SEP 2008	SEP 2008
Full Rate Production Deliveries Start	MAY 2008	MAY 2010	MAY 2010
Service Depot Support	FEB 2009	JUL 2012	JUL 2012
Organic Support Capability	FEB 2009	JUL 2012	JUL 2012
FOC	MAR 2016	APR 2018	APR 2018
Hot Weather Assessment			
Start	N/A	JUL 2005	JUL 2005
Complete	N/A	AUG 2005	AUG 2005
Cold Weather Assessment			
Start	N/A	FEB 2006	FEB 2006
Complete	N/A	MAR 2006	MAR 2006
Pre-LRIP #1 OA			
Start	FEB 2001	N/A	N/A
Complete	JUN 2003	N/A	N/A
EMD Prototype OA			
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
Milestone III DAB Review	AUG 2006	N/A	N/A

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 Level
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 Developmental Testing Start Date changed from JUN 2003 to SEP 2003 due to a program decision to accelerate performance of SDD Block I upgrades to improve inherent reliability of the vehicles prior to the start of DT.

{Ch-2} The Milestone C OA Start Date changed from DEC 2004 to JAN 2005, and the Complete Date changed from APR 2005 to MAY 2005. These changes are made to reflect the latest test schedule.

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EFV (Formerly AAV), December 31, 2003

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	21	24
Forward Speed on a Hard Surface Road (kph)	72	72 / 69	73.6	72
Armor Protection Against (mm/m)	30/1000	30/1000 / 14.5/300	14.5/300	14.5/300
Carry Capacity (AAV(P)) (Marines)	18	18 / 17	17	17
Firepower (AAV(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%
Armor Protection Artillery Fragment (mm/m)	N/A	155/15 / 155/15	TBD	155 / 15 (Ch-1)

Acronyms:

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 EFV demonstrated speeds in excess of 30 knots in calm seas in late 2001. In Dec 2003, sustained speed in excess of 25 knots was demonstrated in a combat loaded condition in two foot significant wave heights (SWH). Also in Dec 2003, sustained speed in excess of 20 knots in a combat loaded condition was achieved in three foot SWH. Speeds in excess of 20 knots were also demonstrated in 3.8SWH. Performance of the SDD prototypes will be demonstrated beginning in Mar 2004.

-Forward Speed on a Hard Surface Road: The EFV achieved an average speed

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EFV (Formerly AAAV), December 31, 2003

10a. Performance Characteristics (Cont'd):

of 73.6 kph (45 mph) in Oct 2000.

-Armor Protection Against: A full scale EFV ballistic hull and turret underwent live fire testing in 2001. Results from the live fire testing correlate to EFV armor validation data, which statistically demonstrated the required ballistic performance.

-Firepower (EFV(P)): The EFV demonstrated performance in excess of the objective range at Eglin, AFB in Jul 2001. The EFV 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) The Current Estimate for the Armor Protection - Artillery Fragment (mm/m) is entered at the threshold value. This KPP was an addition made in the March 2003 APB update.

Note:

Interoperability: PM's current estimate for the Threshold Interoperability is 100% of the critical top level IERS.

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EFV (Formerly AAAP), December 31, 2003

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1199.9	1690.3	1673.1
Procurement	5381.4	6334.8	6316.7
Rollaway	(4959.1)		(5757.3)
Nonrecurring Rollaway			(130.2)
Total Rollaway	(4959.1)		(5887.5)
Other Weapon System	(252.4)		(179.2)
Peculiar Support	(10.4)		(18.5)
Initial Spares	(159.5)		(231.5)
Construction (MILCON)	69.1	64.8	64.2
Acquisition O&M	0.0	0.0	0.0
Total FY 1993 Base-Year \$	6650.4	8089.9	8054.0
Escalation	2074.8	2536.2	2548.3
Development (RDT&E)	(179.1)	(278.7)	(274.2)
Procurement	(1879.8)	(2237.3)	(2255.7)
Construction (MILCON)	(15.9)	(20.2)	(18.4)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	8725.2	10626.1	10602.3
b. Quantity --			
Development (RDT&E)	12	12	12
Procurement	1013	1013	1013
Total	1025	1025	1025

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.

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EFV (Formerly AAV), December 31, 2003

12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	8089.9	8054.0	
(2) Quantity	1025	1025	
(3) Unit Cost	7.893	7.858	-0.44
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1993 BY\$)	6334.8	6316.7	
(2) Quantity	1013	1013	
(3) Unit Cost	6.254	6.236	-0.29

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	-21.9	-280.5	-1.4	-303.8
Quantity	-	-	-	-
Schedule	-1.1	+285.1	+10.2	+294.2
Engineering	-	+628.7	-	+628.7
Estimating	+613.0	+644.2	-12.1	+1245.1
Other	-	-	-	-
Support	-	+33.4	-	+33.4
Subtotal	+590.0	+1310.9	-3.3	+1897.6
Current Changes:				
Economic	-1.0	+28.4	+0.4	+27.8
Quantity	-	-	-	-
Schedule	-	-	+0.2	+0.2
Engineering	-	-	-	-
Estimating	-20.7	-26.9	+0.3	-47.3
Other	-	-	-	-
Support	-	1.2	-	1.2
Subtotal	-21.7	+0.3	+0.9	-20.5
Total Changes	+568.3	+1311.2	-2.4	+1877.1
Current Estimate	1947.3	8572.4	82.6	10602.3

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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	-1.7	+0.9	+2.7	+1.9
Engineering	-	+458.6	-	+458.6
Estimating	+492.1	+486.2	-7.9	+970.4
Other	-	-	-	-
Support	-	+7.7	-	+7.7
Subtotal	+490.4	+953.4	-5.2	+1438.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-17.2	-17.3	+0.3	-34.2
Other	-	-	-	-
Support	-	-0.8	-	-0.8
Subtotal	-17.2	-18.1	+0.3	-35.0
Total Changes	+473.2	+935.3	-4.9	+1403.6
Current Estimate	1673.1	6316.7	64.2	8054.0

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-1.3
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
Program Adjustments (Small Business Innovative research, PB05 adjustments) (Estimating)	-17.0	-20.5
RDT&E Subtotal	-17.2	-21.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+27.4
Economic adjustment for negative program change. (Economic)	N/A	+1.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.5
Net refinements to the program estimate (Estimating)	-17.7	-27.4
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Decrease in Initial Spares (Support)	-0.8	-1.2

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EFV (Formerly AAV), December 31, 2003

13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Decrease in Other Weapon System (Support)		-0.1	-0.1
Procurement Subtotal		-18.1	+0.3
(3) MILCON			
Revised escalation indices. (Economic)		N/A	+0.4
Projects Moved to the Correct Projected Year for Funding (Schedule)		0.0	+0.2
Revised Project Estimates (Estimating)		+0.3	+0.3
MILCON Subtotal		+0.3	+0.9

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.51	-0.269	-0.001	+0.287	+0.613	+1.17	--	+0.031	+1.83	10.34

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	
7.17	-0.242		+0.281	+0.621	+0.600	--	+0.032	+1.29	9.46

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	MAR 1995	MAR 1995	N/A	MAR 1995
Milestone II	JAN 2002	DEC 2000	N/A	DEC 2000
Milestone C	OCT 2007	N/A	N/A	SEP 2005
IOC	DEC 2007	SEP 2006	N/A	SEP 2008
Total Cost	934.1	8725.2	N/A	10602.3
Total Quantity	13	1025	N/A	1025
Prog Acq Unit Cost	71.8	8.5	N/A	10.3

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EFV (Formerly AAV), December 31, 2003

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --			Initial Contract Price		
SDD:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL DYNAMICS, WOODBRIDGE, VA					
M67854-01-C-0001, CPAF			\$712.1	N/A	10
Award: February 14, 2001					
Definitized: July 3, 2001					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$896.7	N/A	10	\$929.2	\$960.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.9	\$-11.5
Cumulative Variances To Date (12/31/03)	\$-29.2	\$-25.6
Net Change	\$-24.3	\$-14.1

Explanation of Change:

The net cumulative cost variance has changed by \$-24.3M. The primary reason for the variance is recurring material cost exceeded original estimates due to the need to expedite deliveries following an aggressive design release schedule to support vehicle build. Overtime to minimize schedule risk also contributed to this variance.

The net cumulative schedule variance has changed by \$-14.1M. The primary contributors were late release of design data packages by the prime contractor and a delay in subcontractor and vendor material deliveries. The prime contractor minimized schedule impacts by reassigning engineers to key program areas and using overtime as necessary to mitigate other delays. The delay is not expected to impact the overall vehicle delivery schedule or other significant events.

Contract Comments:

The contract price has increased by \$153.1M for the addition of One Year Test Extension (\$122.5M), Live Fire Test Vehicle (\$15.9M), Spray Cool Scope Increase (\$12.0M), Advanced Trainer (\$1.0M) and miscellaneous study tasks.

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EFV (Formerly AAV), December 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 (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-18)</u>	<u>Total</u>
RDT&E	1046.5	237.9	237.0	425.9	1947.3
Procurement	17.0	97.2	67.7	8390.5	8572.4
MILCON	29.8	-	-	52.8	82.6
O&M	-	-	-	-	-
Total	1093.3	335.1	304.7	8869.2	10602.3

b. Annual Summary -- EFV

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 1993 Dollars Nonrec</u>	<u>Rollaway 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				125.3	142.5
2002				218.4	250.6
2003				226.8	263.3
2004				202.3	237.9
2005				198.7	237.0
2006				150.0	181.8
2007				131.0	161.6
2008				55.6	69.9
2009				9.8	12.6
Subtotal	12			1673.1	1947.3

Appropriation: 1109 - Procurement, Marine Corps

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 1993 Dollars Nonrec</u>	<u>Rollaway FY 1993 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
2002					
2003	1		13.8	14.6	17.0
2004		82.3		82.3	97.2
2005		47.9		56.5	67.7
2006	18		192.2	204.2	248.8
2007	24		203.7	222.8	276.6

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EFV (Formerly AAV), December 31, 2003

16b. Program Funding Summary (Cont'd):

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Rollaway FY 1993 Dollars Nonrec	Rollaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008	54		401.9	446.6	565.2
2009	90		604.5	667.1	861.2
2010	120		759.6	806.6	1062.1
2011	120		658.4	701.3	941.9
2012	120		632.6	669.1	916.6
2013	120		610.5	646.1	902.9
2014	120		593.1	628.0	895.1
2015	120		580.1	614.5	893.3
2016	106		506.9	537.6	797.2
2017				11.3	17.1
2018				8.1	12.5
Subtotal	1013	130.2	5757.3	6316.7	8572.4

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Rollaway FY 1993 Dollars Nonrec	Rollaway 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					
2007				11.0	13.8
2008					
2009					
2010				5.4	7.2
2011					
2012				3.0	4.2
2013				13.2	18.6
2014				5.7	8.2
2015					
2016				0.5	0.8
Subtotal				64.2	82.6

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1025	130.2	5757.3	8054.0	10602.3

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EFV (Formerly AAV), December 31, 2003

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	3	3
Procurement	0	0

Percent Total Program Quantities Delivered: 0.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1053.5

Percent Total Program Expended: 9.9%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The total cost per element is divided by the number of operating vehicles (609) and then by 20 years (the assumed vehicle life) to calculate an annual value.

Intermediate Maintenance Manpower costs are estimated and included with Mission Pay & Allowances.

The date for this O&S cost estimate is January, 2003.

NOTE: There is no antecedent system.

b. Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	EFV Average Cost Per Vehicle	No Antecedent
Mission Pay & Allowances	0.2	N/A
Unit Level Consumption	0.1	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.1	N/A
Sustaining Support	0.3	N/A
Indirect Costs	0.0	N/A
Total	0.7	N/A

Total O&S Cost	EFV	No Antecedent
BYS (In Millions)	8553.6	N/A
TY\$ (In Millions)	17865.4	N/A

Report Creation Date: 03/21/2004 5:46:27 PM

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N-26 SSN 774 (VA CLASS)

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: VIRGINIA CLASS SUB

AS OF DATE: December 31, 2003

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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 0603562N  
(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)

04-C-0192  
B. Fitz-

Derived from: OPNAVINST 8550.755 ENCL.90  
Downgrade in sections:  
Declassify on: OADR

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline dated June 30, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 2, 2003.

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 Advanced Capability (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) With the VIRGINIA Class program rapidly approaching lead ship delivery, several significant milestones highlighted the year 2003. The lead ship, VIRGINIA (SSN 774) achieved float-off on August 8, 2003 and was christened on August 16, 2003, the date established in the 1998 construction schedule. On August 14, 2003 the Navy contracted with Electric Boat Corporation for a six ship block buy with transition clauses to convert to a multi-year procurement with Congressional approval. As of December 2003, VIRGINIA (SSN 774) was 89% complete while work on TEXAS (SSN 775) was 81% 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) were 51% and 33% complete respectively.

VIRGINIA commenced dockside non-propulsion electronics testing in June 2003 and is scheduled to complete this test phase in April 2004, just prior to the start of sea trials. Electric Boat is planning for an on-time delivery of VIRGINIA in June 2004. TEXAS achieved a major milestone, Pressure Hull Complete (PHC), with the final welds of the boat's pressure hull on October 22, 2003. TEXAS will be delivered at Northrop Grumman Newport News in June 2005, one year after the lead ship.

While the submarine design is complete and most major construction schedule milestones continue to be met, construction cost performance on all four ships

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7. (U) Executive Summary (Cont'd):

continues a decline attributable to higher than anticipated labor/overhead costs, material component cost growth and recovery from vendor and shipbuilder quality assurance problems. An internal funding review of the program determined that current program funding and phasing, including cost-to-complete funding requirements identified in 2001, are marginally sufficient to support delivery of the first four ships.

In pursuit of the lowest possible future program costs, the Navy structured the follow-on construction contract with clauses to transition to a multi-year contract in Fiscal Year 2004. This contract will reduce costs through greater shipyard efficiency and authority to purchase material in economic order quantities. Multi-year 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. The transition to multi-year procurement for hulls six through ten was completed in January 2004 following approval by Congress in the FY04 Defense Appropriations and Authorization Acts.

A new Acquisition Program Baseline (APB) was approved in April 2003, incorporating all cost information to date. Major changes in total program acquisition costs (TY\$) since rebaselining are attributable to Congressional approval of a 5-ship multi-year procurement with one ship each in FY07 and FY08 rather than the 7-ship multi-year procurement with two ships each in FY07 and FY08 (\$380M) that was requested in the FY04 President's Budget. Increases due to the partial restoral of the technology insertion program, \$937M in procurement costs and \$447M in Research, Development, Test and Evaluation, across the duration of the program, also contributed to cost increases since April 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
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	SEP 2008	SEP 2008 (X-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			

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9a. (U) Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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		N/A	
MS III		N/A	
IOC Block IV		N/A	



(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

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Radiated Noise				
Broadband Noise				
5 and 10 knots (prior to installation of hull coating)	Figure A.1 (Except in Port and casualty	Figure / Figure A.1 / A.1 (Except / (Except in Port / in Port and / and casualty/ casualty / as noted / below)	TBD	Figure A.1
Greater than or equal to 15 knots	Figure A.1 (All horizon- tal aspects)	Figure / Figure A.1 (All/ A.1 horizon-/ (beam tal / aspect aspects)/ only).	TBD	Figure A.1
Narrowband Noise				

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VIRGINIA CLASS SUB, December 31, 2003

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1 / Transient Noise	(b)(1)		TBD	(b)(1)
1 / Exceptions: Weapons Launch			TBD	
Active Target Strength (less than or equal to)	(b)(1)			
1 / High Frequency (15-30 kHz)			TBD	
1 / Stern Aspect (dB)				
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-ft3) (million)			TBD	
1 / AC Electric (amp- meter)			TBD	

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10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Flank Speed (knots) (greater than or equal to)			TBD	(b)
Torpedo Launch Rate Torpedoes in one minute			TBD	
Payload (standard size weapons) (including weapons stored in torpedo tubes and vertical launch tubes)			TBD	
Vertical Launch Missiles Cells			TBD	
Test Depth (ft)			TBD	
Endurance (days) (greater than or equal to)			TBD	
Operational Availability (%)				
Covert Strike Warfare (STW)			TBD	
Covert Surveillance Intelligence Collection/Sur- veillance Covert Indication and Warning (ISW), and Electronic Warfare (EW)			TBD	
Special Warfare (NSW)			TBD	
Mine Warfare (MIW)			TBD	
Anti-Submarine Warfare (ASW)			TBD	
Anti-Surface Ship Warfare (ASUW)			TBD	
Battle Group Support			TBD	

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10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Current Perf Estimate
90-Day Basic Functions	(b)(1)	(b)(1)	(b)(1)

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.

11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	3405.0	4104.6	4512.9
Procurement	42228.1	60642.9	59441.6
Sailaway	(42130.9)		(58738.4)
Other Wpn System Costs	(16.5)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(703.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1995 Base-Year \$	45633.1	64747.5	63954.5
Escalation	25447.7	17044.7	19260.7
Development (RDT&E)	(409.0)	(322.1)	(430.6)
Procurement	(25038.7)	(16722.6)	(18830.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	71080.8	81792.2	83215.2

(U) The Current Estimate (CE) increase in Then Year cost and corresponding decrease in Base Year 1995 cost is attributable to the decreased gap between OSD and VIRGINIA Class inflation indices.

The December 2003 SAR Current Estimate (CE) includes \$430.4M of FY04-06 Prior Year Completion funding. These SCN funds are separately authorized.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	30	30	30
Total	30	30	30

(U) Low Rate Initial Production (LRIP) quantity of 14 exceeds 10%, which is standard for shipbuilding programs. The LRIP quantity was approved June 30, 1995 by USD(Acquisition & Technology).

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11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales --  
None

d. (U) Nuclear Costs --  
\$13,704M (TYS).

12. (U) Unit Cost Summary:

	UCR Baseline (APR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 SYS)	64747.5	63954.5	
(2) Quantity	30	30	
(3) Unit Cost	2158.250	2131.817	-1.22
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 SYS)	60642.9	59441.6	
(2) Quantity	30	30	
(3) Unit Cost	2021.430	1981.387	-1.98

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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	3814.0	67266.8	-	71080.8
Previous Changes:				
Economic	-252.3	-14464.0	-	-14716.3
Quantity	-	-	-	-
Schedule	-	+2168.1	-	+2168.1
Engineering	+181.5	+1090.8	-	+1272.3
Estimating	+683.5	+20087.8	-	+20771.3
Other	-	-280.0	-	+280.0
Support	-	+936.0	-	+936.0
Subtotal	+612.7	+10098.7	-	-10711.4
Current Changes:				
Economic	+1.6	+2031.5	-	-2033.1
Quantity	-	-	-	-
Schedule	-	+210.3	-	+210.3
Engineering	-	-	-	-
Estimating	+515.2	-1238.4	-	-723.2
Other	-	-	-	-
Support	-	-97.2	-	-97.2
Subtotal	+516.8	+906.2	-	+1423.0
Total Changes	+1129.5	+11004.9	-	+12134.4
Current Estimate	4943.5	78271.7	-	83215.2

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3405.0	42228.1	-	45633.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+88.6	-	+88.6
Engineering	+158.1	+797.9	-	+956.0
Estimating	-541.5	+16593.9	-	+17135.4
Other	-	+216.3	-	+216.3
Support	-	+718.1	-	-718.1
Subtotal	-699.6	+18414.8	-	+19114.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+408.3	-1089.2	-	-680.9
Other	-	-	-	-
Support	-	-112.1	-	-112.1
Subtotal	+408.3	-1201.3	-	-793.0
Total Changes	+1107.9	+17213.5	-	+18321.4
Current Estimate	4512.9	59441.6	-	63954.5

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VIRGINIA CLASS SUB, December 31, 2003

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	+1.6
Partial restoration of the Tech	+350.3	+447.1
Insertion/Tech Refresh program (Estimating)		
Restore funds to C3I testing, OT-IIB and	+8.8	-10.2
TECH/CPEVAL (Estimating)		
Congressional and OSD adjustments primarily	+34.1	+40.4
for Combat Systems (eg. Networkcentric		
Architecture, Combat Control System		
Architecture) (Estimating)		
Restoration of Information Assurance program	+15.3	-17.7
(Estimating)		
Adjustment for current and prior inflation	-0.2	-0.2
(Estimating)		
RDT&E Subtotal	+408.3	+516.8
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-2031.5
Stretchout of procurement schedule including	N/A	+210.3
moving two ships (one each in FY07 and FY08)		
to beyond the FYDP. (Schedule)		
Revised estimate for Outfitting and Post	-11.5	+8.6
Delivery (Estimating)		
Pricing of construction material and labor	-1593.2	-1912.8
is at 4.2% and 4.5% respectively. Savings		
due to increase in OMB/OSD inflation indices		
between FY04 and FY05 narrows gap between		
OMB/OSD and VA-Class pricing. (Estimating)		
Reduction in OPN spares funding FY05-FY23	-64.7	-65.6
(Support)		
Restoration of Technology Insertion Program	+665.3	+937.2
(Estimating)		
Congressional approval of a 5-ship Multi-Year	-304.8	-380.0
Procurement versus the budgeted 7-ship		
Multi-Year Procurement (Estimating)		
Updated Multi-Year Procurement estimates	-261.5	-370.0
(FY09-FY13) based upon revised savings from		
economic order quantities. (Estimating)		
Adjustment for current and prior inflation	-100.1	-118.3
(Estimating)		
Updated Multi-Year Procurement estimates	-447.6	-670.0
(FY14-FY17) based upon revised savings from		
economic order quantities. (Estimating)		
Adjustment for escalation of labor at 4.5%	+354.6	+506.9
(Estimating)		

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Reduction in Outfitting spares (Support)	-47.4	-31.6
Procurement Subtotal	-1201.3	+906.2

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes								PAUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
2369.36	-422.77	--	+79.28	+42.41	+668.27	+9.33	+27.96	+404.48	2773.84

b. (U) 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
2242.23	-414.42	+0.010	+79.28	+36.36	-628.31	+9.33	-27.96	+366.83	2609.06

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 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	83215.2
Total Quantity	N/A	30	N/A	30
Prog Acq Unit Cost	N/A	2369.4	N/A	2773.8

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VIRGINIA CLASS SUB, December 31, 2003

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --			Initial Contract Price		
(U) IPPD96 Contract:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn, EB Corp, Groton, CT					
N00024-96-C-2100, CPFF w/PI			\$1587.2	N/A	0
Award: January 29, 1996					
Definitized: May 9, 1996					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1617.3	N/A	0	\$1670.0	\$1670.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-114.6	\$-12.2	
Cumulative Variances To Date (09/27/03)			\$-123.4	\$3.3	
Net Change			\$-8.8	\$15.5	

Explanation of Change:

(U) This effort has experienced a net unfavorable cost variance of \$-8.8M, but a net favorable schedule variance, \$15.5M. The cumulative variances are considered insignificant relative to the current target price. Design quality and timeliness remain superior. The detail drawing work is complete and has supported construction schedules at both shipbuilders.

(U) SSN 774:			Initial Contract Price		
Gen Dyn, EB Corp,, Groton, CT			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-96-C2100A, CPFF					
Award: September 30, 1998			\$1028.0	N/A	1
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>	
\$1070.9	N/A	1	\$1230.5	\$1274.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-141.0	\$-34.6	
Cumulative Variances To Date (09/27/03)			\$-183.7	\$-27.1	
Net Change			\$-42.7	\$7.5	

Explanation of Change:

(U) The Estimated Price at Completion is higher than the initial contract target price due to higher than expected labor/overhead rates and degrading labor performance. The net unfavorable cost variance this period of \$-42.7M was driven by forward pricing rate increases as well as by some labor performance issues that include offloaded work inefficiencies. Schedule variance reversed course with a net change of \$7.5M. Current funding and phasing appear to be adequate to support on time delivery of

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VIRGINIA CLASS SUB, December 31, 2003

15. (U) Contract Information (Cont'd):

this ship.

(U) SSN 775:  
Gen Dyn, EB Corp., Groton, CT  
N00024-96-C2100B, CP1F  
Award: December 8, 1998  
Definitized: December 8, 1998

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1083.7	N/A	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1152.1	N/A	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1410.1	\$1447.4

Previous Cumulative Variances  
Cumulative Variances To Date (09/27/03)  
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
\$-173.9	\$-30.9
\$-234.8	\$-18.4
\$-60.9	\$12.5

Explanation of Change:

(U) The Estimated Price at Completion is higher than the initial contract target price due to higher than expected labor/overhead rates and degrading labor performance. The net unfavorable cost variance this period of \$-60.9M was driven by forward pricing rate increases due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Schedule variance reversed course with a net change of \$12.5M. Current funding and phasing appear to be adequate to support on time delivery of this ship.

(U) Lead Yard Services:  
Gen Dyn, EB Corp, Groton, CT  
N00024-00-C-2112, CPFF  
Award: September 30, 2000  
Definitized: September 30, 2000

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$482.1	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$159.8	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$159.8	\$159.8

Explanation of Change:

(U) This is an incrementally funded Level of Effort (LOE) type contract.

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15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this CPFF contract.

(U) SSN 776:			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>	
\$1100.4	N/A	1	\$1184.6	\$1206.8	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (09/27/03)			\$-25.8	\$-43.2	
Net Change			\$-48.8	\$-63.6	
			\$-23.0	\$-20.4	

Explanation of Change:

(U) The Estimated Price at Completion is higher than the initial contract target price due to higher than expected labor/overhead rates and degrading labor performance. The net unfavorable cost variance this period of \$-23.0M was driven by forward pricing rate increases due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. The adverse schedule variance of \$-20.4M this period continues to reflect a lack of resources, however, manning levels are steadily improving over all of the major construction trades. Current funding and phasing appear to be adequate to support on time delivery of this ship.

(U) SSN 777:			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>	
\$1070.5	N/A	1	\$1186.6	\$1239.8	

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VIRGINIA CLASS SUB, December 31, 2003

15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-16.1	\$-29.2
Cumulative Variances To Date (09/27/03)	\$-49.8	\$-29.8
Net Change	\$-33.7	\$-0.6

Explanation of Change:

(U) The Estimated Price at Completion is higher than the initial contract target price due to higher than expected labor/overhead rates and degrading labor performance. The net unfavorable cost variance this period of \$-33.7M was driven by forward pricing rate increases due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Schedule variance this period, (\$-.6), essentially held steady. 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>
RDT&E	3483.6	164.1	143.3	1152.5	4943.5
Procurement	13425.4	2695.8	2613.3	59537.2	78271.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	16909.0	2859.9	2756.6	60689.7	83215.2

b. Annual Summary -- VIRGINIA CLASS SUBMARINE

Appropriation: 1319 - 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	66.3
1994				367.5	363.3
1995				449.8	455.7
1996				416.4	429.0
1997				435.5	454.2
1998				363.7	382.4
1999				289.8	308.3

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VIRGINIA CLASS SUB, December 31, 2003

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 \$
2000				265.8	286.8
2001				217.0	237.4
2002				196.6	217.0
2003				231.4	258.4
2004				145.0	164.1
2005				124.9	143.3
2006				131.6	153.5
2007				117.9	140.0
2008				119.0	144.0
2009				94.7	116.9
2010				96.2	121.2
2011				98.1	126.0
2012				68.8	90.2
2013				66.6	89.0
2014				63.8	87.0
2015				60.9	84.7
Subtotal				4512.9	4943.5

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		735.5		735.5	775.7
1998	1	314.1	1987.2	2301.3	2464.5
1999	1		1801.0	1801.0	1948.5
2000	1	678.3		678.3	744.5
2001	1		1587.2	1587.2	1766.9
2002	1		2195.5	2204.3	2489.8
2003	1		2069.8	2084.2	2445.2
2004	1		2251.2	2263.9	2695.8
2005	1		2142.7	2150.4	2600.9
2006	1		1960.1	1973.3	2428.7
2007	1		2190.7	2201.7	2762.3
2008	1		2419.4	2432.5	3115.3
2009	2		4166.3	4170.4	5447.8
2010	2		3961.7	3997.0	5325.6
2011	2		3528.7	3550.7	4825.8
2012	2		3779.6	3801.9	5270.6
2013	2		3585.6	3618.6	5116.7
2014	3		6131.0	6164.9	8891.7
2015	3		5061.9	5093.1	7477.8

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16b. (U) Program Funding Summary (Cont'd):

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 \$
2016	3		3772.8	3796.9	5697.3
2017	1		1044.7	1082.0	1656.1
2018		103.4		137.8	215.1
2019		124.1		164.3	261.7
2020		145.1		176.3	286.4
2021		133.9		157.4	260.8
2022		86.9		94.4	159.5
2023		21.4		23.2	40.0
Subtotal	30	3101.4	55637.0	59191.2	77961.3

(U) The current funding profile includes \$430.4M of FY04-06 Prior Year Completion funding. These SCN funds are separately authorized.

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				10.7	12.4
2006				39.0	45.9
2007				69.5	83.2
2008				26.9	32.8
2009				6.7	8.4
2010				39.5	50.2
2011				46.1	59.8
2012				1.0	1.3
2013				1.0	1.3
2014				1.0	1.4
2015				1.0	1.4
2016				1.0	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				250.4	310.4

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16b. (U) Program Funding Summary (Cont'd):

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	30	3101.4	55637.0	63954.5	83215.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 12664.3

(U) Percent Total Program Expended: 15.2%

(U) Total expenditures as of January 31, 2004.

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 CAIG O&S Cost Estimating Guide using historical data from operating submarine classes. Maintenance and Personnel costs are the major contributors to the total O&S Program. The source of this cost estimate is the VIRGINIA Class Total Ownership Cost Baseline. Total O&S costs are derived by multiplying the planned quantity of ships by the expected service life and average annual cost per ship. 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)

	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

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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	VIRGINIA CLASS SUBMARINE	LOS ANGELES CLASS
	Average Annual Cost per Ship	Average Annual Cost per Ship
Indirect Costs	0.0	0.9
Indirect Support	5.4	0.0
Total	34.8	26.1

Total O&S Cost	VIRGINIA CLASS SUBMARINE	LOS ANGELES CLASS
BYS (In Millions)	31343.0	N/A
TY\$ (In Millions)	50312.0	N/A

Report Creation Date: 03/22/2004 8:57:44 AM

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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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SECURITY REVIEW  
 DEPARTMENT OF DEFENSE

Classified by: E-3 SECURITY CLASSIFICATION GUIDE, 1 November 2003  
 Downgrade instruction: Not Subject to Automatic Downgrade  
 Declassify on: 1 November 2028

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**5. (U) References:**

SAR Baseline (Production Estimate):

(U) Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated October 29, 1997.

Approved Program:

(U) AFSAE Approved Acquisition Program Baseline (APB) dated March 6, 2000.

**6. (U) Mission and Description:**

(U) The purpose of the Radar System Improvement Program (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 Engineering and Manufacturing Development (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 Radar System Improvement Program (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 Research and Development (R&D) Agreement.

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7. (U) Executive Summary (Cont'd):

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.

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 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 twenty two USAF AWACS modified with RSIP.

In September 2002, the Air Force Comptroller staff set new Depot Maintenance Activity Group (DMAG) rates for the Depot. The FY03 Depot install rate increased 105% over the FY02 rate and the FY04 rate increased 4% over the FY03 rate. The install rate increase caused significant cost impacts for the program. The AWACS RSIP program investigated options to resolve the install funding shortfall. On October 20, 2003 Air Force Material Command/ Logistics Center (AFMC/LG) directed Oklahoma City-Air Logistics Center (OC-ALC) to institute a separate modification rate for the E3-RSIP in FY04. On September 5, 2003 the AWACS RSIP program received a \$1.4M Below Threshold Reprogramming. This combined with the separate mod rate reduced the install requirement shortfall and thus allowed 30 of 32 kit installations to be funded. Additional options are being worked that will allow all 32 RSIP kit installations. Resolution of the remaining shortfall expected late February/early March 2004 time frame.

AWACS RSIP is greater than 90% expended and is submitting this Selected Acquisition Report (SAR) as a final SAR for the program.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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

b. Current Change Explanations -- None

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10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Improve System	13.0	13.0 / 10.6	10.9 (1)	10.6
Sensitivity (dB)				
Detection Range				
Towed-Sphere (.1M^2)				
Low Altitude (nm)				
High Altitude (nm)				
Overland Mission				
MTBCF (hrs)				
Detection Range (360 degrees)				
Fighter-size target				
Low Altitude (nm)				
High Altitude (nm)				
ECCM				
3 millirad strobe				
azimuth, accuracy				
strobe on mainbeam				
noise jammer at				
100 nm (dBw/MHz)				
Detect fighter-size				
target (.8m^2) (nm)				
(dBw/MHz)				
Detect 16 degrees				
off main beam				
jammer (nm)				
(dBw/MHz)				
Inband frequency				
change (msec)				
Maintainability				
(SRC/SRCMP)				
Mean Repair Time				
(hrs)				
Fraction of Failures				
detected (%)				
Reliability (Radar Set)				

(U) (1) Non Elevation Scan (NEL) mode over Sea.

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10a. ~~(S)~~ Performance Characteristics (Cont'd):

(b)(1)



Approved Program  
Threshold

Scaled  
Threshold

Demonstrated

(b)(1)



(U) (8) US IOT&E was completed in October 1996.

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.

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	465.5	465.3	465.5
Procurement	424.6	520.1	553.5
Flyaway	(296.2)		(313.1)
Other Weapon Systems	(102.6)		(197.4)
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 \$	890.1	985.4	1019.0
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 \$	891.3	974.7	1005.1

(U) Initial spares reflect Contract Authority (CA).

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	32	32	32
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.

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

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11c. (U) Total Program Cost and Quantity (Cont'd):

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.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2000 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	985.4	1019.0	
(2) Quantity	32	32	
(3) Unit Cost	30.794	31.844	+3.41
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	520.1	553.5	
(2) Quantity	32	32	
(3) Unit Cost	16.253	17.297	+6.42

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	424.4	466.9	-	891.3
Previous Changes:				
Economic	-	-23.2	-	-23.2
Quantity	-	-	-	-
Schedule	-	+24.9	-	+24.9
Engineering	-	-	-	-
Estimating	-	-8.8	-	-8.8
Other	-	-	-	-
Support	-	+119.1	-	+119.1
Subtotal	-	+112.0	-	+112.0
Current Changes:				
Economic	-	-0.1	-	-0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	+1.9	-	+1.9
Subtotal	-	+1.8	-	+1.8
Total Changes	-	+113.8	-	+113.8
Current Estimate	424.4	580.7	-	1005.1

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	465.5	424.6	-	890.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+22.2	-	+22.2
Engineering	-	-	-	-
Estimating	-	-5.3	-	-5.3
Other	-	-	-	-
Support	-	+110.2	-	+110.2
Subtotal	-	+127.1	-	+127.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	+1.8	-	+1.8
Subtotal	-	+1.8	-	+1.8
Total Changes	-	+128.9	-	+128.9
Current Estimate	465.5	553.5	-	1019.0

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E-3 AWACS RSIP, December 31, 2003

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	-0.1
	Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
	Change in Other Weapon Systems. Decrease requirements in Engineering Change Orders, Diminishing Manufacturing Sources and Production Follow-on Services. Offset by increases in installation and System Program Office Operations Support. (Support)	+1.7	+1.8
	Procurement Subtotal	+1.8	+1.8

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.85	-0.728	+0.001	+0.778	--	-0.275	--	+3.78	+3.56	31.41

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	-0.728	+0.001	+0.778	--	-0.275	--	+3.78	+3.56	18.15

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (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	1005.1
Total Quantity	N/A	34	32	32
Prog Acq Unit Cost	N/A	20.3	27.9	31.4

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --  
 (U) AWACS RSIP PRODUCTION:  
 The Boeing Company, Seattle, WA  
 F19628-99-C-0042, FFP  
 Award: November 12, 2000  
 Definitized: November 13, 2000

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:

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.

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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 (FY89-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	424.4	-	-	-	424.4
Procurement	552.2	21.9	6.6	-	580.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	976.6	21.9	6.6	-	1005.1

(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.

b. Annual Summary -- RSIP MOD

Appropriation: 3600 - Research, Development, Test + Eval, AF

<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>
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

<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	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	115.1	122.1
2002	9		52.0	83.3	89.2
2003				24.7	26.7
2004				19.9	21.9
2005				5.9	6.6

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16b. (U) Program Funding Summary (Cont'd):

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 \$
2006					
Subtotal	32	18.3	294.8	553.5	580.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	32	18.3	294.8	1019.0	1005.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	22	22

(U) Percent Total Program Quantities Delivered: 68.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 912.7

(U) Percent Total Program Expended: 90.8%

(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. 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

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18a. (U) Operating and Support Costs (Cont'd):

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.

In the 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 total O&S cost for the Pre-RSIP is for FY96-FY05. The Post-RSIP steady-state year is FY12. The total O&S cost for the Post-RSIP is for FY98-FY25. The O&S cost of the Pre and Post systems are used to compare the differences in support cost in the steady-state mode.

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\$	830.7	29.3
TY\$	1373.1	47.6

Report Creation Date: 3/23/2004 9:22:13 AM

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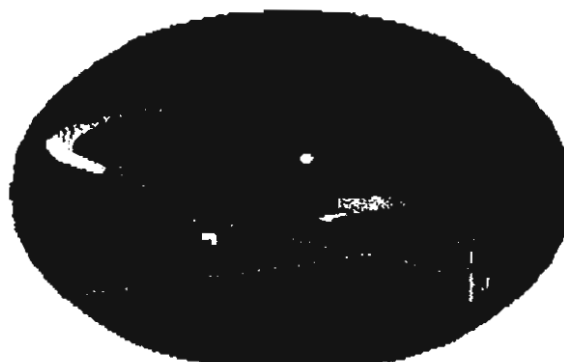
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: NAS

AS OF DATE: December 31, 2003

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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 Steve Bessette
75 Vandenberg Drive	Assigned: December 15, 2003
Hanscom AFB	DSN 478-4947; COMM (781) 377-4947
Bedford, MA 01731-2103	Steve.Bessette@hanscom.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0204696N  
PE 0305137F  
PE 0604633A

PROCUREMENT:

APPN 1810 ICN 284000 (Navy)  
APPN 3080 ICN 833020 (Air Force)  
APPN 2031 ICN AA0050 (Army)

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## **5. References:**

SAR Baseline (Development Estimate):

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated July 20, 1995.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated March 3, 2003.

## **6. Mission and Description:**

The DoD National Airspace System (NAS) is comprised of three systems: the Digital Airport Surveillance Radar (DASR), the DoD Advanced Automation System (DAAS), also known as the Standard Terminal Automation Replacement System (STARS) within the Federal Aviation Administration (FAA), and the Voice Communication Switching System (VCSS). The DoD NAS program will modernize the DoD radar approach control facilities in parallel with the 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:**

If the DoD does not modernize the DoD Air Traffic Control (ATC) system, the resulting reduced interoperability between current DoD and Federal Aviation Administration (FAA) facilities will negatively impact DoD flight operations. DoD will acquire systems, to the maximum extent practical, in conjunction with the FAA to reduce development costs and prevent duplication. The DoD manages the Digital Airport Surveillance Radar (DASR) procurement contract. The remainder of National Airspace System (NAS) procurement funding is for the Voice Communication Switching System (VCSS) and Digital Advanced Automation System (DAAS) programs. The VCSS and DAAS procurement contracts are managed by the FAA and are not reported by DoD.

1993 thru 2001: Chief of Staff of the Air Force (CSAF) approved the National Airspace System (NAS) and Military Airspace Management System (MAMS) Operational Requirements Documents (ORDs). NAS successfully passed its Milestone (MS) II review; FAA awarded contracts for Enhanced Terminal Voice Switch (ETVS) to Denro, Inc. and Standard Terminal Automation Replacement

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7. Executive Summary (Cont'd):

System (STARS) to Raytheon Corporation. The AF awarded the DASR contract to Raytheon Corporation. MAMS had a favorable MS III Review, declared Initial Operational Capability (IOC) and was approved for Full Rate Production. Low Rate Initial Production (LRIP) lots for DAAS and DASR were authorized. DAAS and DASR completed Developmental Test & Evaluation (DT&E). The VCSS achieved a successful Full Rate Production Decision. The NAS systems commenced safe flight operations at Eglin Air Force Base (AFB) in June 2000, which have successfully continued uninterrupted to date. NAS entered first round of Multi-Service Operational Test and Evaluation (MOT&E). A second LRIP for DASR and DAAS was authorized. NAS completed formal DT&E testing of DASR software production enhancements at Eglin Air Force Base (AFB) for further MOT&E.

2002: A DAAS-only Final MOT&E report was issued by Air Force Operational Test and Evaluation Center (AFOTEC) that deemed DAAS "operationally effective and suitable." A second round of MOT&E was completed at Eglin AFB, FL. AFOTEC drafted an MOT&E status report rating DASR as "ineffective and unsuitable." DoD users (Air Force Flight Standards Agency (AFFSA) lead), the FAA, and the System Program Office (SPO) non-concurred with the findings. The Air Force Acquisition Executive directed the SPO to leverage FAA results to proceed to MS III.

2003: AFFSA declared the NAS System IOC when Laughlin AFB started providing air traffic control service with NAS (DAAS, DASR, and VCSS) equipment. AFOTEC formally released their status report on DASR MOT&E. AFOTEC, directed that NAS proceed with another round of MOT&E at Moody AFB, GA, rather than leverage FAA test results at Willow Grove, PA. AFOTEC selected Moody because it was the best near-term available site to represent a DoD operational environment. A General Officer Steering Group (GOSG) directed that Moody expedite by 6 months to support an MOT&E and subsequent MS III by June 2004. FAA made an In Service Decision (ISD) on STARS, declaring the software baseline for national system deployment. Initial system settings for Moody AFB DASR optimization and adaptation provided poor results for re-entry to MOT&E; additional focused tests and adjustments to reflect operator preferences continue. GOSG expedited schedule became unachievable with required test re-entry criteria and planned MOT&E duration. FAA made an ISD for DASR, clearing the system for national deployment and operation. DoD completed its transition from the DAAS Initial Service Capability software to the STARS national baseline. DoD started providing air traffic control service with NAS equipment at Alpena Air National Guard Base, MI, McGuire AFB and Lakehurst Naval Air Engineering Station, NJ, White Sands Missile Range and Holloman AFB, NM, Patuxent River Naval Air Station, MD, Beaufort Naval Air Station, SC, Willow Grove Naval Air Station, PA, Randolph and Lackland AFBs and Fort Bliss, TX, Offutt AFB, NE, Westover AFB, MA, and Quonset State Airport, RI. The 200th DoD VCSS was delivered and installed.

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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
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	JAN 2005 (Ch-1)
IOC (First DoD Site Activation)	APR 2000	AUG 2003	JAN 2003 (Ch-2)
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 2004 (Ch-1)
Full Rate Production Contract Award	MAR 1999	MAR 2004	JAN 2005 (Ch-1)
AUTOMATION (DAAS)			
Production Award Exercise	JUL 1998	MAR 2004	JAN 2005 (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

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	MAR 1998	AUG 1998	AUG 1998
Complete			
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  
 DAAS = DoD Advanced Automation System  
 DASR = Digital Airport Surveillance Radar  
 IOC = Initial Operational Capability  
 IOT&E = Initial Operational Test & Evaluation  
 LRIP = Low Rate Initial Production  
 MAMS = Military Airspace Management System  
 VCSS = Voice Communications Switching System

b. Current Change Explanations --  
 (Ch-1)

Air Force Operational Test and Evaluation Center (AFOTEC) formally released their status report on DASR Multi-Service Operational Test and Evaluation (MOT&E), dated 26 February 2003. AFOTEC, directed that NAS proceed with another round of MOT&E at Moody AFB, GA, rather than leverage FAA test results at Willow Grove, PA. AFOTEC selected Moody because it was the best near-term available site to represent a DoD operational environment. A General Officer Steering Group (GOSG) directed that Moody be expedite by 6 months to support an MOT&E and subsequent MS III by June 2004. Initial system settings for Moody AFB DASR optimization and adaptation, as demonstrated in AFOTEC-directed "Flight of Five" testing in November 2003, provided poor results for entry to MOT&E; additional focused tests and adjustments to reflect operator preferences continue. GOSG expedited schedule became unachievable with required test re-entry criteria and planned MOT&E duration. After data analysis and reporting, MOT&E will start in August 2004 and complete in October 2004, reflected in the IOT&E Complete date slip from October 2003 to October 2004. Following the analysis and reporting from MOT&E, MS III is planned for January 2005 (slipped from March 2004). Once the MS III decision is made, Full Rate Production can occur. The Full Rate Production Contract Award date for DASR changed from March 2004 to January 2005. The Production Award Exercise date for DAAS changed from March 2004 to January 2005.

(Ch-2)

Air Force Flight Standards Agency declared the NAS System IOC when Laughlin AFB, TX started providing air traffic control service with NAS (DAAS, DASR, and VCSS) equipment in January 2003.

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9b. Schedule (Cont'd):

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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
Voice Compatibility/ Interoperability	Digital Voice Systems	Digital / Inter- Voice / face to Systems / existing / FAA / Systems	Met Thresh.	Digital Voice Systems
MAMS				
Conflict Identification	100% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 10 (sec)	100% of / 98% of con- / con- flicts / flicts identi- / identi- fied; / fied; 85% / 85% of con- / of con- flicts / flicts identi- / identi- fied / fied <or= 10 (sec) / 30 (sec)	Met Thresh.	100% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 10 (sec)
Interface with FAA	Trans- mittal Time for 85% of messages between Schedul- er and FAA <or= 5 (min)	Trans- / Trans- mittal / mittal Time / Time for 85% / for 85% of / of messages / messages between / between Schedul- / Schedul- er and / er and FAA <or= / FAA <or= 5 (min) / 10 (min)	Met Obj.	Trans- mittal Time for 85% of messages between schedul- er and FAA <or= 5 (min)

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10a. Performance Characteristics (Cont'd):

Reporting	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	Process- ing Time of Util- ization Data Requests <or= 1 (min); Total Manual and Auto- matic Report Genera- tion <or= 10 (min)	Process-/ ing Time/ of Util-/ ization / Data / Requests/ <or= 1 / (min); Total / Manual / and / Auto- matic / Report / Genera- tion / <or=10 / (min) /	Process- ing Time of Util- ization Data Requests <or=10 (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)

ACRONYMS:

ATCALS = Air Traffic Control and Landing Systems  
dB = Decibels  
FAA = Federal Aviation Administration  
IAW = In accordance with  
ICD = Interface Control Document  
LCF = Local Control Facility  
MAMS = Military Airspace Management System

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)	96.6	105.4	101.3
Procurement	473.7	976.4	947.7
Flyaway	(302.8)		(657.5)
Other Wpn Systems Cost	(144.7)		(236.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.2)		(53.4)
Construction (MILCON)	3.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	573.3	1081.8	1049.0
Escalation	217.8	404.0	353.9
Development (RDT&E)	(16.4)	(21.8)	(14.5)
Procurement	(200.0)	(382.2)	(339.4)
Construction (MILCON)	(1.4)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	791.1	1485.8	1402.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	53	92	92
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 DoD Advanced Automation Systems (DAAS) and Digital Airport Surveillance Radars (DASR). This definition of a unit is not representative of the typical equipment installed at a NAS site. It does not account for Voice Communication Switching System (VCSS) equipment, stand-alone DAAS equipment, or sites that have multiple DASR systems. Costs vary significantly from site to site due to particular site unique configuration requirements.

The LRIP quantity of eight DASR and zero DAAS approved at MS II during July 1995 was for the radar and automation portions of NAS. The Air Force Acquisition Executive approved an Acquisition Decision Memorandum (ADM) on August 8, 2001 authorizing a second LRIP of 20 DASR and 13 DAAS, less than 10% of the total program. This ADM keeps DoD DASR production and deployment efforts on track, avoiding shutdown, restart, and retraining impacts.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (MAR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	1081.8	1049.0	
(2) Quantity	92	92	
(3) Unit Cost	11.759	11.402	-3.04
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	976.4	947.7	
(2) Quantity	92	92	
(3) Unit Cost	10.613	10.301	-2.94

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	113.0	673.7	4.4	791.1
Previous Changes:				
Economic	-6.3	-73.3	-	-79.6
Quantity	-	+300.5	-	+300.5
Schedule	-	+124.3	-	+124.3
Engineering	-	+142.4	-	+142.4
Estimating	+9.1	-76.5	-4.4	-71.8
Other	-	-	-	-
Support	-	+250.4	-	+250.4
Subtotal	+2.8	+667.8	-4.4	+666.2
Current Changes:				
Economic	-	14.5	-	-14.5
Quantity	-	-1.1	-	-1.1
Schedule	-	+15.8	-	+15.8
Engineering	-	+0.4	-	+0.4
Estimating	-	+23.5	-	+23.5
Other	-	-	-	-
Support	-	-78.5	-	-78.5
Subtotal	-	-54.4	-	-54.4
Total Changes	+2.8	+613.4	-4.4	+611.8
Current Estimate	115.8	1287.1	-	1402.9

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	96.6	473.7	3.0	573.3
Previous Changes:				
Quantity	-	+217.8	-	+217.8
Schedule	-	+52.4	-	+52.4
Engineering	-	+103.8	-	+103.8
Estimating	+4.7	-43.1	-3.0	-41.4
Other	-	-	-	-
Support	-	+171.2	-	+171.2
Subtotal	+4.7	+502.1	-3.0	+503.8
Current Changes:				
Quantity	-	+0.0	-	+0.0
Schedule	-	+0.2	-	+0.2
Engineering	-	+0.4	-	+0.4
Estimating	-	+23.2	-	+23.2
Other	-	-	-	-
Support	-	-51.9	-	-51.9
Subtotal	-	-28.1	-	-28.1
Total Changes	+4.7	+474.0	-3.0	+475.7
Current Estimate	101.3	947.7	-	1049.0

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) Procurement

Revised escalation indices. (Economic)	N/A	-23.3
Economic adjustment for negative program change. (Economic)	N/A	+8.8
Total Navy Quantity Variance associated with decrease of 1 site, from 36 to 35.	-6.4	-10.5
Quantity decrease for Navy of 1 site. (Quantity)	-5.6	-9.3
Allocation to Schedule variance resulting from Quantity Change related to Navy. (QR) (Schedule)	-0.4	-0.8
Allocation to Engineering variance resulting from Quantity Change related to Navy. (QR) (Engineering)	-0.7	-0.9
Allocation to Estimating variance resulting from Quantity Change related to Navy. (QR) (Estimating)	+0.3	+0.5
Total Army Quantity Variance associated with increase of 1 site, from 11 to 12.	+6.8	+10.0
Quantity increase for Army of 1 site. (Quantity)	+5.6	+8.2

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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>
Allocation to Schedule variance resulting from Quantity Change related to Army. (QR) (Schedule)	+0.6	+1.2
Allocation to Engineering variance resulting from Quantity Change related to Army. (QR) (Engineering)	+1.1	+1.3
Allocation to Estimating variance resulting from Quantity Change related to Army. (QR) (Estimating)	-0.5	-0.7
Stretchout of Navy procurement buy profile by two years, from 2011 to 2013. (Schedule)	0.0	+11.5
Revised Army annual procurement buy profile. (Schedule)	0.0	+1.8
Revised Air Force annual procurement buy profile. (Schedule)	0.0	+2.1
Change in technology refreshment methodology (from all hardware on three-year replacement cycle to partial hardware on four-year cycle) to Air Force procurement program. (Estimating)	-9.9	-14.1
Adjustment for Navy Current and Prior Inflation. (Estimating)	+0.6	+0.7
Refinement of Navy estimate due to re-evaluation of risk-assessment methodology and higher than expected program management costs. (Estimating)	+18.6	+22.4
Adjustment for Army Current and Prior Inflation. (Estimating)	+0.4	+0.6
Refinement of Army estimate due to change in Operational Support Facility provider. (Estimating)	-5.5	-11.2
Adjustment for Air Force Current and Prior Inflation. (Estimating)	+0.6	+0.8
Refinement of Air Force estimate due to higher than expected program management costs. (Estimating)	+18.6	+24.5
Adjustment for Navy Current and Prior Inflation. (Support)	+0.2	+0.2
Change in Navy Initial Spares (Support)	-6.7	-8.7
Change in Navy Other Wpn Systems Cost (Support)	-6.0	-9.4
Adjustment for Army Current and Prior Inflation. (Support)	+0.1	+0.1
Change in Army Initial Spares (Support)	0.0	-1.0
Change in Army Other Wpn Systems Cost. (Support)	+0.6	+0.8

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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>
Adjustment for Army Current and Prior Inflation. (Support)	+0.6	+0.8
Change in Air Force Initial Spares. (Support)	+4.6	+6.2
Change in Air Force Other Wpn Systems Cost based on lower training costs due to expected AF school house stand-up; lower infrastructure costs for connectivity; and lower site activation costs due to DoD performing more of the installation instead of paying the Department of Transportation's Volpe Center to perform the work. (Support)	-45.3	-67.5
 Procurement Subtotal	 -28.1	 -54.4

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	
14.93	-1.02	-3.07	+1.52	+1.55	-0.525	--	+1.87	+0.322	15.25

**b. Procurement Unit Cost (PUC) History**

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.71	-0.954	-2.13	+1.52	+1.55	-0.576	--	+1.87	+1.28	13.99

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**14c. Unit Cost and Other History (Cont'd):**

**c. Schedule, Cost, and Quantity History**

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	JUL 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	JAN 2005
IOC	OCT 1999	APR 2000	N/A	JAN 2003
Total Cost	122.6	791.1	N/A	1402.9
Total Quantity	N/A	53	N/A	92
Prog Acq Unit Cost	N/A	14.9	N/A	15.3

**15. Contract Information (Then-Year Dollars in Millions):**

**a. RDT&E --**

**DASR:**

Raytheon Company, Marlborough, MA  
F19628-96-D0038, FFP  
Award: August 9, 1996  
Definitized: August 9, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$17.9	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$17.9	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$17.9	\$17.9

**Explanation of Change:**

Cost and Schedule variance reporting is not required on this FFP contract.

**b. Procurement --**

**DASR:**

Raytheon Company, Marlborough, MA  
F19628-96-D0038, FFP  
Award: June 10, 1998  
Definitized: June 10, 1998

Initial Contract Price		
Target	Ceiling	Qty
\$372.0	N/A	92

Current Contract Price		
Target	Ceiling	Qty
\$372.0	N/A	92

Estimated Price At Completion	
Contractor	Program Manager
\$372.0	\$372.0

**Explanation of Change:**

Cost and Schedule variance reporting is not required on this FFP contract.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. 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	115.8	-	-	-	115.8
Procurement	372.8	62.7	83.8	767.8	1287.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	488.6	62.7	83.8	767.8	1402.9

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

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**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	108.8

FY00 funds realigned to Air Traffic Control and Landing Systems (ATCALS) PE 35114F in accordance with House Appropriations Committee 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 \$
1998			0.7	1.8	2.2
1999	2		4.3	7.0	8.7
2000	5		21.5	26.6	33.4
2001			18.6	24.7	31.4
2002	3		10.4	14.5	18.6
2003	1		4.0	5.5	7.0
2004			8.6	12.2	15.8
2005	2		8.1	12.3	16.1
2006	1		16.7	23.5	31.4
2007	3		14.7	20.5	27.8
2008	3		14.9	20.6	28.5
2009	3		15.7	20.5	28.9
2010	3		15.8	20.5	29.5
2011	3		15.7	20.4	30.0
2012	4		15.3	20.5	30.8
2013	2		13.4	16.1	24.6
2014			13.7	14.9	23.2
2015			10.9	11.7	18.6
Subtotal	35		223.0	293.8	406.5

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.

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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 \$
1997				0.6	0.7
1998			0.1	0.2	0.3
1999			1.3	1.4	1.7
2000			1.7	1.9	2.4
2001			9.4	10.4	13.2
2002			4.3	6.5	8.4
2003	1		7.1	10.7	13.7
2004	1		9.0	12.3	15.9
2005	1		10.8	15.2	20.0
2006	2		8.8	12.1	16.2
2007	2		6.8	11.8	16.1
2008	2		10.1	15.1	20.9
2009	3		8.4	12.9	18.2
2010			2.1	3.1	4.5
2011			2.2	2.9	4.3
Subtotal	12		82.1	117.1	156.5

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: 3080 - 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 \$
1998			3.7	12.9	15.8
1999			4.8	12.2	15.1
2000	3		28.6	38.7	48.6
2001	2		36.5	47.3	60.2
2002	4		25.6	41.7	53.7
2003	1		12.7	29.5	37.7
2004			9.6	23.9	31.0
2005	1		24.1	36.3	47.7
2006	1		30.5	42.2	56.4
2007	3		33.4	46.9	63.7
2008	7		31.8	46.9	65.0
2009	5		32.7	46.9	66.3
2010	6		39.2	47.1	67.9

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**16b. Program Funding Summary (Cont'd):**

Appropriation: 3080 - 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 \$
2011	7		27.8	47.6	69.9
2012	5		10.4	15.3	22.9
2013			1.0	1.4	2.2
Subtotal	45		352.4	536.8	724.1

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	35		223.0	297.7	410.5
Army	12		82.1	120.0	159.5
USAF	45		352.4	631.3	832.9
Grand Total	92		657.5	1049.0	1402.9

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	10	10

Percent Total Program Quantities Delivered: 10.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 297.6

Percent Total Program Expended: 21.2%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The Operating and Support (O&S) cost estimate, dated December 31, 2003, is based on analysis performed in preparation for the MS III decision. The estimate assumes a program life up to FY 2021. On average, the 92 sites will be in the O&S phase for 14 years. There is no antecedent system.

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**18a. Operating and Support Costs (Cont'd):**

BY total O&S costs have decreased from previously reported numbers because of fielding delays.

**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	2.0	N/A
Unit Level Consumption	0.2	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	0.1	N/A
Sustaining Support	0.5	N/A
Indirect Costs	0.4	N/A
Total	3.2	N/A

Total O&S Cost	NAS	Avg Annual Cost Per
BY\$	4185.0	N/A
TY\$	8454.0	N/A

Report Creation Date: 3/23/2004 9:34:36 AM

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# A-17 LONGBOW HELLFIRE

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## SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 2003

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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. Carlyn 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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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

AS AMENDED  
(Sant)  
p. 4

~~Classified by: HELLFIRE Security Classification Guide  
Downgrade instructions: HELLFIRE Security Classification Guide, 20 Dec 95  
Declassify on: X3~~

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Longbow Hellfire, December 31, 2003

5. (U) References:

SAR Baseline (Production Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) 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 all 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.

7. (U) Executive Summary:

(U) Congressional authorization for the FY 99 - FY 03 multi-year contract was received October 1998, and the contract was awarded April 30, 1999, for 10,397 missiles. As of January 31, 2004, 6,931 missiles have been delivered against this requirement.

The Home-on-Jam/Anti-Jam (HOJ/AJ) initiative was completed 4Q03 and is being incorporated into production missiles. This initiative was part of a pre-planned product improvement of the Longbow Hellfire missile, which was developed to maintain the Longbow missile's low vulnerability and susceptibility to existing and future battlefield jammer threats. A reprogramming effort is also underway for those missiles already delivered.

During Hellfire live fire training in October 2000, Apache aircraft were damaged by missile motor debris. This resulted in a Safety of Use message restricting Hellfire's with the affected motors to War Time Use Only. As of January 31, 2004, 2,763 Longbow Hellfire missiles have been retrofitted with a new missile motor rod grain support assembly. There are 1,896 missiles remaining to be retrofitted.

Currently, there are 8,395 Longbow Hellfire missiles in inventory.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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

(U) Acronym List:

ASARC (Army Systems Acquisition Review Council)  
DAB (Defense Acquisition Board)  
FSD (Full Scale Development)

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Longbow Hellfire, December 31, 2003

9a. (U) Schedule (Cont'd):

FUE (First Unit Equipped)  
LRIP (Low Rate Initial Production)

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	Yes	Yes / Yes	YES	YES
Independent Function				
After Launch				
(1) Probability of	(b)(1)			
Single Shot Kill				

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, 2003

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	444.1
Procurement	1941.0	2032.3	1954.7
Flyaway	(1932.9)		(1940.8)
Other Wpn Sys Cost	(2.8)		(4.1)
Peculiar Support	(5.3)		(9.8)
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	2398.8
Escalation	283.6	147.0	110.5
Development (RDT&E)	(-24.4)	(-9.6)	(-15.3)
Procurement	(308.0)	(156.6)	(125.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2635.6	2637.5	2509.3
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 (10.9% of total procurement). 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, 2003

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	2490.5	2398.8	
(2) Quantity	12905	12905	
(3) Unit Cost	0.193	0.186	-3.63
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	2032.3	1954.7	
(2) Quantity	12905	12905	
(3) Unit Cost	0.157	0.151	-3.82

(U) Changes from the APB UCR Baseline PAUC and APUC are mainly due to revised estimates for Counter-Active Protection System (CAPS) development and qualification efforts, the decision not to procure CAPS kits, a decrease in the number of missiles to be retrofitted with the Home-on-Jam/Anti-Jam (HOJ/AJ) software, and revised estimates for in-house and test cost.

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	+2.3	-177.3	-	-175.0
Quantity	-	-54.7	-	-54.7
Schedule	+2.5	+4.7	-	+7.2
Engineering	+48.2	+57.6	-	+105.8
Estimating	-1.9	+56.5	-	+54.6
Other	-	-	-	-
Support	-	+1.8	-	+1.8
Subtotal	+51.1	-111.4	-	-60.3
Current Changes:				
Economic	+0.1	+11.0	-	+11.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-65.6	-	-65.6
Estimating	-9.0	-5.9	-	-14.9
Other	-	-	-	-
Support	-	+3.4	-	+3.4
Subtotal	-8.9	-57.1	-	-66.0
Total Changes	+42.2	-168.5	-	-126.3
Current Estimate	428.8	2080.5	-	2509.3

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Longbow Hellfire, December 31, 2003

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	+51.9	-	+96.0
Estimating	-1.9	+49.8	-	+47.9
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+41.1	+62.7	-	+103.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-47.5	-	-47.5
Estimating	-8.0	-4.5	-	-12.5
Other	-	-	-	-
Support	-	+3.0	-	+3.0
Subtotal	-8.0	-49.0	-	-57.0
Total Changes	+33.1	+13.7	-	+46.8
Current Estimate	444.1	1954.7	-	2398.8

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Revised estimate for Counter-Active Protection System (CAPS) development and qualification effort. (Estimating)	-8.0	-9.0
RDT&E Subtotal	-8.0	-8.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Economic adjustment for negative program change. (Economic)	N/A	+11.1
Decreased quantity of Home-on-Jam/Anti-Jam (HOJ/AJ) Software retrofits by 3,260 from 8,076 to 4,816. (Engineering)	-14.8	-21.7
Decreased quantity of Counter-Active Protection Kits by 1,475 from 1,475 to 0. (Engineering)	-32.7	-43.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Reduced estimate for in-house and test cost. (Estimating)	-4.7	-6.1

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)
	<u>Base-Year</u> <u>Then-Year</u>
Increased quantity of environmental covers by 1,200 from 5,608 to 6,808. (Support)	+3.0   +3.4
Procurement Subtotal	<u>-49.0</u> <u>-57.1</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	
0.200	-0.010	--	-0.010	-0.010	+0.028	--	--	-0.002	0.198

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	-0.013	+0.002	+0.001	+0.003	+0.003	--	--	-0.004	0.194

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	
0.171	-0.001	-0.001	-0.009	-0.018	+0.028	--	-0.001	-0.002	0.169

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	-0.013	+0.002	--	-0.001	+0.004	--	--	-0.008	0.161

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	AUG 1985	AUG 1985	AUG 1985
Milestone II	N/A	DEC 1990	DEC 1990	DEC 1990
Milestone III	N/A	OCT 1995	N/A	OCT 1997
IOC	N/A	APR 1997	JUL 1998	JUL 1998
Total Cost	N/A	2190.3	2635.6	2509.3
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) <u>Longbow HF Multiyear:</u>	Initial Contract Price		
Longbow LLC, Orlando, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-99-C-0086, FFP	\$1244.2	N/A	10397
Award: April 30, 1999			
Definitized: April 30, 1999			
Current Contract Price			
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	Estimated Price At Completion
\$1289.7	N/A	10623	Contractor Program Manager
			\$1289.7 \$1289.7

Explanation of Change:

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 and Longbow Hellfire missile spare parts.

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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 (FY91-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06)</u>	<u>Total</u>
RDT&E	427.7	1.1	-	-	428.8
Procurement	2037.5	24.9	15.6	2.5	2080.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2465.2	26.0	15.6	2.5	2509.3

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				11.1	12.2
2004				1.0	1.1
Subtotal				444.1	428.8

Appropriation: 2032 - Missile Procurement, 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>
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		324.8	325.1	344.5
2000	2200		273.6	273.9	293.5
2001	2200		260.8	261.1	282.8

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Longbow HELLFIRE, December 31, 2003

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 \$
2002	2200		210.7	210.9	231.1
2003	1797		193.0	163.2	181.2
2004				22.1	24.9
2005				13.6	15.6
2006				2.1	2.5
2007					
Subtotal	12905	103.2	1837.6	1954.7	2080.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12905	103.2	1837.6	2398.8	2509.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	9238	9431

(U) Percent Total Program Quantities Delivered: 73.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2182.9

(U) Percent Total Program Expended: 87.0%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --  
Operating and support costs for Longbow HELLFIRE are costed under the philosophy of a "certified round" concept. The sustainment phase costs are for FY 97 through FY 25. The following efforts are considered applicable:

- o Replenishment spares for support equipment.
- o Annual overhaul of Longbow HELLFIRE equipment - ten percent of missiles in storage will be checked annually. Of the items checked, those that fail will be shipped to the depot for overhaul and return. Costs are based on predicted failure rate and average cost to repair.
- o Transportation costs associated with annual overhaul

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Longbow Hellfire, December 31, 2003

18a. (U) Operating and Support Costs (Cont'd):

- o System Project Management
- o Surveillance Program
- o Missile Economic Life is 20 years

There is no antecedent system.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Longbow Hellfire Avg Annual Cost for all Missiles	Avg Annual Cost Per 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	3.8	N/A
Indirect Costs	N/A	N/A
Total	3.8	N/A

Total O&S Cost	Longbow Hellfire	Avg Annual Cost Per
BY\$ (In Millions)	76.5	N/A
TY\$ (In Millions)	120.7	N/A

Report Creation Date: 03/17/2004 12:26:21 PM

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N-19 LPD 17

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: LPD 17 Class

AS OF DATE: December 31, 2003

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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 Project S0408 (Shared)  
PE 0604311N Project 22283, 22425, 2283  
PE 0604567N Project S1803 (Shared), S2198 (Shared)  
PROCUREMENT:  
APFN 1611 ICN 303600 (Navy)

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**5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (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 for 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. Twelve LPD 17 Class ships are required to support 2.5 Marine Expeditionary Brigades (MEB) and 12 Amphibious Ready Groups/Expeditionary Strike Groups.

**7. Executive Summary:**

The lead ship design and construction contract was awarded to the Avondale Alliance in December 1996. Production design was completed in August 2002 and remains stable. The SAN ANTONIO (LPD 17) was christened on July 19, 2003 at Avondale shipyard in New Orleans, Louisiana. It successfully completed the first major test milestone, Electronic System Light-Off (ESLO), on November 21, 2003. As of mid-December, LPD 17 was greater than 80% complete.

For LPD 17, a slight adjustment in the ship contractual delivery schedule (November 30, 2004 to December 16, 2004) is due to shut down time associated with hurricane Lili and tropical storm Isidore. Follow ship construction continues to ramp-up, with NEW ORLEANS (LPD 18) achieving the 50% Erect Milestone (38% complete overall), MESA VERDE (LPD 19) at 25% complete and GREEN BAY (LPD 20) at approximately 5% complete as of mid-December 2003. LPD 18-20 continue to achieve increased unit pre-outfitting levels at 90% and greater, and lead-ship lessons learned are being effectively implemented in the Class production plan.

A cost plus incentive/award fee contract for NEW YORK (LPD 21) was awarded to NGSS on November 25, 2003. In accordance with the LPD 17 Class Acquisition Strategy, a request for proposal (RFP) for LPD 22 (FY04 ship) construction, with an option for LPD 23 (FY05 ship) construction, was released on December 23, 2003. A proposal is expected in late March 2004.

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LPD 17 Class, December 31, 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 --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	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
Complete	SEP 2003	MAY 2000	MAY 2000
DIT (OT-IIB)			
Start	N/A	JAN 2002	JAN 2002
Complete	N/A	MAR 2003	MAR 2003
DT&E (DT-IIB)			
Start	SEP 1998	SEP 2002	SEP 2002
Complete	JUN 2002	NOV 2004	NOV 2004
OT&E (OT-IC)			

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LPD 17 Class, December 31, 2003

9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Start	SEP 1998	N/A	N/A
Complete	MAR 1999	N/A	N/A
Lead Ship Delivery	JUN 2002	NOV 2004	DEC 2004 (Ch-1)
DT&E (DT-IIC)			
Start	JUL 2002	NOV 2004	NOV 2004
Complete	JAN 2004	NOV 2006	NOV 2006
IOT&E (OT-IIC)			
Start	N/A	JAN 2006	JAN 2006
Complete	N/A	JUN 2007	JUN 2007
LEAD SHIP IOC	JAN 2004	JUL 2006	JUL 2006
Milestone III	AUG 2007	SEP 2009	SEP 2009
FOT&E (OT-III)			
Start	JAN 2011	JUL 2010	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

b. Current Change Explanations --

(Ch-1) For LPD 17, a slight adjustment in the lead ship contractual delivery schedule (November 30, 2004 to December 16, 2004) is due to shut down time associated with hurricane Lili and tropical storm Isidore.

	From	To
Lead Ship Delivery	NOV 04	DEC 04

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LPD 17 Class, December 31, 2003

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>
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

Acronym list:

DIT Design Integration Testing  
 DT&E Developmental Test and Evaluation  
 FOT&E Follow-on Operational Test and Evaluation  
 IOC Initial Operational Capability  
 IOT&E Initial Operational Test and Evaluation  
 K/k Thousands  
 Kts Knots  
 LCAC Landing Craft Air Cushion  
 NET Net (such as Net total)  
 NM Nautical Miles  
 OT&E Operational Test and Evaluation  
 VTOL Vertical Take-Off and Landing

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LPD 17 Class, December 31, 2003

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)	78.7	97.1	101.4
Procurement	8939.4	12842.4	13082.8
Sailaway	(8939.4)		(13082.8)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	9018.1	12939.5	13184.2
Escalation	1743.7	2441.2	2398.5
Development (RDT&E)	(-0.9)	(-0.1)	(0.3)
Procurement	(1744.6)	(2441.3)	(2398.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	10761.8	15380.7	15582.7
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	12	12	12
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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LPD 17 Class, December 31, 2003

12. Unit Cost Summary:

	UCR Baseline (JUN 2002 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	12939.5	13184.2	
(2) Quantity	12	12	
(3) Unit Cost	1078.292	1098.683	+1.89
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	12842.4	13082.8	
(2) Quantity	12	12	
(3) Unit Cost	1070.200	1090.233	+1.87

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	77.8	10684.0	-	10761.8
Previous Changes:				
Economic	-0.6	-784.5	-	-785.1
Quantity	-	+64.9	-	+64.9
Schedule	-	+761.4	-	+761.4
Engineering	-	-	-	-
Estimating	+23.5	+4785.1	-	+4808.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+22.9	+4826.9	-	+4849.8
Current Changes:				
Economic	-	+331.4	-	+331.4
Quantity	-	-64.9	-	-64.9
Schedule	-	-23.0	-	-23.0
Engineering	-	-	-	-
Estimating	+1.0	-273.4	-	-272.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.0	-29.9	-	-28.9
Total Changes	+23.9	+4797.0	-	+4820.9
Current Estimate	101.7	15481.0	-	15582.7

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LPD 17 Class, December 31, 2003

13a. Cost Variance Analysis (Cont'd):

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	78.7	8939.4	-	9018.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+315.7	-	+315.7
Engineering	-	-	-	-
Estimating	+21.7	+4044.1	-	+4065.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+21.7	+4359.8	-	+4381.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.0	-216.4	-	-215.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.0	-216.4	-	-215.4
Total Changes	+22.7	+4143.4	-	+4166.1
Current Estimate	101.4	13082.8	-	13184.2

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RD&amp;E</u>		
Revised/Rephased cost estimates to support FY02-05 T&E requirements. (Estimating)	+1.0	+1.0
RD&E Subtotal	+1.0	+1.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+266.5
One ship (LPD 23) moved from FY06 to FY05. (Schedule)	0.0	-23.0
The effect of FY03 actual shipyard labor and material cost on current and future budgets was not fully accounted for by the OSD standard indices. (Estimating)	-165.0	-213.5
Adjustment for current and prior year inflation. (Estimating)	-51.4	-59.9
Correction to align quantity and economic changes (Quantity)	0.0	-64.9
(Economic)	N/A	+64.9
Procurement Subtotal	-216.4	-29.9

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LPD 17 Class, December 31, 2003

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
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
896.82	-37.81	+0.002	+61.53	--	+378.02	--	--	+401.74	1298.56

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									PUC
PUC	Changes								PUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
890.33	-37.76	--	+61.53	--	+375.98	--	--	+399.75	1290.08

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	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	15582.7
Total Quantity	0	12	N/A	12
Prog Acq Unit Cost	0.0	896.8	N/A	1298.6

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	\$1459.9	\$1479.0

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LPD 17 Class, December 31, 2003

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-140.0	\$-12.5
Cumulative Variances To Date (10/31/03)	\$-41.5	\$-25.6
Net Change	\$98.5	\$-13.1

Explanation of Change:

The favorable net change to cost variance is primarily the result of the contractor's reporting to a revised baseline established in March 2003. The cumulative cost variance (-\$41.5M) since the overtarget baseline (OTB) is due to Avondale labor performance and productivity, and labor and material rate increases.

Cumulative schedule variance since the OTB is -\$25.6M. This is due to delayed material invoicing and rescheduling of subcontract effort. A slight delay in the ship delivery schedule (November 30, 2004 to December 16, 2004) is due to heavy weather factors.

Contract Comments:

The increase from the initial contract price to the current contract price reflects the September 2001 negotiated settlement which incorporated schedule delays and contract cost growth.

<u>LPD 18:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman Ship Sys, New Orleans LA	\$390.8	N/A	1
N0002497C2202/18, CPIF/AF			
Award: December 18, 1998			
Definitized: December 18, 1998			

<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>
\$666.6	N/A	1	\$750.3	\$772.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.0	\$0.0
Cumulative Variances To Date (10/31/03)	\$-60.3	\$-21.1
Net Change	\$-58.3	\$-21.1

Explanation of Change:

The unfavorable cost variance of -\$60.3M is primarily due to labor performance and productivity. Schedule variance is unfavorable at -\$21.1M due to delays to unit construction schedules and intra-company transfer of material.

Contract Comments:

The current contract price includes implementation of the LPD-DDG workload swap memorandum of understanding and miscellaneous changes. The revised

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LPD 17 Class, December 31, 2003

15. Contract Information (Cont'd):

estimated price at completion is based on production performance, higher labor rates, and associated overhead costs. PM's estimates are covered within the current budget.

LPD 19:	Initial Contract Price		
Northrop Grumman Ship Sys, New Orleans LA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N0002497C2202/19, CPIF/AF	\$491.9	N/A	1
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>
\$694.1	N/A	1	\$779.6	\$799.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.3	\$0.0
Cumulative Variances To Date (10/31/03)	\$-37.5	\$-41.8
Net Change	\$-36.2	\$-41.8

Explanation of Change:

The unfavorable cost variance of -\$37.5M is due to direct labor, overhead, and material performance. Schedule variance is unfavorable at -\$41.8M due to delays to unit construction schedules and intra-company transfer of material.

Contract Comments:

The current contract price includes implementation of the LPD-DDG workload swap memorandum of understanding and miscellaneous changes. The revised estimated price at completion is based on production performance, higher labor rates, and associated overhead costs. PM's estimates are covered within the current budget.

LPD 20:	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	\$723.0	\$744.0

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LPD 17 Class, December 31, 2003

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.3	\$-1.4
Cumulative Variances To Date (10/31/03)	<u>N/A</u>	<u>N/A</u>
Net Change	\$1.3	\$1.4

Explanation of Change:

Cost and Schedule variance data in this report continue to reflect August 2002 CPR reporting. The LPD 20 PMB remains at the FY00 contract value, and will require an over-target baseline to be established for cost performance reporting purposes. This process is near completion.

Contract Comments:

The PM's estimated price at completion reflects deteriorating cost performance on previous ships. PM's estimates are covered within the current budget.

LPD 21:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrup Grumman Ship Sys, New Orleans LA	\$785.5	N/A	1
N0002404C2204/21, CPIF/AF			
Award: November 25, 2003			
Definitized: November 25, 2003			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$785.5	N/A	1	\$785.5	\$785.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (10/31/03)	<u>N/A</u>	<u>N/A</u>
Net Change	N/A	N/A

Explanation of Change:

The LPD-17 program has not yet received Cost Performance Reporting on this ship as it was awarded on November 25, 2003. An Integrated Baseline Review will be conducted, and a performance measurement baseline established later this year. Earned Value Management data will be incorporated in the next SAR.

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LPD 17 Class, December 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 (FY90-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-16)</u>	<u>Total</u>
RDT&E	92.0	3.5	6.2	-	101.7
Procurement	5462.9	1644.3	1312.5	7061.3	15481.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5554.9	1647.8	1318.7	7061.3	15582.7

b. Annual Summary -- LPD 17 CLASS

Appropriation: 1319 - Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Sailaway FY 1996 Dollars Nonrec</u>	<u>Sailaway FY 1996 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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				0.5	0.5
2003				5.1	5.6
2004				3.2	3.5
2005				5.5	6.2
Subtotal				101.4	101.7

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.

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LPD 17 Class, December 31, 2003

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 \$
1996	1		1705.3	968.6	994.1
1997					
1998				91.0	96.0
1999	1		989.7	593.8	632.9
2000	2		1908.4	1412.2	1527.2
2001				541.2	593.5
2002				375.6	418.0
2003	1		1063.8	1039.2	1201.2
2004	1		1119.5	1401.6	1644.3
2005	1		984.8	1101.5	1312.5
2006	1		963.7	1008.2	1222.6
2007	1		1022.1	1007.4	1245.2
2008	1		1022.2	997.3	1258.4
2009	1		1024.8	1030.3	1326.0
2010	1		1278.5	1267.5	1664.0
2011				49.3	66.0
2012				49.8	68.0
2013				49.0	68.3
2014				48.6	69.0
2015				39.9	57.8
2016				10.8	16.0
Subtotal	12		13082.8	13082.8	15481.0

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		13082.8	13184.2	15582.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RD&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3277.2

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LPD 17 Class, December 31, 2003

17b. Delivery/Expenditure Information (Cont'd):

Percent Total Program Expended: 21.0%

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 initial LPD 17 estimates. Cost estimate sources are Total Ownership Cost (TOC), and Contract Data Requirements List (CDRL) September 2001. Total O&S costs reflect a service life of forty years per ship. 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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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: F/A-18E/F

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): F/A-18E/F

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PEO FOR TACTICAL AIRCRAFT (PMA265)	CAPT Donald E. Gaddis, USN
BLDG 2272 STE 445 NAVAIRSYSCOMHQ	Assigned: May 30, 2003
47123 BUSE ROAD, UNIT #IPT	DSN 757-7669; COMM (301) 757-7669
PATUXENT RIVER, MD 20670-1547	donald.gaddis@navy.mil

4. Program Elements/Procurement Line Items:

RDT&E:  
 PE 0204136N  
 PROCUREMENT:  
 APPN 1506 ICN 014500 (Navy)  
 APPN 1506 ICN 060510 (Navy)

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5. References:

SAR Baseline (Production Estimate):  
 Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline dated September 17, 2000.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated July 10, 2003.

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 DEPARTMENT OF DEFENSE

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F/A-18E/F, December 31, 2003

## **6. Mission and Description:**

The F/A-18E/F is the second major model upgrade since the inception of the F/A-18 aircraft program. The single-seat F/A-18E and the two-seat F/A-18F are high performance, twin-engine, mid-wing, multi-mission tactical aircraft designed to replace F/A-18C (single-seat), F/A-18D (two-seat) and F-14 aircraft as they reach the end of their service lives and retire. The F/A-18E/F is designed to meet current Navy fighter escort and interdiction mission requirements, to maintain F/A-18 fleet air defense and close air support roles, as well as an increasing range of missions, including Forward Airborne Controller (Attack) and Aerial Tanking. The F/A-18E/F has proven capability to replace the retiring S-3 as an aerial tanker. F/A-18E/F enhancements over the F/A-18C/D include the increased range and improved carrier suitability required for the F/A-18 to continue its key strike fighter role against the advanced threats of the 21st century. Enhancements include the increased range and improved carrier suitability required for the F/A-18 to continue its key strike fighter role against the advanced threats of the 21st century.

## **7. Executive Summary:**

The F/A-18E/F Super Hornet program continues to excel. Cost, schedule and performance are superb. During this reporting period, the program continued to deliver aircraft up to three months ahead of contract schedule. The program has continued to pursue cost reduction efforts, and a second multi-year contract was awarded on 29 December 2003.

On September 10, 2003, the Department of the Navy issued the Record of Decision (ROD) for East coast basing of 144 F/A-18E/Fs. The Navy selected basing alternative 6: FRS and 8 squadrons to Naval Air Station (NAS) Oceana and 2 squadrons to Marine Corps Air Station (MCAS) Cherry Point. The ROD also selected Washington County, NC as the site for the new outlying field. The issuance of the ROD gives PMA-265, NAVICP, and other activities the authority to commit the resources required to ready NAS Oceana and Marine Corp Air Station (MCAS) Cherry Point for the F/A-18E/Fs. The Aircraft Intermediate Maintenance Department (AIMD) and Naval Aviation Maintenance Training Group (NAMTRAGR) at NAS Oceana will begin preparations to receive the first F/A-18E/Fs in May 2004 and the site is scheduled to be ready-for-training in March 2005. MCAS Cherry Point is expected to be ready to receive F/A-18E/Fs in late FY08. Additional PMA-265/NAVICP funds required for Cherry Point standup of 2 squadrons are will be addressed by POM-06.

As of 01 November 2003, Super Hornet aircraft have flown over 98,878 hours.

Ninety-eight Full Rate Production (FRP) aircraft deliveries have been completed ahead of schedule. This brings the total deliveries to 166 aircraft, 159 production, and 7 EMD. Seventeen Lot 26 aircraft have been delivered.

Lot 26 aircraft deliveries continued fully three months ahead of contract schedule. Lot 26 Production Verification Testing (PVT) commenced on time in September and no anomalies have been reported.

VFA-14 and VFA-41 returned in November from an extremely successful second

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F/A-18E/F, December 31, 2003

**7. Executive Summary (Cont'd):**

deployment for the Super Hornet. Both units participated in Operation Iraqi Freedom, flying offensive and defensive counter-air, strike, air defense suppression, armed reconnaissance and aerial refueling missions. These squadrons introduced the Multi-Functional Information Distribution System (MIDS Link 16), Joint Helmet-Mounted Cueing System (JHMCS) and the Shared Reconnaissance Pod (SHARP) to combat operations, and also operated with the Fast Tactical Imaging (FTI) image capture and transfer system.

Several VFA-115 aircraft were subjected to post-cruise inspections and assessments. Evaluation of the material condition of six aircraft as part of the F/A-18E/F Age Exploration Program indicated no critical areas. Results from post-cruise aircraft Radar Cross Section (RCS) measurement tests were excellent, exceeding specification. Lessons learned lifted from post-cruise debriefs are being implemented into aircraft operation, maintenance and support concepts.

Teardown of the Third Lifetime Full-Scale Fatigue Test Article (FT-50) passed two-thirds complete. The abundant and detailed data being reaped from this effort will be valuable in managing the Super Hornet airframe throughout its service life, and lay the foundation for potential service life extensions as well as development of the service life limits for the EA-18G variant.

The program office has awarded second aircraft procurement, Multi-Year Procurement II (MYP II), which covers the purchase of F/A-18E/F and EA-18G aircraft for a total of 210 aircraft in program years FY05-09 under a single, five-year fixed price type contract. The contract was approved by Congress in the FY04 Defense Appropriations Act and in the FY04 Defense Authorization Act. The contract was awarded on 29 December 2003 with the obligation of Cost Reduction Initiatives (CRI) and advanced procurement dollars, and the establishment of prices and contract terms and conditions for program years FY05-09. 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.

The MYP II has a minimum and currently funded quantity stream of 42 a/c per year. It contains a variation in quantity clause, which allows for the addition of up to six aircraft in each of the last four years of the contract (FY06-09). This provision provides the government the ability to increase quantities to procure emergent requirements for more aircraft without breaking the MYP or disturbing the savings/cost avoidance already established in the baseline. Should any aircraft be taken out of any one year to pay bills, the multi-year contract would be broken, and the Navy would be forced into a single-year procurement scenario. A reduction in aircraft would force an increase in aircraft unit price due to learning curve impacts and economies of scale. Prices would also increase because of reduced business base and the loss of MYP benefits. For example, the contractor would not have a guaranteed stabilized business base, there would be yearly production line planning and yearly procurement costs associated with a single year procurement scenario, that only occur once in a multi-year procurement scenario.

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F/A-18E/F, December 31, 2003

7. Executive Summary (Cont'd):

The Acquisition Decision Memorandum (ADM) to approve the Active Electronically Scanned Array (AESA) AN/APG-79 radar Milestone C/LRIP 2 was approved on 29 January 2004. This ADM also redesignated the Full Rate Production Time Critical Parts decision as an LRIP 4 decision. Pursuant to 10 U.S.C. 2400(b), the minimum quantity of AN/APG-79 radars needed to conduct LRIP was revised to 84 systems. The increase from 42 to 84 (20.2% of the total number of radars) is necessary to permit an orderly increase in the production rate for the system sufficient to lead to full-rate production upon the successful completion of operational testing. Since the total number of LRIP assets of 84 constitutes more than 10% of the total number (415) of AN/APG-79 radars, the F/A-18E/F SAR will report that LRIP quantities have been increased to 20.2%. This is reported in the F/A-18E/F SAR because procurement funding related information for this program is included in the F/A-18E/F SAR. The AESA SAR only contains RDT&E information.

The EA-18G procurement costs and quantities were included in the 2002 F/A-18E/F SAR report. Since that time, the EA-18G received a Milestone B decision in December 2003 and their procurement costs and quantities were split out into their own Program Element and Budget Line Item separate from the F/A-18E/F. With this budget, procurement of F/A-18E/F and EA-18G have been separated into a separate line item titled 'EA-18G'.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 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
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

ACRONYM LIST

DT-Developmental Testing  
DT&E-Developmental Test and Evaluation  
FOT&E-Follow-on Operational Test and Evaluation  
IOC-Initial Operational Capability  
IOT&E-Initial Operational Test and Evaluation  
LRIP-Low Rate Initial Production  
OPEVAL-Operational Evaluation  
OT-Operational Testing  
SRA-Shop Replaceable Assembly  
TPS-Test Program Set

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9a. Schedule (Cont'd):

WRA-Weapon Replaceable Assembly

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
KEY PERFORMANCE					
PARAMETERS (KPPs)					
(Specified in					
F/A-18E/F ORD and					
validated by					
JROC)					
Deck Spot Factor	<= 1.4	<= 1.4 / <1.5	1.46	1.46	
(F/A-18A/B/C/D =1.2)		/			
		/			
Fighter Escort Radius	>=425	>=425 / >=410	462	454	(Ch-1)
(F/A-18E) (internal					
fuel) (Nm)					
Interdiction Mission					
Radius (Nm)					
2 external tanks	>=400	>=400 / >=390	444	439	(Ch-1)
(retained)		/			
3 external tanks	>=450	>=450 / >=430	489	484	(Ch-1)
(retained)		/			
		/			
Combat Ceiling	>50000	>50000 / >=50000	52,300	52,215	(Ch-1)
(max thrust) (ft)					
Carrier Suitability					
(Tropical Day					
Conditions)					
Launch: Catapult WOD	<=25	<=25 / <=30	19	19	
(C-13-1 Catapult MAX		/			
TOGW (kts))					
Recovery: WOD (MK-7	<=10	<=10 / <=15	8	8	(Ch-1)
MOD 3) (kts)		/			
Approach Speed (kts)	<=140	<=140 / <=150	142	142	
		/			
Recovery Payload	>9000	>9000 / >=9000	10195	9750	(Ch-2)
(lbs)		/			
Usable Load Factor	>= +7.5	>= +7.5 / >= +7.5	+7.5	+7.44	(Ch-1)
(Subsonic; Nz) (G's)		/			
Specific Excess Power	>=650	>=650 / >600	648	644	
(Max Thrust, .9M,		/			
1G, 10kft) (fps)					
Acceleration (.8M to	<=60	<=60 / <70	65	66	
1.2M at 35kft) (sec)		/			

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10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Additional Internal Fuel Capacity (lbs) (greater than C/D)	>=3000	>=3000 / >=3000	4090	4071	(Ch-2)
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	5.4	(Ch-3)
OTHER PARAMETERS (desired to achieve maximum performance)					
Built-In Test (All Avionics)					
Fault Detection (%)	75	75 / 65	99	97.4	(Ch-4)
Fault Isolation (%)	90	90 / 85	99.5	97.8	(Ch-4)
False Alarm Rate (%)	30	30 / 45	16	60.2	(Ch-5)
Speed (Mach)	.98	.98 / .96	.96	.95	
Fighter Escort		/			
Mission Configuration @10,000 ft with Intermediate Rated Thrust					
Empty Weight (lbs)	29950	29950 / 31950	30123	30555	(Ch-2)
Interoperability of the F/A-18E/F	Achieve all IERS	Achieve / Achieve all IERS/ all	Achieve all	Achieve all	
Communications & Data Link Suite		/ Critical IERS	Critical IERS	Critical IERS	
Mean Time Between Operational Mission Failure (MTBOMF) (Replaces MFHBF)	>=3.2	>=3.2 / >=2.6	7.2	8.7	(Ch-6)

ACRONYM LIST

fps-feet per second  
 Ft-Feet  
 G-Gravitational Acceleration  
 IER-Information Exchange Requirement  
 JROC-Joint Requirements Oversight Council  
 kft-Thousand Feet  
 KPP-Key Performance Parameter  
 kts-knots  
 lbs-pounds

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10a. Performance Characteristics (Cont'd):

M-Mach Number  
MAX TOGW-Maximum Take Off Gross Weight  
MFHBF-Mean Flight Hours Between Failure  
MH/FH-Maintenance Hours per Flight Hour  
Nm-Nautical Mile/s  
Nz-Normal Load Factor, Normal Acceleration  
ORD-Operational Requirements Document  
WOD-Wind Over Deck

Notes:

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.

Interdiction Mission Radius (Nm) payload with:

- a. 2 external tanks + 2 AIM-9 + 4 MARK 83 LD on Low Drag Pylons + Forward Looking Infrared/Navigation Forward Looking Infrared (FLIR/NAVFLIR)
- b. 3 external tanks + 2 AIM-9 + 4 MARK 83 LD on Low Drag Pylons + FLIR/NAVFLIR

Weight status as of July 2003 is 30555 ((Full Rate Production)FRP 3 configuration).

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. Current estimated performance is based on a Lot 26 (FRP 3) configuration as of October 2003. Empty Weight and Recovery Payload is based on the weight status for FRP 3 as of July 15, 2003.

Recovery Payload: F/A-18F: 44,000 Carrier Landing Design Gross Weight (CLDGW). The F/A-18 E/F at IOC provided for a threshold/objective of 9,000 pounds of recovery payload.

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.

All Reliability and Maintainability performance numbers are based on a Lot 24 configuration. Environmental Control System (ECS) false alarms account for 50% of the Built in Test (BIT) false alarms. 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 Mean Flight Hours Between False Alarms (MFHBFA) from the current performance of 1.6 hours to 2.8 hours. Of the new modified systems, the Flight Control System (FCS) is the major false alarm contributor at 17%. A FCS fix is expected in the next FCS software update

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**10a. Performance Characteristics (Cont'd):**

in FY04. The Up front Color Display (UFCD), is the next major contributor to new BIT false alarms. The UFCD, accounts for roughly 15% of the BIT false alarms. ECS and UFCD BIT false alarms were addressed with correction in the release of F/A-18E/F 18E\* SCS which occurred in March 2003. The UFCD has further implemented two recent changes to correct false BIT alarms. First, UFCD filters were added to the Diagnostic File Filter (DFF) for H1E and H2E Operational Flight Programs (OFPs). This change effectively eliminates UFCD false alarms for aircraft implementing those SCSs/Higher Order Languages (HOLs). Secondly, the UFCD software was updated from 20.10 to 20.24, which contains a correction to fix the UFCD BIT false alarm problem. Version 20.24 was first released with Lot 26 aircraft and will be retrofitted to all F/A-18E/F aircraft.

**b. Current Change Explanations --**

(Ch-1): Current estimates are based on the latest (October 2003) configuration changes and current flight-derived aero performance database. Fighter Escort Mission Radius changed from 459 to 454, Interdiction Mission Radius with 2 external tanks changed from 441 to 439, and Interdiction Mission Radius with 3 external tanks changed from 486 to 484. Combat Ceiling changed from 52,265 to 52,215, Recovery Wind Over Deck (WOD) from 9 to 8, Usable Load Factor changed from +7.45 to +7.44. The +7.5g load factor was met at IOC. The current +7.44g estimate is a result of expected in-service weight growth.

(Ch-2): The current estimate reflects weight status as of October 2003 (FRP 2 configuration). Recovery Payload, based on the actual weight empty and not the specification weight empty, changed from 9894 to 9750 and Empty Weight changed from 30400 to 30555. The additional internal fuel capacity changed from 4090 to 4071.

(Ch-3): Direct Maintenance changed from 6.0 to 5.4 due to normal fluctuations in the month to month performance. The performance exceeds threshold of  $\leq 9.0$  and approaches the objective of  $\leq 5.0$ . 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 Engineering and Manufacturing Development (EMD) Technical Evaluation (TECHEVAL) period during which Boeing was responsible for maintenance. The Current Estimates are based on USN Organizational-level actual.

(Ch-4): Fault Detection changed from 97.7 to 97.4 and Fault Isolation changed from 97.1 to 97.8 due to normal fluctuations in month to month performance. The Fault Detection performance exceeds threshold of 65.0% and objective of 75%. The Fault Isolation performance exceeds threshold of 85% and objective of 90%. All Reliability and Maintainability performance numbers are based on a Lot 24 configuration.

(Ch-5): BIT false alarm percentage changed from 58.1 to 60.2 due to a change in aircraft configuration reporting. All Reliability and

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10b. Performance Characteristics (Cont'd):

Maintainability performance numbers are based on a Lot 24 configuration. Additional factors include the addition of new avionic sub-systems onto the Lot 24 aircraft.

(Ch-6): Mean Time Between Operational Mission Failures changed from 14.0 to 8.7 due to the accumulation of additional flight hours on the Lot 24 aircraft. This represents a larger sample size of data which results in a more accurate calculation of the performance. All Reliability and Maintainability performance numbers are based on a Lot 24 configuration. The performance exceeds threshold of 2.6 hrs and exceeds the objective of 3.2. hrs.

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	5889.4	5889.4	5895.2
Procurement	32995.3	41679.0	35770.1
Recurring Flyaway	(24180.6)		(25698.6)
Non-Recurring	(849.4)		(1123.4)
Ancillary	(2820.7)		(2597.4)
Net AP			(20.1)
Total Flyaway	(27850.7)		(29439.5)
Total Other Wpn Sys			(0.0)
Peculiar Support	(4304.8)		(5547.6)
Initial Spares	(839.8)		(783.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	38884.7	47568.4	41665.3
Escalation	2752.6	3198.2	2179.9
Development (RDT&E)	(-315.4)	(-315.4)	(-337.6)
Procurement	(3068.0)	(3513.6)	(2517.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	41637.3	50766.6	43845.2

Costs for the AESA radar are included.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	458	552	462
Total	458	552	462

Note: Excludes seven RDT&E prototypes from the Current Estimate that are not considered fully configured.

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11b. Total Program Cost and Quantity (Cont'd):

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.

c. Foreign Military Sales --

Potential sales include Malaysia, Singapore, Australia, and Kuwait.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (JUL 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	47568.4	41665.3	
(2) Quantity	552	462	
(3) Unit Cost	86.175	90.185	+4.65
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	41679.0	35770.1	
(2) Quantity	552	462	
(3) Unit Cost	75.505	77.424	+2.54

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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	36063.3	-	41637.3
Previous Changes:				
Economic	-23.7	-704.1	-	-727.8
Quantity	-	+212.8	-	+212.8
Schedule	-	+969.1	-	+969.1
Engineering	-	+103.5	-	+103.5
Estimating	+7.3	+552.6	-	+559.9
Other	-	-	-	-
Support	-	+1281.4	-	+1281.4
Subtotal	-16.4	+2415.3	-	+2398.9
Current Changes:				
Economic	-	-8.0	-	-8.0
Quantity	-	-	-	-
Schedule	-	-12.6	-	-12.6
Engineering	-	-	-	-
Estimating	-	-101.1	-	-101.1
Other	-	-	-	-
Support	-	-69.3	-	-69.3
Subtotal	-	-191.0	-	-191.0
Total Changes	-16.4	+2224.3	-	+2207.9
Current Estimate	5557.6	38287.6	-	43845.2

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5889.4	32995.3	-	38884.7
Previous Changes:				
Quantity	-	+202.9	-	+202.9
Schedule	-	+799.1	-	+799.1
Engineering	-	+104.7	-	+104.7
Estimating	+5.8	+565.4	-	+571.2
Other	-	-	-	-
Support	-	+1271.2	-	+1271.2
Subtotal	+5.8	+2943.3	-	+2949.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-8.0	-	-8.0
Engineering	-	-	-	-
Estimating	-	-75.3	-	-75.3
Other	-	-	-	-
Support	-	-85.2	-	-85.2
Subtotal	-	-168.5	-	-168.5
Total Changes	+5.8	+2774.8	-	+2780.6
Current Estimate	5895.2	35770.1	-	41665.3

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-16.6
Economic adjustment for negative program change. (Economic)	N/A	+8.6
Acceleration of annual procurement buy profile. (Schedule)	0.0	-3.2
Rephasing of procurement profile between F and G aircraft configurations (Schedule)	-8.0	-9.4
Revised Active Electronically Scanned Array (AESA) estimate for Milestone C (Estimating)	+61.0	+74.8
Update for Actual Contract Price and Learning Curve Effects (Estimating)	-105.5	-120.3
Update Shared Reconnaissance Pod (SHARP) for FY05 Cancellation (Estimating)	-65.1	-73.0
Weapon System Integration Ancillary Supplemental for additional weapons integration with the F/A-18 platform (Estimating)	+85.7	+97.5
Update for current and prior inflation (Estimating)	-76.9	-95.9
Removal of AESA Retrofit Funding (Estimating)	-69.9	-82.7
Removed 9 Advanced Targeting Forward Looking InfraRed (ATFLIR) Pods from APN-1 (Estimating)	-23.7	-29.3
Rephasing of procurement profile between E and F aircraft configurations (QR) (Estimating)	+1.6	+2.0
Decrease in Initial Spares (Support)	-431.0	-495.2
Increase in Peculiar Support due to the addition of the F/A-18E/F and EA-18G Common Support (Support)	+463.3	+551.7
Realignment of flyaway and support costs due to transfer of EA-18G costs to a separate report (Support)	-117.5	-125.8
(Estimating)	+117.5	+125.8
Procurement Subtotal	-168.5	-191.0

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

Initial SAR Baseline to Current SAR Baseline										PAUC
PAUC	Changes									Prod Est
Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
94.58	-16.46	+19.82	+1.93	-2.51	+0.670	--	-12.58	-9.13		85.45

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		
90.91	-1.59	-0.325	+2.07	+0.224	+0.993	--	+2.62	+3.99		94.90

b. 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		
88.75	-16.09	+15.00	+2.20	-2.51	+0.510	--	-12.58	-13.47		75.28

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		
78.74	-1.54	-0.218	+2.07	+0.224	+0.977	--	+2.62	+4.13		82.87

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	43845.2
Total Quantity	0	1000	548	462
Prog Acq Unit Cost	0.0	94.6	85.5	94.9

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15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --			Initial Contract Price		
<u>Airframe MYP:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS, ST. LOUIS, MO					
N00019-99-C-1226, FPIF			\$8966.3	\$9746.6	222
Award: June 17, 2000					
Definitized: June 17, 2000					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$9296.0	\$10100.0	210	\$4173.1	\$4173.1

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	\$-17.5	\$-13.0
Net Change	\$-14.7	\$-12.9
	\$2.8	\$0.1

Explanation of Change:

The net change (improvement) in the cumulative Cost Variance (CV) as of December 2003 is primarily due to the cessation of Cost Performance Reporting (CPR) for the second production lot (FY01), as well as early unfavorable cost performance within the fourth production lot (FY03). The cumulative CPI was unchanged at 0.99. At the time that the CPR for the FY01 portion of the contract ceased (September 2003), the FY01 lot had a cumulative CPI of 1.02, which drove an overall cumulative CPI of 1.00 for the combined portions of the contract receiving CPRs at that time (FY01, FY02, FY03, CRI/EOQ and ECP 6038). CPR reporting for FY01 ceased in September 2003 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 FY03 lot is only 8.2% complete, and based on trends observed with the FY02 lot, cost performance for FY03 is expected to eventually improve.

The net change (improvement) in the cumulative Schedule Variance (SV) as of December 2003 reflects improved performance to Boeing's Performance Measurement Baseline (PMB). The cumulative SPI was unchanged at 0.99. 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.

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 third and fourth production lots (FY02 and FY03), as well as the CRI/EOQ and ECP 6038 efforts). It does not reflect the performance or estimated price at completion for the last lot (FY04) or the first two lots (FY00 and FY01) of the MYP contract since formal CPR are not being received for those parts

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15. Contract Information (Cont'd):

of the contract. Once formal CPR data are received for the MYP FY04 lot, they 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>			Initial Contract Price		
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					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$319.1	\$350.4		\$278.2	\$266.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$8.4	\$-4.8
Cumulative Variances To Date	\$12.3	\$-3.5
Net Change	\$3.9	\$1.3

Explanation of Change:

The net change (improvement) in the cumulative Cost Variance (CV) and associated Cost Performance Index from 1.04 to 1.05 (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 0.98 to 0.99 is attributable to 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.

The October 2003 was the last formal Cost Performance Report (CPR) for this effort as a contract modification (P00071 dated 20 November 2003) removed the CPR requirement. Informal reporting will continue to be provided on a quarterly basis.

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15. Contract Information (Cont'd):

<u>Airframe FY00 ILS:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas, St. Louis, MO			\$148.1	\$0.0	0
N00019-01-C-0012, CPFF/CPIF					
Award: October 20, 2000					
Definitized: April 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>
\$129.9	\$129.9		\$129.9	\$129.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$4.0	\$-1.8
Cumulative Variances To Date	\$1.4	\$-2.0
Net Change	\$-2.6	\$-0.2

Explanation of Change:

Since the last report, the Cost Variance (CV) deteriorated by \$2.6M. The unfavorable CV was driven by the implementation of new fabrication methods and procedures that were mutually agreed to between Boeing and the Government, which required additional up-front investments. Investments included the implementation of new method, testing, inspection and process development activities not originally planned. Activities included the utilization of Selective Laser Sintering (SLS). Other negative CV's were driven by the EDU Test Stand efforts requiring more personnel than expected, and workarounds for Major Structural Repair Tool Definition resulting from obsolete C/D precedents. Cumulative CPI is currently 1.02.

The unfavorable Schedule Variance (SV) is attributable to unplanned efforts to implement new fabrication methods and procedures in the Boeing Tooling Fabrication (MTF) team. Other Schedule deterioration included Boeing Support Team issues such as Mechanical Systems Exhibit, EVH Test Stand Design and Development effort behind the original liquidation schedule, and Non-recurring Mechanical Systems Engineering. Mechanical Systems Engineering continues to reflect an unfavorable SV against an initial baseline schedule, which was too aggressive. Manpower shortages have contributed to delays in the Fan Test Stand, LCS Test Stand, and Adapter Set efforts. Some of the effort has been realigned; recovery has begun and is expected to continue. Cumulative SPI is currently 0.98.

<u>F414-GE-400 Engine VI/X:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric, Lynn, MA			\$1917.0	N/A	493
N00019-01-C-0147, FFP					
Award: July 5, 2001					
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>

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15. Contract Information (Cont'd):

\$1917.0	N/A	493	\$1917.0	\$1917.0
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Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

First production delivery of Lot VI occurred December 2001.

Airframe FY01 ILS: McDonnell Douglas, St Louis, MO N00019-02-C-3036, CPFF/CPIF Award: October 20, 2000 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$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>
\$105.2	\$105.2	0	\$105.2	\$105.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.6	\$-0.4
Cumulative Variances To Date	\$1.2	\$-0.5
Net Change	\$-1.4	\$-0.1

Explanation of Change:

Since the last report, the Cost Variance (CV) deteriorated by \$1.4M. CV deterioration is primarily attributable to Tooling Fabrication (MIT), Support Equipment (F00), and Logistics Engineering Support (GSS). This deterioration is due to increased sustaining effort to support this contract. Other causes include cost over runs for the CAST implementation and Theodolite and EDU lock/flag control box efforts within the Support Equipment team (F00) in August of FY03. Cumulative CPI is 1.03.

The unfavorable cumulative Schedule Variance (SV) is small relative to the baseline and is driven by Support Equipment and Logistics and Engineering Support. Cumulative SPI is currently 0.99.

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15. Contract Information (Cont'd):

<u>FIRST Phase II ILS:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
McDonnell Douglas, St. Louis, MO					
N00019-03-C-0041, CPIF	\$57.1	\$57.1			
Award: April 7, 2003					
Definitized: April 7, 2003					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$57.1	\$63.6		\$57.1	\$57.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$4.5	\$-0.4
Net Change	\$4.5	\$-0.4

Explanation of Change:

Cost Variance

The cumulative favorable Cost Variance of \$4.5M is due to a number of reasons. Support Systems (FY00) costs are lower due to less support needed than expected for coordination activities related to field failure data preparation, including coordination activities with Raytheon. Technical Data I & Technical Data System (TDS) (J00) has been driven by a number of Vendor Pubs not liquidated when scheduled and Travel Activities charged late but which will charge in January of 2004. FIRST Program Management (GS2) driven by travel expenses being lower than expected due to Naval Aviation Logistics Command Management Information System (NALCOMIS) enhancements not materializing. In-Service Engineering (GS4) driven by an open Team Lead Position that will be filled in FY04. Support Integration (GS7) driven by the ATFLIR mod effort. This effort has yet to be definitized and will extend into 2004 due to a late start. Also, cost overruns were incurred for late delivery of materials by Raytheon in this cost account.

Schedule Variance

The cumulative unfavorable Schedule Variance of (\$422K) is driven by Support Systems (F00). Purchase Orders for Generator Conversion Unit (GCU) SE Maintenance and for Servo Test System (STS) Maintenance did not liquidate when scheduled. However, liquidation has been rescheduled for February 2004.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-11)</u>	<u>Total</u>
RDT&E	5557.6	-	-	-	5557.6
Procurement	19784.8	3141.6	3011.0	12350.2	38287.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	25342.4	3141.6	3011.0	12350.2	43845.2

b. Annual Summary -- F/A-18E/F

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>
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

Appropriation: 1506 - Aircraft Procurement, 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>
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	2134.5	2839.4	2898.9
2001	39	61.5	2314.3	2875.2	2965.1
2002	48	61.9	2589.1	3143.4	3276.8
2003	45	67.2	2568.3	3069.5	3244.4
2004	42	140.7	2416.3	2926.7	3141.6
2005	42	52.0	2383.6	2770.9	3011.0

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**16b. Program Funding Summary (Cont'd):**

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 \$
2006	38	27.3	2160.1	2576.9	2849.1
2007	30	13.0	1708.6	2087.9	2352.3
2008	24	9.5	1370.7	1798.9	2066.8
2009	20	8.4	1163.3	1496.9	1754.2
2010	22	9.6	1218.5	1495.1	1787.1
2011	14	27.0	755.5	1263.7	1540.7
Subtotal	462	1123.4	28316.1	35770.1	38287.6

Costs for the AESA (AN/APG-79 Radar) procurement are included.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	462	1123.4	28316.1	41665.3	43845.2

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	7	7
Procurement	149	159

Percent Total Program Quantities Delivered: 35.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 20828

Percent Total Program Expended: 47.5%

**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\$:

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18a. Operating and Support Costs (Cont'd):

\$0.62

Date of estimate: March 2003

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

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: 03/21/2004 5:52:46 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 2003

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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	Ms. Michelle Bailey
PMW 176	Assigned: August 1, 2000
4301 Pacific Highway	DSN (312) 524-7930; COMM (619) 524-7930
San Diego, CA 92110-3217	michelle.e.bailey@navy.mil
4. (U) Program Elements/Procurement Line Items:  
 RDT&E:  
 (U) PE 0303109N Project X0728 (Shared)  
 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

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Derived from:  
 Downgrade instructions: MILSTAR  
 Declassification Guide September 10, 1993

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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, control and 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 C3 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, Polar Satellite and with the Fleet Satellite (FLTSAT) EHF Packages (FEP) installed on FLTSAT's 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, 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. In 1986, after full and open competition, one company was awarded a Firm Fixed Price contract for Full Scale Development (FSD) completion and initial production. Low Rate Initial Production (LRIP) began in FY90 and by April 1993, Milestone III decision approved Full Rate Production.

(U) The first Milstar satellite was launched on February 7, 1994. A production NESP terminal successfully communicated with an Air Force terminal over the on-orbit Milstar I Satellite on February 15, 1994 as part of Milstar System Test (MST)-8000. NESP Initial Operational Capability (IOC) was achieved in April 1994. In November 1996 Operational test event OT-IIIB (Signal

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7. (U) Executive Summary (Cont'd):

Susceptibility and Vulnerability Assessment) concluded that EHF shore, sub and ship terminals met their respective anti-jam (AJ) and Low probability of intercept (LPI) performance requirements.

(U)The NESP Acquisition Strategy was updated in December 1996 to provide for the development and deployment of an MDR upgrade (MDR capability via a spare drawer in the initial LDR terminal) to satisfy interoperability and compatibility with Milstar II satellites and provides significantly increased rates to the Fleet. The MDR upgrade contract was awarded on January 20, 1998.

(U)The strategy also included a plan to competitively procure an LDR/MDR Follow-On NESP terminal. The resultant "Follow-On Terminal" (FOT) integrated the LDR and MDR capabilities into a streamlined terminal configuration and capitalized on the most current technology to satisfy remaining Fleet requirements. The FOT contract was awarded on March 20, 1998.

(U)The MST-6000 test, performed in August 1998 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) 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) Three Milstar II satellites have been successfully launched.

Milstar II Flight 4: February 27, 2001

Milstar II Flight 5: January 15, 2002

Milstar II Flight 6: April 8, 2003

(U) NESP requires \$52.5M to complete procurement and installation of 18 ship and shore LDR/MDR FOT fielding requirements. The previous SAR reported an \$84.5M shortfall. The revised estimate is a result of the following: A budget increase and reprioritization of terminal fielding necessary to fund the high priority 18 SSBN/GN FOT terminals which were previously in "To Complete", CNO N77 funding the fielding of these terminals, and a decrease in total terminal requirements.

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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
	JAN 1982	JAN 1982	JAN 1982
FSD Approval (Milestone II) (2 Contractors)			
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

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9a. (U) Schedule (Cont'd):

(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</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Survivability	(b)(1)			
Transient				
Overpressure (psi)				
Neutron Fluence				
(neutrons/cm^2)				
Gamma Dose Rate				
(rads) (si)/(sec)				
Total Gamma Dose				
(rads) (si)				
Gamma Dose Initial				
(rads) (si)				
Thermal Fluences				
1 MT yield				
(cal/cm^2)				
EMP (peak at antenna)				
Eo Field				
(volts/meter)				
Ho Field				
(amps/meter)				
Resistance to Jamming				
Shore (EIRP) (dBW)				
Shore (G/T) (dBi)				
Ship (EIRP) (dBW)				
Ship (G/T) (dBi)				
Sub (EIRP)				
(Wet Radome) (dBW)				
Sub (G/T)				
(Wet Radome) (dBi)				
Low Probability of				
Intercept (CEVR)				
(75bps/minimum power)				
Ship (nmi)				

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10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Sub (nmi)	<div>b</div>			
Availability				
Submarine				
Surface				
Shore				
Reliability (All Terminals) (hrs)				
Maintainability (MTTR (hrs)				
Minimum Essential Communications				
Ship (1^0 Spot) (bps) (sv)				
Ship (1^0 Spot) (bps) (TTY)				
Receive Only (bps) data				
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)				
Shore (6 Ft. Ant.) (dBw)				
Ship (4 Ft. Ant.) (dBw)				
Ship (3 Ft. Ant.) (dBw)				
Sub (9.5 in. Ant.) (dBw) (Wet Radome)				
G/T				
Shore (10 Ft. Ant.) (dBk)				
Shore (6 Ft. Ant.) (dBk)				

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10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAP)	Approved Program (APB) Obj/Threshold	Demon- strated Current
Ship (4 Ft. Ant.) (dBk)	(b)(1)		(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)			
Sub (9.5 in. Ant.) (kBPS)			(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)

(U) Entries shown for Performance Characteristics under "Demonstrated Performance" have been tested at values equal to or better than the Approved Program Objective/Threshold.

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10a. (U) Performance Characteristics (Cont'd):

(U) Acronyms:

bps	bits per second
cal	calories
cm	centimeters
CEVR	Circular Equivalent Vulnerability Radius
dB <sub>i</sub>	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
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 AFB 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.

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Navy EHF SATCOM Prog, December 31, 2003

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	435.9
Procurement	1395.2	1395.2	1353.1
Terminals	(991.7)		(1043.5)
Other Weapon Sys	(127.9)		(120.8)
Peculiar Support	(40.7)		(41.6)
Initial Spares	(234.9)		(147.2)
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	1796.7
Escalation	497.1	497.1	259.0
Development (RDT&E)	(6.0)	(6.0)	(-4.5)
Procurement	(486.3)	(486.3)	(262.6)
Construction (MILCON)	(4.8)	(4.8)	(0.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2373.7	2373.7	2055.7
b. (U) Quantity --			
Development (RDT&E)	7	7	7
Procurement	386	386	508
Total	393	393	515

(U) Note: RDT&E units are fully configured

[U] A total of 116 EHF LDR terminals were procured under LRIP, exceeding 10% of total production. Three one-year LRIPs 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 508 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 241 LDR/MDR Follow-On Terminals. The decrease in LDR/MDR Follow-On Terminals from 246 to 241 is due to a revised SCN procurement schedule and a change in Naval Force structure for a net decrease of 5 LDR/MDR FOT terminals.

[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.

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11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (AUG 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	1876.6	1796.7	
(2) Quantity	393	515	
(3) Unit Cost	4.775	3.489	-26.93
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	1395.2	1353.1	
(2) Quantity	386	508	
(3) Unit Cost	3.615	2.664	-26.31

(U) The revised Acquisition Program Baseline of August 16, 2001 updated schedule information only; no cost information was updated from 1993 SAR Baseline.

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	+2.7	-197.1	-0.6	-195.0
Quantity	-	+223.9	-	+223.9
Schedule	+23.9	+16.5	-	+40.4
Engineering	+35.5	+33.7	-	+69.2
Estimating	-96.3	-186.6	+0.8	-282.1
Other	-	-	-	-
Support	-	-146.6	-20.4	-167.0
Subtotal	-34.2	-256.2	-20.2	-310.6
Current Changes:				
Economic	-0.1	+1.0	-	+0.9
Quantity	-	-10.6	-	-10.6
Schedule	-	+0.6	-	+0.6
Engineering	-	-	-	-
Estimating	+2.3	-1.8	-	+0.5
Other	-	-	-	-
Support	-	+1.2	-	+1.2
Subtotal	+2.2	-9.6	-	-7.4
Total Changes	-32.0	-265.8	-20.2	-318.0
Current Estimate	431.4	1615.7	8.6	2055.7

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	457.4	1395.2	24.0	1876.6
Previous Changes:				
Quantity	-	+184.6	-	+184.6
Schedule	+12.1	+3.0	-	+15.1
Engineering	+24.3	+23.8	-	+48.1
Estimating	-59.6	-151.7	+0.5	-210.8
Other	-	-	-	-
Support	-	-94.9	-16.8	-111.7
Subtotal	-23.2	-35.2	-16.3	-74.7
Current Changes:				
Quantity	-	-7.5	-	-7.5
Schedule	-	+0.4	-	+0.4
Engineering	-	-	-	-
Estimating	+1.7	-0.8	-	+0.9
Other	-	-	-	-
Support	-	+1.0	-	+1.0
Subtotal	+1.7	-6.9	-	-5.2
Total Changes	-21.5	-42.1	-16.3	-79.9
Current Estimate	435.9	1353.1	7.7	1796.7

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised Escalation Indices (Economic)	N/A	-0.1
NESP baseband/ancillary equipment development and testing completion. (Estimating)	+1.7	+2.3
RDT&E Subtotal	+1.7	+2.2
(2) <u>Procurement</u>		
Revised Escalation Indices (Economic)	N/A	+1.0
Adjustment for Current and Prior Inflation (Estimating)	-0.5	-0.7
Procurement decrease of 6 OPN Low Data Rate (LDR)/Medium Data Rate (MDR) Follow-On Terminals (FOT) and increase of 1 SCN LDR/MDR FOT due to Naval Force restructuring. (Quantity)	-7.5	-10.6
Accelerated procurement of LDR/MDR FOT and other equipment. (Schedule)	+0.4	+0.6
Revised estimates due to economic order quantity buy in production year 5. (Estimating)	-0.3	-1.1

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Estimating change for procurement of SSBN/GN spares. (Support)	+1.0	+1.2
Procurement Subtotal	-6.9	-9.6

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes								PAUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
6.04	-0.377	-1.02	+0.080	+0.134	-0.547	--	-0.322	-2.05	3.99

b. (U) 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
4.87	-0.386	-0.751	+0.034	+0.066	-0.371	--	-0.286	-1.69	3.18

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	2055.7
Total Quantity	N/A	N/A	393	515
Prog Acq Unit Cost	N/A	N/A	6.0	4.0

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15. (U) Contract Information (Then-Year Dollars in Millions):

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
a. Procurement --				
(U) EHF Terminals:				
RAYTHEON COMPANY, MARLBOROUGH, MA				
N00039-82-C-0146, FFP	\$83.7	N/A	24	
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:

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.

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
(U) EHF Follow-On Terminals:				
Raytheon Company, Marlborough, MA				
N00039-98-C-0047, FFP	\$9.5	N/A	1	
Award: March 20, 1998				
Definitized: January 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>
\$134.4	N/A	157	\$253.6	\$253.6

Explanation of Change:

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, 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 (FY82-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-07)</u>	<u>Total</u>
RDT&E	429.2	0.9	0.8	0.5	431.4
Procurement	1388.1	98.6	51.4	77.6	1615.7
MILCON	8.6	-	-	-	8.6
O&M	-	-	-	-	-
Total	1825.9	99.5	52.2	78.1	2055.7

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				3.0	3.8
2004				0.7	0.9
2005				0.6	0.8
2006				0.4	0.5
Subtotal				435.9	431.4

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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	3		6.6	4.0	4.3
1991	1		2.0	1.2	1.3
1992	1		2.2	2.0	2.3
1993	9		19.6	12.0	13.9
1994	7		26.6	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	3		4.3	6.2	8.1
2003	9		13.8	9.5	13.0
2004	11		15.7	14.9	20.7
2005	1		2.2	8.1	11.4
2006				0.7	1.0
Subtotal	78		146.6	150.2	189.6

(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	21		34.2	59.0	74.2
2002	23		42.6	51.8	65.8
2003	11		25.5	39.2	50.4

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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	39		37.8	59.7	77.9
2005			8.0	30.2	40.0
2006			4.3	17.9	24.1
2007	18		36.0	38.3	52.5
Subtotal	430	44.5	852.4	1202.9	1426.1

(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	515	44.5	999.0	1796.7	2055.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	7	7
Procurement	406	406

(U) Percent Total Program Quantities Delivered: 80.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1783.3

(U) Percent Total Program Expended: 86.7%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

(U) Operating and support costs are the sum of all costs resulting from the operation, maintenance, and support of the terminals after acceptance into the Navy inventory. The operating costs are the sum of the cost of operating personnel and facilities, in addition to energy and software maintenance. The prime equipment inventory objective 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
BYS (In Millions)	472.0	N/A
TYS (In Millions)	592.0	N/A

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N-22 MIDS - LVT

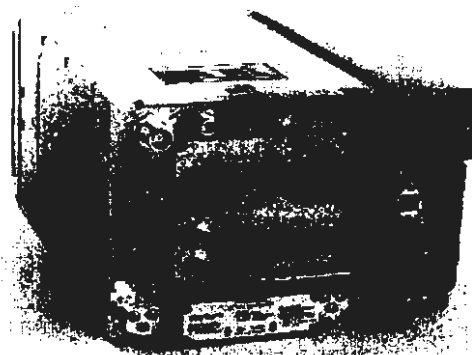
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: MIDS-LVT

AS OF DATE: December 31, 2003

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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

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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 0604280N (Shared)	MIDS SCA Project X3073 (Shared)
(U)	PE 0604771D (Shared)	MIDS Project P773

Derived from: MIDS Security Classification Guide, dated January 15, 1999  
Downgrade instructions: Source document marked OADR, dated January 15, 1999  
Declassify on: Source document marked OADR, dated January 15, 1999

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**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 3010 ICN 0207138F (Air Force) (Shared)  
(U) APPN 0300 ICN 0208861C (DoD) (Shared)  
(U) APPN 0300 ICN 0208865C (DoD) (Shared)  
(U) APPN 2035 ICN 0528992A (Army) (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) The current estimate of the MIDS-LVT acquisition cost includes Defense 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, Operation Enduring Freedom, and Operation Iraqi Freedom.

**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated June 14, 2003.

**6. (U) Mission and Description:**

(U) The MIDS-LVT terminal does not replace an existing DoD system; however, 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

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**6. (U) Mission and Description (Cont'd):**

individual user needs and budgets. Three principal configurations of the 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 the F/A-18, which was previously unable to use JTIDS due to space and weight limitations. MIDS-LVT(2) is an Army variant of MIDS tailored that is 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 2,900 terminals (total for all three variants) are planned for procurement through fiscal year 2011.

**7. (U) Executive Summary:**

(U) The Operational Evaluation (OPEVAL) of the MIDS-LVT integrated on the Navy F/A-18 commenced October 2002 aboard the Nimitz Carrier Strike Group. Based on an interim OPEVAL Report, Commander, Operational Test and Evaluation Force (COMOPTEVFOR) concluded the MIDS-LVT would enhance operational effectiveness and situational awareness, which supported an Early Operational Capability (EOC) during March 2003 on two F/A-18 Strike Fighter Squadrons deployed with the Nimitz. These MIDS-LVT equipped operational squadrons successfully supported the Nimitz Carrier Strike Group throughout Operation Iraqi Freedom. OPEVAL completed March 19, 2003 and COMOPTEVFOR issued the final OPEVAL Report on May 27, 2003, which determined the MIDS-LVT "... significantly enhances aircrew situational awareness in virtually every mission area and greatly increases the overall effectiveness and survivability of the F/A-18." However, the final OPEVAL Report also identified suitability issues and one safety of flight concern, which the MIDS-LVT Program Manager (PM) addressed. COMOPTEVFOR subsequently conducted a Verification of Correction of Deficiencies during July and August 2003, which supported a recommendation for full fleet release of the MIDS-LVT on September 4, 2003. Director, Operational Test and Evaluation Force submitted the required Beyond Low Rate Initial Production (LRIP) Report to Congress on September 24, 2003. The Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN(RD&A)) convened a Program Decision Meeting on September 25, 2003 that evaluated the readiness of the MIDS-LVT and the Army unique MIDS-LVT(2) variant for Full Rate Production (FRP). As documented in the Acquisition Decision Memorandum (ADM), dated December 8, 2003, the Navy and the Air Force demonstrated it had successfully met the MIDS-LVT Milestone III exit criteria and FRP for the Air Force MIDS-LVT and Army MIDS-LVT(2) were approved. However, because of ASN(RD&A) concerns with four remaining deficiencies on the F/A-18, only the Fiscal Year 2003 (FY03) Navy procurement was authorized, which constituted an LRIP 4 decision for 71 Navy MIDS-LVT. (The PM subsequently requested and received authorization to procure an additional 20 MIDS-LVT for Navy emergent requirements.) The PM has planned the collection of flight test and fleet data that will demonstrate either resolution or a resolution path for the remaining deficiencies with the F/A-18 that will support a successful Navy MIDS-LVT Milestone III decision in spring 2004. Of the four deficiencies cited in the ADM, reliability, maintainability, and issues with radio frequency cabling have been resolved; resolution of the voice deficiency is ongoing.

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7. (U) Executive Summary (Cont'd):

The PM has implemented an acquisition strategy that plans continuous competition throughout the MIDS-LVT production phase. The Navy awarded the FY03 procurements on September 29, 2003 on a competitive source selection to the two U.S MIDS-LVT contractors, Data Link Solutions (DLS) and ViaSat, respectively. Over the course of the last two years, the Navy has coordinated plans to migrate the MIDS-LVT to comply with the requirements of the Joint Tactical Radio System (JTRS). The Navy's acquisition strategy includes the proactive involvement of the MIDS-LVT participating Nations, e.g., U.S., France, Germany, Italy, and Spain and their related national industries. U.S. developmental funding for this effort is included in the President's fiscal year 2005 budget and reported herein. However, budgeted funds are insufficient to fully fund both U.S. contractors during MIDS JTRS development and qualification, which hampers the Navy's ability to maintain continuous competition throughout the production phase. The Navy is currently evaluating potential solutions that would provide full funding.

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:

Explanation of Schedule Breach: The Assistant Secretary of the Navy for Research, Development and Acquisition (ASN(RD&A)) issued an Acquisition Decision Memorandum on December 8, 2003 that approved Milestone III for the Air Force MIDS-LVT but delayed Milestone III for the Navy MIDS-LVT until four specific deficiencies with F/A-18 integration are resolved. There have been no funding impacts to date, as ASN(RD&A) authorized the Navy fiscal year 2003 award to maintain production and the Navy Milestone III decision, planned spring 2004, will enable the timely obligation of Navy fiscal year 2004 funding.

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8c. (U) Threshold Breaches (Cont'd):

Explanation of Cost Breach: Planned procurement quantities have increased from 2,573 in the approved baseline to 2,842 in the current estimate, an increase of 10%. The quantity increase breaches the total procurement cost threshold but the average procurement unit cost is within the approved threshold.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	DEC 1993	DEC 1993	DEC 1993
Milestone II (DAB)			
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	MAR 1994	N/A	N/A
(NAVAIR)			
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
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	MAR 2003 (Ch-1)
LVT(2)	N/A	FEB 2002	JUN 2002
LVT(3)	N/A	JUL 1999	AUG 1999
Low-Rate Initial Production First	OCT 2000	N/A	N/A
Delivery			
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	APR 2004 (Ch-2)
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	SEP 2003 (Ch-3)
LVT(2)	N/A	JUN 2002	DEC 2002
LVT(3)	N/A	JAN 2001	FEB 2001
Organic Support Capability Date	JUN 2003	N/A	N/A

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9a. (U) Schedule (Cont'd):

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Service Depot Support Date	JAN 2004	MAR 2005	MAR 2005
Full Rate Production - LVT(2)	N/A	MAY 2003	SEP 2003 (Ch-4)

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 March 2003.

<u>Milestone</u>	<u>From</u>	<u>To</u>
IOT&E Complete LVT	Feb 03	Mar 03

(Ch-2) Although the Assistant Secretary of the Navy for Research, Development and Acquisition agreed the Navy and Air Force successfully met the approved Milestone III exit criteria for the MIDS-LVT, the Navy Milestone III is delayed until four specific deficiencies with F/A-18 integration are resolved.

<u>Milestone</u>	<u>From</u>	<u>To</u>
Milestone III (Navy) LVT	Jul 03	Apr 04

(Ch-3) The Initial Operational Capability for the MIDS-LVT was delayed until Commander, Operational Test and Evaluation Force issued a recommendation for full fleet release in September 2003.

<u>Milestone</u>	<u>From</u>	<u>To</u>
Initial Operational Capability LVT	May 03	Sep 03

(Ch-4) Due to the relatively small procurement quantity for the Army unique MIDS-LVT(2), five percent of the total planned procurement, the Army Full Rate Production decision was delayed until September 2003, when the MIDS-LVT Milestone III decision meeting was convened.

<u>Milestone</u>	<u>From</u>	<u>To</u>
Full Rate Production - LVT(2)	Mar 03	Sep 03

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10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Interoperability	N/A	All IERs/ All in SMORD/ critical	F/A-18 JIT	All Critical
		/ IERs in		IERs in
		/ SMORD		SMORD
Waveform Compatibility	N/A	STANAG / STANAG	STANAG	STANAG
		4175 & / 4175 &	4175 &	4175 &
		JTIDS / JTIDS	JTIDS	JTIDS
		SSS / SSS	SSS	SSS
Message Standard	N/A	STANAG / STANAG	STANAG	STANAG
		5516 (& / 5516 (&	5516 (&	5516 (&
		5616 for/ 5616 for	5616 for	5616 for
		Data / Data	Data	Data
		Fwds) & / Fwds) &	Fwds) &	Fwds) &
		MIL-STD-/ MIL-STD-	MIL-STD-	MIL-STD-
		6016A / 6016A	6016A	6016B
Maximum Power	N/A	/	TBD	
Transmission (w)		/		
LVT	N/A	Multiple/ 200 with	200	200 with
		select- / IF for		IF for
		able / 1000		1000
		levels /		
LVT(2)	N/A	Multiple/ 200 or	200	200 or
		select- / 25		25
		able / select-		Select-
		levels / able		able
LVT(3)	N/A	Multiple/ 50	40 - 80	50
		select- /		
		able /		
		levels /		
Information Exchange	N/A	1000 / 28.8 -	26.375 -	26.375 -
Rate (Kbps)		/ 115.2	53.526	53.526
Coded Data Rate (Kbps)	N/A	N/A / N/A	TBD	Deleted
Standard Packing	28.8	N/A / N/A		Deleted
Packed 2 DP	57.6	N/A / N/A		Deleted
Packed 4 DP	115.2	N/A / N/A		Deleted
Paired Time Slot Relay	N/A	Integral/ Integral	Integral	Integral
Capability		and / and	and	and
		auto- / auto-	auto-	auto-
		mated / mated	mated	mated
Relay Range (nm)	1200	N/A / N/A		Deleted
Paired Time Slot Relay	N/A	1200 / 500	500	500
Range (nm) (USN Only)			(data & voice)	
Repromulgation Relay	N/A	4 hop / 3 hop	TBD	3 hop
(nm) MIDS-LVT(2)		with LOS/ with LOS		with LOS
Communication Range	300	N/A / N/A		Deleted
(nm)				

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10a. (U) Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Communication Range				
LVT (USN: C2 to C2)	N/A	300 / 300	TBD	300
LVT (USN: Non-C2 to C2)	N/A	240 / 220	250	240
LVT (USN: Non-C2 to Non-C2)	N/A	200 / 180	225	260 data & 240 voice
LVT (USN: Surface Platforms)	N/A	LOS up to 300 / LOS up to 300	TBD	LOS up to 300
LVT (F-16: Non-C2 to C2)	N/A	300 / 200	TBD	200
LVT (F-16: Non-C2 to Non-C2)	N/A	150 / 100	TBD	100
LVT(2)	N/A	300 with/ LOS at 200 w / 300 with/ LOS at 200 w	249 with/ LOS at 200 w	300 with/ LOS at 200 w
LVT(3) (Non-C2 to C2)	N/A	300 / 200	TBD	200
LVT(3) (Non-C2 to Non-C2)	N/A	150 / 100	TBD	100
Voice Channels	2	N/A / N/A		Deleted
Voice Channels: LVT (USN)	N/A	Capable of 2 / 1	2	2
Coded Message Error Probability (%)	1	N/A / N/A		Deleted
Coded Message Error Probability (%)				
LVT	N/A	1 / 2	1	1
LVT(2)	N/A	1 / 2	TBD	2
LVT(3)	N/A	< 1 / 2	TBD	2
(b) Jam Resistance (db)	(b) <del>CONFIDENTIAL</del>	detected/ N/A / N/A	TBD	Deleted
Jam Resistance				
LVT (USN) (db)	N/A	MJCS- 194-89 / MJCS- 194-89	MJCS- 194-89	MJCS- 194-89
LVT (F-16) (%)	N/A	< 1 / < 1	TBD	< 1
		detected/ error / error		detected error
LVT(2) (%)	N/A	< 1 / < 5	TBD	< 5
		detected/ error /		detected error
LVT(3) (%)	N/A	< 1 / < 1	TBD	< 1
		detected/ error / error		detected error
Ao				
LVT	.9	.90 / .90	.95	.90
LVT(2) (Terminal)	N/A	.94 / .90	.99	.90

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10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
LVT(3)	N/A	.97	/ .95	TBD	.95
MTBF (hr) (lab)					
LVT	1000	N/A	/ N/A		Deleted
USN	N/A	1000	/ 1000	1285	1000
USA	N/A	1800	/ 1000	1000	1000
USAF	N/A	1500	/ 1000	TBD	1000
MFHBMCF (hr) (field)	300		/		N/A
MFHBOMF/MTBOMF (hr)					
System	N/A	25	/ 25	90	25
LVT (Aircraft)	N/A	300	/ 220	205.8	220
(Terminal)					
LVT (Ships)	N/A	350	/ 257	TBD	257
(Terminal)					
LVT(2) (Terminal)	N/A	393	/ 393	373	393
MTTR (O-level) (min)	30	N/A	/ N/A		Deleted
MTTR (O-level) (min)					
LVT(2) (Terminal)	N/A	30	/ 30	TBD	30
MCMTOMF	N/A		/	TBD	
LVT (USN Aircraft)	N/A	60	/ 90	70	90
LVT (USN Ships)	N/A	60	/ 90	TBD	90
LVT (USAF)	N/A	MRT < 20/	MRT < 30	TBD	MRT < 30
LVT(3)	N/A	MRT < 20/	MRT < 30	TBD	MRT < 30
Volume (dm3)	16.4	N/A	/ N/A		Deleted
Volume (Cubic Feet)					
LVT	N/A	< .6	/ < .6	.56	< .6
LVT(2)	N/A	< 1.4	/ < 1.4	.437	< 1.4
LVT(3)	N/A	< .6	/ < .6	TBD	< .6
Weight (kg)	N/A	N/A	/ N/A	TBD	Deleted
LVT	29.5	N/A	/ N/A		Deleted
Weight (lbs)					
LVT	N/A	< 65	/ < 65	51.4	< 65
LVT(2)	N/A	< 88	/ < 88	80.74	< 88
LVT(3)	N/A	< 65	/ < 65	TBD	< 65

(U) Acronyms:

% - Percentage

Ac - 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

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**10a. (U) Performance Characteristics (Cont'd):**

kg - Kilograms  
LOS - Line of Sight  
MCMTOMF - Mean Corrective Maintenance Time for Operational Mission Failures  
MPHBMCf - 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 -- None

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	481.1	673.7	737.6
Procurement	443.8	697.7	831.2
Prime Mission Eqmt (PME)	(313.7)		(606.2)
Production Support	(10.5)		(29.8)
Nonrecurring Flyaway			(70.5)
Total Flyaway	(324.2)		(706.5)
Other Wpn Sys	(55.7)		(18.3)
Peculiar Support	(6.6)		(3.8)
Initial Spares	(57.3)		(102.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1992 Base-Year \$	924.9	1371.4	1568.8
Escalation	194.6	250.3	280.0
Development (RDT&E)	(51.9)	(77.9)	(90.2)
Procurement	(142.7)	(172.4)	(189.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1119.5	1621.7	1848.8

(U) Note: Development and procurement costs include the migration of the MIDS-LVT to compliance with the Joint Tactical Radio System and changes in budgeted platform procurement profiles. 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	164
Procurement	630	2573	2842
Total	672	2662	3006

(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. Four Low Rate Initial Production (LRIP) decisions have been approved to date for a total planned LRIP quantity of 544 terminals; the last LRIP was approved in conjunction with the Navy Program Decision Meeting convened September 25, 2003. 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 --

The European participants in the MIDS cooperative development program will

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**11c. (U) Total Program Cost and Quantity (Cont'd):**

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.

Foreign Military Sales

Foreign military sales totaling 179 MIDS terminals at a cost of \$55.6M have been implemented through December 2003 with Australia (72), Belgium (35), Denmark (3), Japan (16), Netherlands (4), Norway (26), Poland (6), Switzerland (7), and Taiwan (10).

Direct Commercial Sales

Direct commercial sales totaling 147 MIDS terminals have been implemented through December 2003 with Korea (40), NATO EF2000 and Tornado Management Agency (28), Netherlands (3), and the United Kingdom (76). (Note: cost information for direct commercial sales is not available.)

Other Foreign Sales

Other foreign sales for 3 MIDS terminals at a cost of \$1.1M has been implemented through December 2003 with the European Participating Air Force.

d. Nuclear Costs -- None.

**12. (U) Unit Cost Summary:**

	UCR Baseline (JUN 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1992 BY\$)	1371.4	1568.8	
(2) Quantity	2662	3006	
(3) Unit Cost	0.515	0.522	+1.36
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1992 BY\$)	697.7	831.2	
(2) Quantity	2573	2842	
(3) Unit Cost	0.271	0.292	+7.75

(U) The current estimates have been revised in consideration of actual contractor costs for recurring and nonrecurring production costs.

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	533.0	586.5	-	1119.5
Previous Changes:				
Economic	-12.8	-54.8	-	-67.6
Quantity	+12.1	+562.7	-	+574.8
Schedule	+0.2	+40.3	-	+40.5
Engineering	+50.0	-89.1	-	-39.1
Estimating	+226.5	-48.4	-	+178.1
Other	-	-	-	-
Support	-	-79.7	-	-79.7
Subtotal	+276.0	+331.0	-	+607.0
Current Changes:				
Economic	-0.1	-0.6	-	-0.7
Quantity	+18.4	+21.7	-	+40.1
Schedule	-	+4.1	-	+4.1
Engineering	-	-12.0	-	-12.0
Estimating	+0.5	+8.7	-	+9.2
Other	-	-	-	-
Support	-	+81.6	-	+81.6
Subtotal	+18.8	+103.5	-	+122.3
Total Changes	+294.8	+434.5	-	+729.3
Current Estimate	827.8	1021.0	-	1848.8

(U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	481.1	443.8	-	924.9
Previous Changes:				
Quantity	+9.6	+451.7	-	+461.3
Schedule	+0.2	-	-	+0.2
Engineering	+41.1	-61.8	-	-20.7
Estimating	+189.7	-23.3	-	+166.4
Other	-	-	-	-
Support	-	-61.7	-	-61.7
Subtotal	+240.6	+304.9	-	+545.5
Current Changes:				
Quantity	+15.5	+15.7	-	+31.2
Schedule	-	-	-	-
Engineering	-	-7.4	-	-7.4
Estimating	+0.4	+7.4	-	+7.8
Other	-	-	-	-
Support	-	+66.8	-	+66.8
Subtotal	+15.9	+82.5	-	+98.4
Total Changes	+256.5	+387.4	-	+643.9
Current Estimate	737.6	831.2	-	1568.8

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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	-0.1
Quantity increase of 44 MIDS terminals from 120 to 164 (USN, USA, USAF). (Quantity)	+15.5	+18.4
Increased systems engineering support (USA). (Estimating)	+0.4	+0.5
RDT&E Subtotal	+15.9	+18.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-1.0
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation (USN, USAF, USA). (Estimating)	+0.4	+0.4
Quantity decrease of 6 MIDS terminals from 116 to 110 (USA) (Quantity)	-3.2	-4.4
Allocation to Schedule variance resulting from Quantity Change (USA). (QR)(Schedule)	0.0	-0.6
Allocation to Engineering variance resulting from Quantity Change (USA). (QR)(Engineering)	+0.8	+1.4
Allocation to Estimating variance resulting from Quantity Change (USA). (QR)(Estimating)	+0.3	+0.8
Quantity increase of 25 MIDS terminals from 1149 to 1175 (USN). (Quantity)	+10.0	+14.4
Allocation to Schedule variance resulting from Quantity Change (USN). (QR)(Schedule)	0.0	+3.1
Allocation to Engineering variance resulting from Quantity Change (USN). (QR)(Engineering)	-4.3	-7.0
Allocation to Estimating variance resulting from Quantity Change (USN). (QR)(Estimating)	-0.4	-0.9
Acceleration of annual procurement buy profile (USN). (Schedule)	0.0	-0.7
Quantity increase of 19 MIDS terminals from 1538 to 1557 (USAF). (Quantity)	+8.9	+11.7
Allocation to Schedule variance resulting from Quantity Change (USAF). (QR)(Schedule)	0.0	+2.9
Allocation to Engineering variance resulting from Quantity Change (USAF). (QR)(Engineering)	-3.9	-6.4
Allocation to Estimating variance resulting from Quantity Change (USAF). (QR)(Estimating)	-1.4	-3.4
Acceleration of annual procurement buy profile (USAF). (Schedule)	0.0	-0.6
Increased use of warranties (USN, USAF, USA). (Estimating)	+8.5	+11.8

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in Initial Spares as a result of increased procurement quantities and increased budgets (USN, USAF). (QR) (Support)	+63.5	+77.4
Change in Peculiar Support and Other Wpn Sys (USN, USAF, USA). (Support)	+3.3	+4.2
Procurement Subtotal	<u>+82.5</u>	<u>+103.5</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	+0.015	-0.017	+0.062	--	+0.001	-1.05	0.615

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	-0.019	-0.520	+0.016	-0.036	-0.014	--	+0.001	-0.572	0.359

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	APR 2004
IOC	N/A	DEC 2000	N/A	SEP 2003
Total Cost	N/A	1119.5	N/A	1848.8
Total Quantity	N/A	672	N/A	3006
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

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14. (U) Unit Cost and Other History (Cont'd):

planned for the Army unique LVT(2) variant but it was replaced by a Full Rate Production decision approved September 2003.

<u>Milestone III</u>	<u>Date</u>
LVT	Apr 04
LVT(3)	Oct 99 (Actual)

<u>IOC</u>	
LVT	Sep 03 (Actual)
LVT(2)	Dec 02 (Actual)
LVT(3)	Feb 01 (Actual)

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --	Initial Contract Price		
(U) <u>Sys Eng &amp; Integration:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BAE Systems, Wayne, NJ			
N00039-00-D-2102, FFP/T& M	\$1.7	N/A	0
Award: June 19, 2000			
Definitized: June 19, 2000			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$40.1	N/A	0	\$40.1	\$40.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP/T& M contract.

(U) Contract Comments:

The Systems Engineering and Integration (SE&I) contract was awarded to BAE Systems North America on June 19, 2000 in preparation for the transition of the Engineering and Manufacturing Development (EMD) responsibilities from the cooperative international development contract with MIDSCO as of June 30, 2000. The initial target cost of \$1.7M included funding for the first delivery order and the current target price of \$40.1M includes all sixty-four delivery orders issued to date on the SE&I contract. These delivery orders facilitated completion of most unfinished EMD work and provides systems level engineering capabilities for continued support of the EMD terminals, Government developmental and operational test, continued maintenance of the EMD software, and development of the production block cycle software needed to support the production phase of the program. BAE implemented an Associate Contract Agreement (ACA) with the European MIDS-LVT production contractor, EuroMIDS, for the maintenance and development of common core and tailored input/output (TI/O) software for the production phase, as BAE provides the core software support and Thales (French participant to EuroMIDS) provides the TI/O software. The SE&I contract is nearing completion and is planned to be replaced by a contract for a Software Support Activity (SSA) that is planned for award in late

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15. (U) Contract Information (Cont'd):

FY05.

b. Procurement --  
(U) Fighter Data Link:  
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>
\$200.3	N/A	764	\$200.3	\$200.3

Explanation of Change:

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 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 target cost of \$3.1M was part of a cost sharing agreement whereby DLS ultimately contributed \$8M to qualify and produce 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. The current target price of \$200.3M includes all costs incurred during development and production of 832 FDL 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

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15. (U) Contract Information (Cont'd):

supply support system. To date, 832 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 828 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. As over 90 percent of the FDL terminals have been delivered to date, this contract will not be subject to future reporting.

(U) <u>MIDS Production Contract:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Data Link Solutions, Cedar Rapids IA N00039-00-D-2100, FFP Award: January 20, 2000 Definitized: June 7, 2000	\$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>
\$156.0	N/A	365	\$156.0	\$156.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The initial target price of \$16.1M was for the nonrecurring engineering, long lead parts, and build of the first 35 Low Rate Initial Production MIDS-LVT. The current target price of the production contract is \$156M and includes First Article Qualification Test (FAQT), nonrecurring engineering, supportability, and the manufacture of 365 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

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15. (U) Contract Information (Cont'd):

Aviation Administration / National Telecommunications and Information Administration have not issued final EMC certification. The contractor commenced production deliveries November 2001 and 270 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			
NC0039-00-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>
\$150.2	N/A	342	\$150.2	\$150.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The initial target price of \$23.4M was for the nonrecurring engineering, long lead parts, and build of the first 35 Low Rate Initial Production MIDS-LVT. The current target price of the production contract is \$150.2M and includes First Article Qualification Test (FAQT), nonrecurring engineering, supportability, and the manufacture of 266 MIDS-LVT(1), 76 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 and 129 terminals have been delivered to date.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-12)</u>	<u>Total</u>
RDT&E	751.3	36.1	28.7	11.7	827.8
Procurement	484.8	90.6	88.5	357.1	1021.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1236.1	126.7	117.2	368.8	1848.8

(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 (94 FDL terminals and associated nonrecurring engineering to increase FDL manufacturing capacity from 20 terminals per month to 32 terminals per month, \$22.8M). Funding supports Homeland Defense, Operation Noble Eagle, and Operation Iraqi Freedom.

b. Annual Summary -- MIDS-LVT

Appropriation: 0400 - RDT&E, Defense Wide

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1992 Dollars Nonrec</u>	<u>Flyaway FY 1992 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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				11.1	13.1
2003				6.3	7.5
2004				4.5	5.5
2005				2.7	3.3
Subtotal	39			326.8	360.5

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16b. (U) Program Funding Summary (Cont'd):

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				32.3	37.7
2002				22.2	26.2
2003				14.0	16.7
2004				21.8	26.3
2005				20.7	25.4
2006				9.4	11.7
Subtotal	36			371.7	422.1

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				0.1	0.1
2002				2.6	3.1
2003				0.5	0.6
Subtotal	15			10.3	11.9

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				3.5	3.9
1998				7.1	8.0
1999				0.2	0.2
2000				5.5	6.3

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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 \$
2001				3.3	3.9
2002				2.5	2.9
2003				3.2	3.8
2004				3.5	4.3
Subtotal	74			28.8	33.3

Appropriation: 0300 - Procurement, Defense Wide

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	3.2	7.8	8.9
2000					
2001	15		2.8	3.6	4.2
2002			0.1	0.1	0.1
2003	10		2.1	2.1	2.5
2004			0.1	0.8	1.0
2005			0.1	0.5	0.6
2006	6		1.4	2.1	2.6
2007	8		1.8	2.5	3.2
2008	4		0.9	1.6	2.1
2009	2		0.5	1.2	1.6
2010	4		1.0	1.7	2.3
2011	4		1.1	1.7	2.4
Subtotal	68	4.2	15.1	25.7	31.5

(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	6.3	7.0	8.0
2000	38	31.4	14.5	52.1	60.7
2001	64	0.9	20.3	22.2	26.1
2002	84	1.1	20.1	29.3	34.8
2003	89	0.8	21.9	32.0	38.5
2004	117	0.7	30.5	43.3	52.9
2005	131	0.2	33.5	45.0	55.8

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16b. (U) Program Funding Summary (Cont'd):

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 \$
2006	108	0.1	27.8	37.7	47.5
2007	118	0.1	29.8	39.9	51.3
2008	122	0.1	31.5	33.2	43.5
2009	160	0.1	39.8	44.6	59.6
2010	42	0.1	12.0	18.0	24.5
2011	28		8.6	9.3	13.0
Subtotal	1117	36.3	296.6	413.6	516.2

(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 \$
2001	1		0.3	0.3	0.3
2002	2		0.4	0.4	0.5
2003	5		1.2	1.2	1.4
2004	4		0.9	0.9	1.1
2005	3		0.6	0.6	0.8
2006	4		0.9	0.9	1.1
2007	4		0.8	0.8	1.1
2008	7		1.5	1.5	2.0
2009	8		1.7	1.7	2.3
2010	1		0.2	0.2	0.3
Subtotal	39		8.5	8.5	10.9

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	6		1.3	1.3	1.5
2004	8		1.8	1.8	2.2
Subtotal	19		4.6	4.6	5.4

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16b. (U) Program Funding Summary (Cont'd):

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		0.3	0.3	0.3
2002					
2003	4		1.0	1.0	1.2
2004	7		1.6	1.6	1.9
2005	6		1.4	1.4	1.7
2006	3		0.6	0.6	0.8
2007	4		0.9	0.9	1.1
2008	7		1.5	1.5	2.0
2009	4		0.9	0.9	1.2
2010	6		1.5	1.5	2.0
Subtotal	42		9.7	9.7	12.2

(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.

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	29	4.0	7.4	16.9	19.9
2002	117		27.1	35.0	41.6
2003	145	0.3	28.7	34.7	41.8
2004	110	0.1	24.6	25.7	31.5
2005	101	0.2	22.6	23.8	29.6
2006	117	0.1	25.1	26.1	33.0
2007	103	0.1	21.8	22.7	29.3
2008	47	0.1	10.2	11.1	14.6
2009	27		5.6	6.8	9.1
2010	4		1.0	1.8	2.4
2011				0.4	0.6
2012				0.4	0.6
Subtotal	800	4.9	174.1	205.4	254.0

(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.

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16b. (U) Program Funding Summary (Cont'd):

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		28.9	30.7	35.4
2000	274	0.4	43.2	46.9	54.8
2001	143	3.7	23.0	27.6	32.6
2002	97	4.7	15.7	20.4	24.3
2003	2		0.3	4.7	5.7
Subtotal	757	25.1	127.4	163.7	190.8

(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	107	4.2	15.1	352.5	392.0
Navy	1211	36.3	309.7	798.4	954.6
Army	57		9.7	20.0	24.1
USAF	1631	30.0	301.5	397.9	478.1
Grand Total	3006	70.5	636.0	1568.8	1848.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	106	106
Procurement	1038	1052

(U) Percent Total Program Quantities Delivered: 38.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1236.2

(U) Percent Total Program Expended: 66.9%

(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

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17. (U) Delivery/Expenditure Information (Cont'd):

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 2003, depicts a 33-year support period of 2842 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 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	0.4	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.7	N/A
Contractor Support	7.3	N/A
Sustaining Support	3.0	N/A
Indirect Costs	0.0	N/A
Other ILS	0.0	N/A
Total	11.4	N/A

Total O&S Cost	MIDS-LVT	No Antecedent System
BY\$ (In Millions)	649.6	N/A
TY\$ (In Millions)	1082.5	N/A

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MIDS-LVT, December 31, 2003

18b. (U) Operating and Support Costs (Cont'd):

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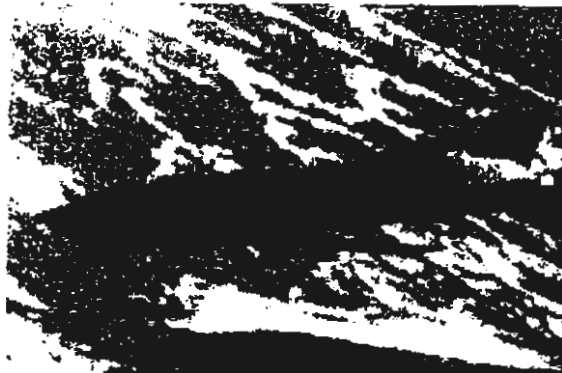
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AS OF DATE: December 31, 2003

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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 168  
Eglin AFB, FL 32542-6807

Mr. Gerald L. Freisthler  
Assigned: June 16, 2002  
DSN 872-4785 x 3046  
COMM 850-882-4785 x 3046  
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 223600 (Navy)  
(U) APPN 3020 ICN 654515 (Air Force)

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CLEARED  
FOR OPEN PUBLICATION  
AS AMENDED  
MAR 24 2004 5

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

Classified by: JASSM Security Classification Guide, Rev 3, 1 Dec 01  
Downgrade instruction: E.O. 12958 Section 5 (e)  
Declassify on: X3

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**5. (U) References:**

SAR Baseline (Development Estimate):

(U) Approved Acquisition Program Baseline (APB) 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) Air Force Operational Test and Evaluation Center (AFOTEC) concluded Initial Operational Test and Evaluation (IOT&E) on October 3, 2003 and completed their final IOT&E report on December 10, 2003. Joint Air-to-Surface Missile (JASSM) achieved a grade of Effective and Potentially Suitable and was recommended for full rate production.

The final development Test for the Block 1A JASSM was launched on March 26, 2003 at the White Sands Missile Range (WSMR). The DT-12A JASSM was released off a operational B-52 from Barksdale AFB, LA, flew through nine way points, and the live warhead detonated exactly as planned. This marked the last planned developmental mission from a B-52 aircraft. The success of DT-12A completed the requirements for the AFOTEC JASSM Test Team to resume operational testing.

AFOTEC resumed IOT&E on April 8, 2003 at WSMR. The OT-4A and 4B Lot 1 missiles were launched from a Barksdale AFB operational B-52. The 4A missile performed as planned. The 4B missile engine failed to start after launch and the missile was destroyed by WSMR safety. A failure review board was convened and the investigation identified two possible sources of this failure - both of which have been thoroughly scrutinized and addressed in the production process.

On July 11, 2003, the AFOTEC launched two JASSM missions, OT-5A and OT-5B, from a Barksdale AFB operational B-52. Both missiles flew their planned mission and accomplished all objectives. On August 2, 2003, the AFOTEC launched JASSM over the Nevada Test and Training Range (NTTR), OT-6B. The live warhead missile,

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JASSM, December 31, 2003

7. (U) Executive Summary (Cont'd):

released off an operational B-52 from Barksdale AFB, LA, flew its planned route and accomplished all objectives. The missile used on this test was the first Lot 1 production JASSM to be launched and it performed flawlessly. AFOTEC's next test, OT-6AR, occurred on August 9, 2003, again at NTTR and was launched off a Barksdale AFB LA, B-52. This mission was originally flown on July 19, 2003 but was rescheduled due to a malfunction of missile test instrumentation. All objectives were met. On August 14, 2003, AFOTEC launched OT-4BR at WSMR. A Barksdale AFB, LA, B-52 launched the JASSM and accomplished all test points.

On September 19, 2003 AFOTEC returned to NTTR to launch OT-2A and OT-2B tests. During the launch sequence for OT-2B, a safety feature in the missile detected a missile power failure and prevented the missile release. The Barksdale AFB B-52 next launched the OT-2A missile. The missile flew its preplanned mission and accomplished all objectives. Problems identified from the OT-2B attempted launch and correction implemented.

An F-16 M3.3+ integration mission was executed at WSMR on October 22, 2003, from an Edwards AFB, CA, F-16 test aircraft. All integration test objectives were accomplished, which supports JASSM Follow on Test and Evaluation (FOT&E) on production F-16M3+ in second quarter FY04.

On October 30, 2003, a JASSM Separation Test Vehicle was released from an Edwards AFB B-1B test aircraft over the China Lake Weapons Range. This successful separation test marked the first release of a guided JASSM from the B-1B, and demonstrated aerodynamics compatibility between JASSM and B-1B.

JASSM met the warfighter commitment for Required Assets Available (RAA) status with a B-52H unit at Barksdale AFB on September 24, 2003. In addition, JASSM met the Headquarters Air Combat Command requirements for the B-2 inventory objective on December 30, 2003.

The JASSM team awarded the Navy JASSM F/A-18E/F and Joint Mission Planning System (JMPS) Integration contract valued at \$53M to Lockheed Martin Missile and Fire Control on April 17, 2003. The period of performance is through December 2007. F/A-18E/F Initial Operation Capability (IOC) is expected in third quarter FY09.

Lockheed Martin was awarded a \$9.6M contract on June 27, 2003 for Phase I of the JASSM Extended Range (JASSM-ER) Pre-Planned Product Improvement (P3I) program. These funds support the risk reduction efforts on Lockheed's engine candidates and the business case required for the go-ahead to proceed with Phase II of the JASSM Extended Range program in FY04. Approval to proceed with Phase II of JASSM-ER was granted in November 2003.

The House and Senate Defense Appropriation Committees marked the FY04 JASSM production and development budget request. The HAC-D reduced the production request of \$102.5M to \$56M and the SAC-D lowered the request to \$38.5M. Language in the committee reports also directed JASSM maintain Low Rate Initial Production (LRIP) in FY04. Additionally, the HAC-D reduced the JASSM-ER development budget request by \$11M.

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7. (U) Executive Summary (Cont'd):

The Congressional Appropriation Conference met in September 2003 and restored sufficient JASSM Lot 3 production funding to sustain prices achieved during competition. This action resulted in the procurement of 200 versus the planned 250 quantity. In addition, JASSM received \$16.5M of supplemental funding (Iraqi Freedom Funds) which allowed the program office to purchase an additional 40 missiles, bringing the total Lot 3 buy to 240 missiles. The Congressional Appropriations Conference also settled on a reduction to JASSM development of \$5.5M with JASSM-ER receiving the cut. The Navy F/A-18 integration effort was cut by \$4.0M.

The Navy slipped JASSM production cut-in from FY07 to FY08 and reduced the total quantity buy from 514 to 453 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

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. (U) **Schedule:**

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0	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	MAR 2004 (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

RAA for the F-16 is 25 missiles

EMD - Engineering and Manufacturing Development

LRIP - Low Rate Initial Production

NM - Nautical Mile

IER - Information Exchange Requirement

MSFD - Multi Spectral Force Deployment

MME - Missile Mission Effectiveness

b. Current Change Explanations --

(U) (Ch-1) Milestone III has moved from November 2003 to March 2004 due to Operational Test schedule delays.

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10. (U) Performance Characteristics:

(b)(1)



b. Current Change Explanations:

(b)(1)



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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)	771.1	1070.5	1073.1
Procurement	960.0	2270.9	2239.3
Flyaway	(914.3)		(2161.0)
Other Wpn System Costs	(45.7)		(78.3)
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 \$	1749.5	3359.8	3312.4
Escalation	323.8	711.0	686.1
Development (RDT&E)	(67.5)	(107.1)	(98.7)
Procurement	(249.6)	(597.2)	(587.4)
Construction (MILCON)	(6.7)	(6.7)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2073.3	4070.8	3998.5

(U) Note: Procurement funding does not include Seek Eagle funding of \$11.5M (\$.7M in FY02, \$3.7M in FY03, \$1.4M in FY04, \$2.8M in FY05, and \$2.9M in FY07). Exit criteria for Milestone III were approved at the LRIP decision.

b. (U) Quantity --

Development (RDT&E)	69	94	97
Procurement	2400	3826	4269
Total	2469	3920	4366

(U) Note: Total Program Quantity includes 97 fully configured RDT&E units for EMD (88 for the Air Force and nine for the Navy). An additional six units are planned for JASSM Extended Range development.

Navy RDT&E received a FY04 congressional cut of \$4.0M for the F-/18E-F Integration.

Air Force RDT&E received a FY04 congressional cut of \$5.5M for JASSM-ER.

Lot 3 was awarded 26 November 2003 for 200 units. Congressional funding cuts decreased our quantity buy from 250 to 200. Congress approved \$16.5M in supplemental funding of Iraqi Freedom Funds (IFF) to be used for procurement of missiles. This action increased our quantity buy from 200 to 240. Also, congressional language for FY04 budget dictated that JASSM program remain in LRIP for Lot 3.

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**11b. (U) Total Program Cost and Quantity (Cont'd):**

Navy realigned their production by moving the schedule out by one year and reduced quantities from 514 to 453.

**c. (U) Foreign Military Sales --**

Currently JASSM is in competition for Air Project 5418, the Australian Follow-On Standoff Weapon. Additionally, Lockheed Martin has a license with provisos, to hold discussions/briefings with the European Participating Air Forces (EPAF) countries and Spain. Each case will be separately approved.

**d. (U) Nuclear Costs --**  
None.

**12. (U) Unit Cost Summary:**

	UCR Baseline (FEB 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	3359.8	3312.4	
(2) Quantity	3920	4366	
(3) Unit Cost	0.857	0.759	-11.44
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	2270.9	2239.3	
(2) Quantity	3826	4269	
(3) Unit Cost	0.594	0.525	-11.62

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	838.6	1209.6	25.1	2073.3
Previous Changes:				
Economic	-31.9	-80.9	-	-112.8
Quantity	+23.0	+1145.6	-	+1168.6
Schedule	+96.9	+120.3	-	+217.2
Engineering	+85.9	+296.4	-	+382.3
Estimating	+170.2	+124.8	-25.1	+269.9
Other	-	-	-	-
Support	-	+52.3	-	+52.3
Subtotal	+344.1	+1658.5	-25.1	+1977.5
Current Changes:				
Economic	+0.5	-2.5	-	-2.0
Quantity	-	-41.9	-	-41.9
Schedule	-	+6.0	-	+6.0
Engineering	-	-	-	-
Estimating	-11.4	+5.1	-	-6.3
Other	-	-	-	-
Support	-	-8.1	-	-8.1
Subtotal	-10.9	-41.4	-	-52.3
Total Changes	+333.2	+1617.1	-25.1	+1925.2
Current Estimate	1171.8	2826.7	-	3998.5

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	771.1	960.0	18.4	1749.5
Previous Changes:				
Quantity	+20.7	+824.4	-	+845.1
Schedule	+87.6	+90.3	-	+177.9
Engineering	+74.8	+229.9	-	+304.7
Estimating	+127.6	+127.3	-18.4	+236.5
Other	-	-	-	-
Support	-	+39.0	-	+39.0
Subtotal	+310.7	+1310.9	-18.4	+1603.2
Current Changes:				
Quantity	-	-29.5	-	-29.5
Schedule	-	-1.7	-	-1.7
Engineering	-	-	-	-
Estimating	-8.7	+6.0	-	-2.7
Other	-	-	-	-
Support	-	-6.4	-	-6.4
Subtotal	-8.7	-31.6	-	-40.3
Total Changes	+302.0	+1279.3	18.4	+1562.9
Current Estimate	1073.1	2239.3	-	3312.4

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	-0.7
Economic adjustment for negative program change. (Economic)	N/A	+1.2
Adjustment for Current and Prior Inflation. (Estimating)	-1.4	-1.8
Congressional cut - FY04 - AF (Estimating)	-4.2	-5.6
Congressional cut - FY04 - Navy (Estimating)	-3.1	-4.0
RDT&E Subtotal	-8.7	-10.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.6
Economic adjustment for negative program change. (Economic)	N/A	+2.1
Total Quantity Variance associated with decrease of 61 units, from 514 to 453, for Navy.	-32.9	-45.9
Quantity decrease of -61 units. (Quantity)	-25.3	-35.7
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	-1.5	-2.3
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	-6.1	-7.9
Total Quantity Variance associated with decrease of 10 units, from 250 to 240, for Air Force.	-5.3	-7.7
Quantity decrease of -10 units. (Quantity)	-4.2	-6.2
Allocation to Schedule variance resulting from Quantity Change. (QR)(Schedule)	-0.2	-0.3
Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	-0.9	-1.2
Stretchout of annual procurement buy profile for Navy. (Schedule)	0.0	+7.1
Stretchout of annual procurement buy profile for Air Force. (Schedule)	0.0	+1.5
Updated out year projections for Navy. (Estimating)	-1.6	-2.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.8
Increase in JASSM-ER delta cost for Air Force. (Estimating)	+13.9	+15.7
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Decrease in other weapon system costs due to updated support projections. (Support)	-6.5	-8.2
Procurement Subtotal	-31.6	-41.4

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	-0.026	-0.107	+0.051	+0.088	+0.060	--	+0.010	+0.076	0.916

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	-0.020	+0.039	+0.030	+0.069	+0.030	--	+0.010	+0.158	0.662

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 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	MAR 2004
IOC	JUN 2001	SEP 2002	N/A	SEP 2003
Total Cost	811.3	2073.3	N/A	3998.5
Total Quantity	44	2469	N/A	4366
Prog Acq Unit Cost	18.4	0.8	N/A	0.9

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --	Initial Contract Price		
(U) JASSM EMD:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Orlando, FL			
F08626-96-C-0002, CPAF	\$172.0	N/A	0
Award: November 13, 1998			
Definitized: November 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>
\$445.9	N/A	0	\$445.9	\$452.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-15.5	\$-3.3
Cumulative Variances To Date (12/31/03)	\$-15.7	\$-3.9
Net Change	\$-0.2	\$-0.6

Explanation of Change:

(U) The unfavorable net schedule variance is due to the impact of production on the test unit assembly. Also, B-1 schedule changes have prevented tasks from being accomplished.

The unfavorable net cost variance is attributable to Selective Availability Anti-Spoofing Module (SASSM) hardware yield problems, and fuze and wing actuator failures.

(U) Contract Comments:

The \$6.5M 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.

The increase of \$273.9M from the Initial Contract Price to the Current Contract Price represents scope increases, risk reduction/extension, EMD restructure, SASSM, overrun, B-1 restructure, and problem resolution.

The increase of \$28.0M on the contract since the previous SAR is due to an increase in EMD scope and additional overrun. Scope increases include electronic safe and arm fuze phase II, Navstrike software, radar cross section pole model, and ship attack capability study.

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15. (U) Contract Information (Cont'd):

(U) F-/18E-F & JMPS Integrat:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Lockheed Martin, Orlando, FL					
F08635-03-C-0059, CPIF	\$52.9	N/A	0		
Award: April 17, 2003					
Definitized: April 17, 2003					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$52.9	N/A	0	\$47.7	\$47.7	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$1.4	\$0.1
Cumulative Variances To Date (12/31/03)	<u>\$1.7</u>	<u>\$-0.2</u>
Net Change	\$0.3	\$-0.3

Explanation of Change:

(U) The unfavorable net schedule variance is due to awarding 3 months later than the planned award date.

The favorable net cost variance is attributable to an underrun incentive on the contract.

(U) JASSM ER Phase I:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Lockheed Martin, Orlando, FL					
F08635-03-0120, FFP	\$9.6	N/A	0		
Award: June 27, 2003					
Definitized: June 27, 2003					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$9.6	N/A	0	\$9.6	\$9.6	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

b. Procurement --

(U) JASSM LRIP (Lot 1):			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Lockheed Martin, Orlando, FL					
F08635-02-C-0026, FFP	\$36.2	N/A	76		
Award: January 14, 2002					
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>	

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15b. (U) Contract Information (Cont'd):

\$38.1	N/A	76	\$38.1	\$38.1
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Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) JASSM LRIP (Lot 2): Lockheed Martin, Orlando, FL F08635-03-C-0010, FFP Award: November 18, 2002 Definitized: November 18, 2002	<table><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>\$36.1</td><td>N/A</td><td>100</td></tr></table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$36.1	N/A	100
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$36.1	N/A	100								

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$43.4	N/A	100	\$43.4	\$43.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) JASSM LRIP (Lot 3): Lockheed Martin, Orlando, FL FA8682-04-C-0060, FFP Award: November 26, 2003 Definitized: November 26, 2003	<table><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>\$76.4</td><td>N/A</td><td>240</td></tr></table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$76.4	N/A	240
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$76.4	N/A	240								

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$93.8	N/A	240	\$93.8	\$93.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:  
Lot 3 was awarded 26 November 2003 for 240 units. Congressional funding cuts decreased our quantity buy from 250 to 200. Congress approved \$16.5M in supplemental funding of Iraqi Freedom Funds (IFF) to be used for procurement of missiles. This action increased our quantity buy from 200 to 240. Also, congressional language for FY04 budget dictated that JASSM program remain in LRIP for Lot 3.

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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 (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	912.7	46.4	72.8	139.9	1171.8
Procurement	92.2	99.4	145.3	2489.8	2826.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1004.9	145.8	218.1	2629.7	3998.5

b. Annual Summary -- JASSM

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>
1998				5.0	5.3
1999				1.7	1.8
2000				3.1	3.4
2001				1.8	2.0
2002				5.3	5.9
2003				14.4	16.1
2004				18.4	20.9
2005				23.5	27.0
2006				18.1	21.1
2007				12.0	14.3
2008				12.1	14.6
2009				12.1	14.9
Subtotal	9			127.5	147.3

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>
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				74.8	82.8
2003				43.5	48.6

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16b. (U) 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 \$
2004				22.5	25.5
2005				39.9	45.8
2006				52.7	61.5
2007				11.4	13.5
Subtotal	88			945.7	1024.5

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 \$
2008	28		16.2	16.2	19.8
2009	106		56.9	56.9	70.9
2010	106		55.6	55.6	70.7
2011	80		41.1	41.1	53.4
2012	80		43.7	43.7	57.8
2013	53		35.3	35.3	47.7
Subtotal	453		248.8	248.8	320.3

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 \$
2001				0.1	0.1
2002	76		33.1	37.6	42.0
2003	100		36.3	44.5	50.1
2004	240		85.0	87.1	99.4
2005	360		120.8	125.5	145.3
2006	360		121.1	125.9	148.3
2007	260		159.0	164.6	197.4
2008	386		241.0	248.1	303.4
2009	394		241.6	248.6	310.0
2010	313		184.7	190.9	242.8
2011	272		145.5	151.2	196.2
2012	272		143.2	148.9	197.1
2013	271		141.3	146.9	198.3
2014	271		139.4	145.0	199.6
2015	241		120.2	125.6	176.4
Subtotal	3816		1912.2	1990.5	2506.4

(U) Note: Permission to spend \$150K for long lead material in FY01 was

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**16b. (U) Program Funding Summary (Cont'd):**

received. Required were receiver parts no longer being manufactured for the Lot 1 receivers. The configuration changed in Lot 2.

Procurement funding does not include Seek Eagle funding of \$11.5M. (\$.7M in FY02, \$3.7M in FY03, \$1.4M in FY04, \$2.8M in FY05, and \$2.9M in FY07).

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	462		248.8	376.3	467.6
USAF	3904		1912.2	2936.2	3530.9
Grand Total	4366		2161.0	3312.5	3998.5

**17. (U) Delivery/Expenditure Information:**

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	76	76
Procurement	62	62

(U) Percent Total Program Quantities Delivered: 3.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 976

(U) Percent Total Program Expended: 24.4%

(U) Expenditures reflect Program Office information as of 31 December 2003.

**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 decrease.

The latest O&S cost estimate was August 2003.

There is no antecedent system for JASSM.

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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 Ave Annual Cost 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	3.7	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.0	N/A
Total	3.7	N/A

Total O&S Cost	JASSM	N/A
BY\$ (In Millions)	285.5	N/A
TY\$ (In Millions)	469.7	N/A

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AF-15 JPATS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: JPATS

**AS OF DATE:** December 31, 2003

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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 RONALD G. JOSEPH
Building 11A Room 201I	Assigned: April 4, 2001
1970 Monahan Way	DSN 785-2896; COMM (937) 255-2896
WPAFB, OH 45433-7211	Ronald.Joseph@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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## **5. References:**

SAR Baseline (Production Estimate):

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated February 28, 2002.

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 United States Air Force (USAF)/ United States Navy (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 are being 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 logistics support (CLS). 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 has been 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 Air Education and Training Command (AETC) and Chief of Naval Air Training (CNATRA) operating locations together.

The USAF will have CLS 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 CLS for the entire aircraft. The GBTS will be a total CLS effort for both services.

## **7. Executive Summary:**

Initial Operational Capability (IOC) and Required Assets Availability (RAA) were declared during June 2003 at Naval Air Station (NAS) Pensacola to establish the first Navy operational capability with Joint Primary Aircraft Training System (JPATS). This was concurrent with the start of student training at NAS Pensacola. In January the Air Force started student training at Laughlin Air Force Base, the second Air Force student training base. Thirty-two student classes have been trained in the system.

Fifty T-6A aircraft were delivered during 2003 (28 to the Air Force and 22 to the Navy). The contractor is 5 aircraft ahead of contract delivery schedule at the end of the year.

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7. Executive Summary (Cont'd):

The test report for the Multi-service Operational Test and Evaluation (MOT&E(S)) which was conducted June 14, 2002 through December 12, 2002 was published. The previous Selected Acquisition Report (SAR) reported no major deficiencies identified based on preliminary briefings by the test agency. The final report rated the T-6A "Unsuitable" and the Training Integration Management System (TIMS) "Unsatisfactory". TIMS software has undergone several block updates and facility upgrades have been accomplished to prepare the system for the Follow-On Test and Evaluation (FOT&E) scheduled to start in March 2004. The operators and maintainers are gaining familiarity with the aircraft and sustainability factors are improving. Both TIMS and the aircraft are expected to attain satisfactory ratings in the FOT&E and Operational Readiness Verification (ORV) also scheduled to start in March 2004.

The following incidents occurred during the year:

March 12: A T-6A had a landing gear push rod failure which forced a gear up landing. No injuries resulted. The fleet was in the process of being retrofitted with an improved pushrod. The accident aircraft had not been retrofitted. Fleet retrofit was completed within the week.

September 4: A T-6A experienced a 'chip warning' light and subsequently the crew shut the engine down. This event followed spin type maneuvers in the aircraft. There have been previous shutdowns associated with spins in the aircraft. Based on the latest shut down, the System Program Office (SPO) developed Technical Order (TO) changes to increase oil-servicing level and improve accuracy of the servicing level. The longer-term solution may require partial oil system redesign, including scavenge & pressure pumps. The SPO is actively pursuing these efforts with the aircraft and engine manufacturers.

October 24: A T-6A experienced a 'chip warning' light and subsequent engine shutdown due to vibrations. No injuries occurred. Two facts distinguish this incident from previous shutdown incidents. There was no drop in oil pressure and no zero "G" maneuvers prior to the chip light indication and subsequent vibrations. This aircraft was on a Functional Check Flight (FCF) after an engine change out. The engine was the engine from the March 12 gear up landing, and it had been rebuilt and tested by the manufacturer. Cause of this incident was determined to be a bearing failure caused by microscopic metal shavings incurred during the 'sudden stoppage' on March 12. Rebuild procedures have been revised to prevent recurrence.

Lot 11 Production Option was awarded on November 25, 2002 for 47 Air Force aircraft.

The retrofit of the Environmental Control System (ECS) and Ultrahigh Frequency (UHF) antenna was completed in November. This closes out corrective actions for the aircraft deficiencies identified during the Multi-service Operational Test and Evaluation of the aircraft.

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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 0/I	JAN 1993	JAN 1993	JAN 1993
Milestone II	AUG 1995	AUG 1995	AUG 1995 (Ch-1)
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

Note 1: MOT&E is Multiservice Test and Evaluation

b. Current Change Explanations --

(Ch-1) Correction to add Milestone II dates back into schedule section - dropped in error during program rebaseline.

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10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Syllabus Maneuvers	Accom- lish all	Accomp- / Accom- lish all/ lish all	Demonst- rated	Demonst- rated
Mission Profiles	five	five / five	all five	all five
(Contact, Familiarization, Precision Aero- batics, Instrument, and Navigation - High and Low)	mission profiles	mission / mission profiles/ profiles	mission profiles	mission profiles
Sustained Speed at 1000 ft MSL, hot day (KTAS)	270	270 / 250 (270 / Dash)	250 (270 Dash)	250 (270 Dash)
Operational G Envelope (Gs)	+7 to -3 sym- metric	+7 to -3/ +6 to -3 sym- / 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 Capabil- ity (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	Unpre- pared surface	Unpre- / Runway pared / 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- / able / Instruc-/ tor / 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	0 Degree/ Stepped Over-the/ Tandem -Nose / Visi- / bility / from the/	Stepped Tandem	Stepped Tandem

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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>
	Rear	Rear /		
	Cockpit	Cockpit /		
	at	at /		
	Design	Design /		
	Eye	Eye /		
	Height	Height /		
Exterior Noise	FAR Part	FAR Part/ FAR Part	FAR Part	FAR Part
	36, Most	36, Most/ 36, Most	36, Most	36, Most
	Restric-	Restric-/ Restric-	Restric-	Restric-
	tive	tive / tive	tive	tive
	App-	App- / App-	App-	App-
	licable	licable / licable	licable	licable
	Standard	Standard/ Standard	Standard	Standard
Takeoffs/Touch & Go/Land (Wx, Weight, Configuration) at Main Operating Bases (Runway Length - FT)	4000	4000 / 5000	4000	4000
IFR Certified	All	All / IFR	IFR	IFR
Instrumentation	Digital	Digital / Cert-	Cert-	Cert-
	except	except / ified	ified	ified
	Backups	Backups / (Select-	(Select-	(Select-
		/ able	able	able
		/ EADI/EHS	EADI/	EADI/
		/ I)	EHSI)	EHSI)
Visual System For	Yes	Yes / Provide	Provide	Provide
IFT/OFT		/ a visual	a visual	a visual
		/ field of	field of	field of
		/ view	view	view
		/ commen-	commensu	commensu
		/ surate	rate	rate
		/ with the	with the	with the
		/ JPPT	JPPT	JPPT
		/ syllabus	syllabus	syllabus
		/ training	training	training
		/ require-	requirem	requirem
		/ ments	ents	ents

Demonstrated performance for JPATS meets all Key Performance Parameters.

Acronyms:

MSL Mean Sea Level  
KTAS Knots True Airspeed  
G Gravitational Acceleration  
PSI Pounds Per Square Inch  
FAR Federal Aviation Regulation

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10a. Performance Characteristics (Cont'd):

Wx	Weather
FT	Feet
IFR	Instrument Flight Rules
EADI	Electronic Attitude/Directional Indicator
EHSI	Electronic Horizontal Situation Indicator

b. Current Change Explanations -- None

11. Total Program Cost and Quantity (Dollars in Millions):

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**11a. Total Program Cost and Quantity (Cont'd):**

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	289.2	289.2	297.0
Procurement	4177.1	4177.1	4455.7
Navy	(1399.2)		(1659.3)
Air Force	(1878.1)		(1919.5)
Navy NRec			(26.9)
Total Flyaway	(3277.3)		(3605.7)
Air Force (A/V Support			(0.0)
Navy GBTS	(163.4)		(168.4)
Air Force GBTS	(230.5)		(201.5)
Navy Mission Support	(35.8)		(13.7)
Air Force Mission Suppo	(80.8)		(67.0)
Air Force Other Support	(46.3)		(81.6)
Navy Other Support	(29.1)		(8.6)
Navy (A/V Support & ILS	(47.4)		(19.4)
AF (A/V Support & ILS)	(143.3)		(141.3)
Unknown			(0.0)
Unknown			(0.0)
Unknown			(0.0)
Unknown			(0.0)
Unknown			(0.0)
Unknown			(0.0)
Unknown			(0.0)
Unknown			(0.0)
Total Other Wpn Sys	(776.6)		(701.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(123.2)		(148.5)
Construction (MILCON)	62.7	62.7	32.2
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	4529.0	4529.0	4784.9
Escalation	512.1	512.1	376.8
Development (RDT&E)	(-13.7)	(-13.7)	(-11.4)
Procurement	(522.1)	(522.1)	(388.0)
Construction (MILCON)	(3.7)	(3.7)	(0.2)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5041.1	5041.1	5161.7

Navy costs for production line tear down.

**b. Quantity --**

Development (RDT&E)	1	1	1
Procurement	782	782	782
Total	783	783	783

Note 1: Program growth is due to changes in Navy buy schedule, unprogrammed

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**11b. Total Program Cost and Quantity (Cont'd):**

addition of Navy spares funds and joint program modifications.

Note 2: Initial Low Rate Initial Production (LRIP) for 108 aircraft was included in Acquisition Decision Memorandum (ADM) dated August 9, 1995. LRIP quantity increased to 170 aircraft in ADM dated February 16, 2001. Reason for the authorization above 10 percent was to insure maintenance of adequate and efficient manufacturing capability.

**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 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	4529.0	4784.9	
(2) Quantity	783	783	
(3) Unit Cost	5.784	6.111	+5.65
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	4177.1	4455.7	
(2) Quantity	782	782	
(3) Unit Cost	5.342	5.698	+6.66

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**13. Cost Variance Analysis:**

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	275.5	4699.2	66.4	5041.1
Previous Changes:				
Economic	+1.2	-155.0	-1.1	-154.9
Quantity	-	-	-	-
Schedule	-	+42.7	-	+42.7
Engineering	+8.0	-	-	+8.0
Estimating	+0.7	+91.5	-28.9	+63.3
Other	-	-	-	-
Support	-	+100.2	-	+100.2
Subtotal	+9.9	+79.4	-30.0	+59.3
Current Changes:				
Economic	-0.1	+9.3	+1.1	+10.3
Quantity	-	-	-	-
Schedule	-	-1.8	-	-1.8
Engineering	-	-	-	-
Estimating	+0.3	+242.9	-5.1	+238.1
Other	-	-	-	-
Support	-	-185.3	-	-185.3
Subtotal	+0.2	+65.1	-4.0	+61.3
Total Changes	+10.1	+144.5	-34.0	+120.6
Current Estimate	285.6	4843.7	32.4	5161.7

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	+7.0	-	-	+7.0
Estimating	+0.6	+120.3	-26.7	+94.2
Other	-	-	-	-
Support	-	+88.5	-	+88.5
Subtotal	+7.6	+208.8	-26.7	+189.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.2	+208.1	-3.8	+204.5
Other	-	-	-	-
Support	-	-138.3	-	-138.3
Subtotal	+0.2	+69.8	-3.8	+66.2
Total Changes	+7.8	+278.6	-30.5	+255.9
Current Estimate	297.0	4455.7	32.2	4784.9

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Refinement of cost estimate (Estimating)	+0.2	+0.3
Revised escalation indices. (Economic)	N/A	-0.1
RDT&E Subtotal	+0.2	+0.2
(2) <u>Procurement</u>		
Economic adjustment for negative program change. (Economic)	N/A	+9.3
Navy acceleration of annual procurement buy profile - moved 2 aircraft from Lot 20 to Lot 11. (Schedule)	0.0	-1.8
Rephrasing of the Navy budget. (Estimating)	+10.1	+1.1
Revised Navy flyaway cost estimate. (Estimating)	+143.7	+183.7
Revised Navy cost to reflect allocation of support costs to flyaway. (Support)	-143.7	-183.7
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.1
Revised cost estimate to reflect budget adjustment in FY 2005-2009. (Estimating)	+53.2	+57.0
Revised Initial Spares Estimate. (Support)	-5.7	-6.7
Revised requirement due to quantity price break on Aircrew Training Devices (ATD). (Support)	-1.3	-8.2
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Revised Initial Spares requirement. (Support)	+1.8	+1.9
Revised requirement due to quantity price break on ATDs.. (Support)	-9.9	-10.1
Revised Air Force Mission Support requirement. (Support)	-5.9	-6.4
Revised Air Force air vehicle support. (Support)	+11.5	+11.9
Revised Air Force aircraft modification requirements. (Support)	+14.5	+15.6
Procurement Subtotal	+69.8	+65.1
(3) <u>MILCON</u>		
Economic adjustment for negative program change. (Economic)	N/A	+1.1
Revised cost estimate (Estimating)	-3.8	-5.1
MILCON Subtotal	-3.8	-4.0

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**14. Unit Cost and Other History (Then-Year Dollars in Millions):**

**a. Program Acquisition Unit Cost (PAUC) History**

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.44	-0.185	+0.001	+0.052	+0.010	+0.385	--	-0.109	+0.154	6.59

**b. Procurement Unit Cost (PUC) History**

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.01	-0.186	--	+0.052	--	+0.428	--	-0.109	+0.185	6.19

**c. Schedule, Cost, and Quantity History**

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	JAN 1993	JAN 1993	JAN 1993
Milestone II	N/A	AUG 1995	DEC 1999	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	5161.7
Total Quantity	N/A	712	783	783
Prog Acq Unit Cost	N/A	5.7	6.4	6.6

**15. Contract Information (Then-Year Dollars in Millions):**

**a. Procurement --**

Lot VIII (Comcl AV):

Raytheon Aircraft, Wichita, KS

F33657-00-C-2192, FFP

Award: April 2, 2001

Definitized: April 2, 2001

Initial Contract Price		
Target	Ceiling	Qty
\$148.4	\$148.4	59

Current Contract Price		
Target	Ceiling	Qty
\$156.3	\$156.3	59

Estimated Price At Completion	
Contractor	Program Manager
\$156.3	\$156.3

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

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**15. Contract Information (Cont'd):**

a stand-alone commercial contract. Cost and schedule variance reporting is not required/available on this FFP contract.

Contract price growth is a result of post-award aircraft modifications.

Cost and Schedule variance reporting is not required on this FFP contract.

<u>Lot 9 Production:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Aircraft, Wichita, KS					
F33657-01-C-0022, FFP			\$193.3	\$193.3	40
Award: December 28, 2001					
Definitized: December 28, 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>
\$227.1	\$227.1	47	\$227.1	\$227.1

Explanation of Change:

Lot 9 (Commercial)

This lot is subject to commercial pricing. Cost and schedule variance reporting is not required/available on this FFP contract.

Contract price growth is a result of added Navy quantities and post-award aircraft modifications.

Cost and Schedule variance reporting is not required on this FFP contract.

<u>Lot 10 Production:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Aircraft, Wichita, KS					
F33657-01-C-0022, FFP			\$181.7	\$181.7	35
Award: February 28, 2003					
Definitized: February 28, 2003					

<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>
\$215.3	\$215.3	39	\$215.3	\$215.3

Explanation of Change:

Lot 10 (Commercial)

This lot is subject to commercial pricing. Cost and schedule variance

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15. Contract Information (Cont'd):

reporting is not required/available on this FFP contract.

Contract price growth is a result of added Navy quantities and post-award aircraft modifications.

Cost and Schedule variance reporting is not required on this FFP contract.

<u>Lot 11 Production:</u> Raytheon Aircraft, Wichita, KS F33657-01-C-0022, FFP Award: February 28, 2003 Definitized: February 28, 2003	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$266.8	\$266.8	52

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$284.0	\$284.0	54	\$284.0	\$284.0

Explanation of Change:

Lot 11 Commercial

This is the first time this lot has been reported in the SAR.

This lot is subject to commercial pricing. Cost and schedule variance reporting is not required/available on this FFP contract.

Contract price growth is a result of added Navy quantities and post-award aircraft modifications.

Cost and Schedule variance reporting is not required on this FFP contract.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-13)</u>	<u>Total</u>
RD&E	271.4	1.8	1.9	10.5	285.6
Procurement	1259.2	309.4	321.8	2953.3	4843.7
MILCON	28.4	-	2.0	2.0	32.4
O&M	-	-	-	-	-
Total	1559.0	311.2	325.7	2965.8	5161.7

b. Annual Summary -- JPATS

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				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

<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>
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				1.8	1.8
2004				1.7	1.8
2005				1.8	1.9

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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 \$
2006				1.7	1.8
2007				1.9	2.1
2008				2.0	2.2
2009				2.0	2.2
2010				1.9	2.2
Subtotal	1			284.8	274.3

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		31.5	58.8	58.6
2001	24		61.6	80.2	80.6
2002	7	0.1	30.0	38.3	38.8
2003	4	0.1	18.4	28.8	29.5
2004	2		9.2	21.5	22.3
2005				3.0	3.2
2006				1.6	1.7
2007	24	0.6	114.0	140.3	153.3
2008	48	0.2	243.9	273.5	304.9
2009	48	0.2	245.8	266.7	303.2
2010	48	0.5	265.5	313.0	363.1
2011	48	0.3	267.1	300.0	354.9
2012	48	6.5	275.1	308.3	372.1
2013	15	18.4	97.2	123.5	152.0
2014					
Subtotal	328	26.9	1659.3	1957.5	2238.2

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		75.9	107.8	107.4
2001	34		85.8	138.8	139.5
2002	40		176.9	219.7	222.8

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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 \$
2003	35		164.8	240.6	246.6
2004	52		243.3	276.3	287.1
2005	53		252.4	302.0	318.6
2006	54		259.6	309.6	332.2
2007	50		231.7	280.3	306.4
2008	39		181.2	223.0	248.6
2009				13.1	14.9
2010				39.7	46.0
2011					
2012					
2013					
2014					
2015					
Subtotal	454		1919.5	2498.2	2605.5

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					
Subtotal				13.4	13.4

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

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**16b. Program Funding Summary (Cont'd):**

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	328	26.9	1659.3	1983.1	2262.9
USAF	455		1919.5	2801.8	2898.8
Grand Total	783	26.9	3578.8	4784.9	5161.7

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	148	153

Percent Total Program Quantities Delivered: 19.7%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1199.9

Percent Total Program Expended: 23.2%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

The operating 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 Contractor Logistic Support (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 Joint Primary Aircraft Training System (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. Ground Based Training System (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

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**18a. Operating and Support Costs (Cont'd):**

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 system is the T-37 for the Air Force. Navy antecedent system costs are not available. 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.

JPATS Operations and Support (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 Full Operational Capability) in Base Year 2002 dollars. Source for all costs is the JPATS Milestone III Cost Analysis Improvement Group (CAIG) briefing, November 6, 2001.

**b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)**

Cost Element	JPATS per steady state year (all aircraft)	T-37 Only per steady state year (AF only)
Mission Pay & Allowances	125.2	89.7
Unit Level Consumption	22.6	109.1
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	5.5
Contractor Support	176.1	25.9
Sustaining Support	75.9	12.5
Indirect Costs	31.2	69.1
Total	431.0	311.8

Total O&S Cost	JPATS	T-37 Only
BY\$	9426.4	N/A
TY\$	14036.3	N/A

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# A-1 ABRAMS UPGRADE

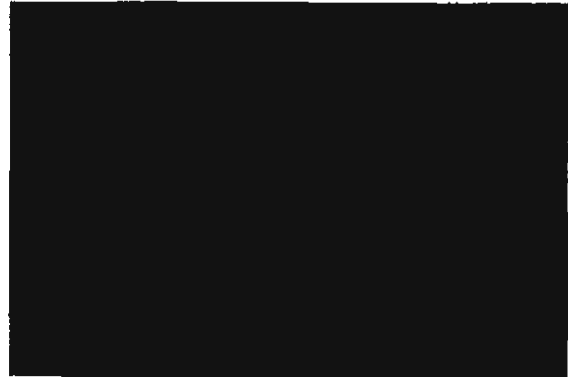
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: M1A2 ABRAMS UPGRADE

AS OF DATE: December 31, 2003

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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, Ground Combat Systems	COL Curtis McCoy
PM, Combat Systems	Assigned: July 16, 2001
ATTN: SFAE-GCS-CS	DSN 786-5630; COMM (586) 574-5630
Warren, MI 48397-5000	mccoy@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 GB1302 (Army)  
(U) APPN 2033 ICN GC0161 (Army)  
(U) APPN 2033 ICN GE0161 (Army)

O&M:

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SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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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) Army Acquisition Executive (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 and Transformation. The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower, situational awareness and shock effect. The 120mm 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 Upgrade 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) 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. During the FY04 Budget Cycle, Congress approved an increase in the quantity of M1A2 SEPs from 588 to 717, increasing the number of SEP retrofits from 41 to 170.

Based on the Abrams Upgrade Program exceeding 90% of deliveries, we anticipate this will be the final SAR.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	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)	JAN 1991	JAN 1991	JAN 1991
Technical Test			
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) Acronyms:

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

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M1A2 ABRAMS UPGRADE, December 31, 2003

## 10. (b) Performance Characteristics:

## a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(✓) Maximum Width (inches)	144	144 / 144	144	144
(✓) Maximum Height (inches) (grnd to center of turret roof)	96	96 / 96	96	96
(✓) Maximum Combat Weight (tons)	68.5	68.5 / 69.5	68.5	68.7
(✓) Minimum Range (miles)				
Paved Roads				
With NBC	257	257 / 243	254	243
Without NBC	270	270 / 256	270	256
(✓) Maximum Speed (mph)				
Paved Roads	41.5	41.5 / 41.5	42.5	41.5
(0% slope)				
Cross Country	30	30 / 30	30	30
(✓) Acceleration (0-20 mph) (sec)				
Paved Roads (0% slope)				
With NBC	7.5	7.5 / 9.0	7.0	7.5
Without NBC	7.2	7.2 / 9.0	6.9	7.2
(✓) Combat Mission	360	360 / 320	449	360
Reliability (MMBF)				
(✓) System Maintainability (Maintenance Ratio)	1.04	1.04 / 1.40	0.95	1.25
(✓) Track Life (miles)	2000	2000 / 1000	1509	1509
(✓) Air Transportability	C5A, C17	C5A, C17 / C5A, C17	C5A	C5A, C17
(✓) Fightability-Improved	40	40 / 25	25	25
Commander's Weapon Station Visibility over 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)	(b)(1)			

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M1A2 ABRAMS UPGRADE, December 31, 2003

10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Targets Acquired/Unit Time Over M1A1 (%)	(b)(1)			
Average 1st Round Hit Probabilities (Round/ Condition/Ranges)				
Heat/S-S/1500- 3000m				
Heat/S-M/1500- 2500m				
Heat/M-S/1500- 2500m				
Heat/M-M/1500- 2500m				
KE/S-S/1500-3000m				
KE/S-M/1500-2500m				
KE/M-S/1500-2500m				
KE/M-M/1500-2500m				
Armor Protection vs Threat (deg)				
Heat Rounds:				
127mm ATGM (Hull & Turrent Side Crew Areas Bustle and Hull Ammo Compartment)				
81mm HHIW (Hull Ammo Compartment)				
81mm HHIW (Turret Bustle Compartment)				
150mm ATGM (Turret & Hull Front)				
Kinetic Energy Rounds:				
125mm APFSDS @ 800-1200mm (Turret Front)				
115mm APFSDS (Hull Front)				

(U) Acronyms:

APB - Aproved Program Baseline  
APFSDS - Armor Piercing Fin Stabilized Discarding Sabot  
ATGM - Anti Tank Guided Missile  
BIT - Built In Test

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M1A2 ABRAMS UPGRADE, December 31, 2003

10a. (U) Performance Characteristics (Cont'd):

deg - degree  
 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  
 TBD - To Be Determined  
 UAAPU - Under Armor Auxiliary Power Unit  
 RMS - Root Mean Square

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	755.4	907.8	868.7
Procurement	6028.6	7981.8	6487.3
Rollaway	(4968.9)		(5510.4)
Other Wpn System	(791.1)		(753.0)
Peculiar Support	(108.5)		(117.8)
Initial Spares	(160.1)		(106.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	207.9	85.3	85.3
Total FY 1995 Base-Year \$	6991.9	8974.9	7441.3
Escalation	970.0	822.7	352.9
Development (RDT&E)	(-84.8)	(-64.3)	(-69.0)
Procurement	(1020.8)	(885.3)	(420.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(34.0)	(1.7)	(1.7)
Total Then Year \$	7961.9	9797.6	7794.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1060	1155	1155
Total	1060	1155	1155

Note: Excludes 10 RDT&E prototypes from the SAR Baseline that are not considered fully configured.

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M1A2 ABRAMS UPGRADE, December 31, 2003

11b. (U) Total Program Cost and Quantity (Cont'd):

(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

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 2000 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	8974.9	7441.3	
(2) Quantity	1155	1155	
(3) Unit Cost	7.770	6.443	-17.08
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	7981.8	6487.3	
(2) Quantity	1155	1155	
(3) Unit Cost	6.911	5.617	-18.72

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M1A2 ABRAMS UPGRADE, December 31, 2003

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	+5.0	-251.4	-	-1.4	-247.8
Quantity	-	-1847.9	-	-	-1847.9
Schedule	-	-200.2	-	-10.5	-210.7
Engineering	+2.8	+136.3	-	-	+139.1
Estimating	+121.3	+1719.2	-	-143.0	+1697.5
Other	-	-	-	-	-
Support	-	-56.1	-	-	-56.1
Subtotal	+129.1	-500.1	-	-154.9	-525.9
Current Changes:					
Economic	-	+6.7	-	-	+6.7
Quantity	-	+442.8	-	-	+442.8
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-0.2	-	-	-0.2
Other	-	-	-	-	-
Support	-	-91.1	-	-	-91.1
Subtotal	-	+358.2	-	-	+358.2
Total Changes	+129.1	-141.9	-	-154.9	-167.7
Current Estimate	799.7	6907.5	-	87.0	7794.2

(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	-	-1322.7	-	-	-1322.7
Schedule	-	-	-	-	-
Engineering	+3.3	+118.1	-	-	+121.4
Estimating	+110.0	+1363.0	-	-122.6	+1350.4
Other	-	-	-	-	-
Support	-	-8.1	-	-	-8.1
Subtotal	+113.3	+150.3	-	-122.6	+141.0
Current Changes:					
Quantity	-	+383.3	-	-	+383.3
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-0.2	-	-	-0.2
Other	-	-	-	-	-
Support	-	-74.7	-	-	-74.7
Subtotal	-	+308.4	-	-	+308.4
Total Changes	+113.3	+458.7	-	-122.6	+449.4
Current Estimate	868.7	6487.3	-	85.3	7441.3

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M1A2 ABRAMS UPGRADE, December 31, 2003

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	+0.1
Economic adjustment for negative program change. (Economic)	N/A	+6.6
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
Added 129 M1A2 SEP quantity from 588 to 717, increasing the M1A2 to M1A2 SEP retrofit quantity from 41 to 170. (Quantity)	+383.3	+442.8
Change in Initial Spares due to increase in M1A2 SEP retrofit quantity (QR) (Support)	+1.3	+1.8
Change in Peculiar Support (Support)	-1.5	-1.6
Change in Other Wpn System due to Congressional decrement (Support)	-74.5	-91.3
Procurement Subtotal	+308.4	+358.2

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	-0.209	-1.84	-0.182	+0.120	+1.47	--	-0.127	-0.763	6.75

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.65	-0.212	-1.77	-0.173	+0.118	+1.49	--	-0.127	-0.670	5.98

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M1A2 ABRAMS UPGRADE, December 31, 2003

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	
--	--	--	--	--	--	--	--	--	--

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	-0.212	-1.77	-0.173	+0.118	+1.49	--	-0.127	-0.670	5.98

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	7794.2
Total Quantity	N/A	N/A	1060	1155
Prog Acq Unit Cost	N/A	N/A	7.5	6.8

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --

(U) Upgrade Production:

General Dynamics Corp., Sterling Heights, MI

DAAE07-00-C-N044, FFP

Award: March 30, 2001

Definitized: March 30, 2001

Initial Contract Price  
Target Ceiling Qty

\$741.2 N/A 307

Current Contract Price

Target Ceiling Qty  
\$746.0 N/A 307

Estimated Price At Completion  
Contractor Program Manager  
\$746.0 \$746.0

Explanation of Change:

(U) None.

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M1A2 ABRAMS UPGRADE, December 31, 2003

15. (U) Contract Information (Cont'd):

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.

(U) <u>TRANSMISSION:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Allison Transmission, Indianapolis, IN			
DAAE07-01-C-N040, FFP/CPFF	\$51.7	N/A	307
Award: December 22, 2000			
Definitized: December 28, 2000			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$39.9	N/A	307	\$39.9	\$39.9

Explanation of Change:

(U) None.

Cost and Schedule variance reporting is not required on this FFP/CPFF contract.

(U) Contract Comments:

Target price for the transmission was reduced due to negotiations and a downward rate adjustment written into the contract based on projected business base for Allison. As business base increased, rates for this contract decreased.

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M1A2 ABRAMS UPGRADE, December 31, 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 (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	6409.7	188.8	303.6	5.4	6907.5
MILCON	-	-	-	-	-
O&M	87.0	-	-	-	87.0
Total	7296.4	188.8	303.6	5.4	7794.2

b. Annual Summary -- M1A2 ABRAMS Upgrade

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 1995 Dollars Nonrec</u>	<u>Rollaway FY 1995 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1985				47.9	36.2
1986				29.2	22.7
1987				30.6	24.5
1988				89.3	74.4
1989				142.9	123.9
1990				84.2	75.8
1991				126.3	117.9
1992				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

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M1A2 ABRAMS UPGRADE, December 31, 2003

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 \$
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	287.6	297.0
1996	100		328.1	541.5	566.8
1997	120		409.2	458.0	483.5
1998	120		449.1	560.1	597.8
1999	120		571.6	661.9	711.9
2000	120		532.5	753.8	822.0
2001	100		594.2	491.6	541.1
2002	104		507.4	640.5	712.6
2003	103		537.1	435.6	491.2
2004			139.1	165.1	188.8
2005			240.9	261.6	303.6
2006				4.6	5.4
2007					
2008					
2009					
2010					
2011					
2012					
Subtotal	1155	240.6	5269.8	6487.3	6907.5

(U) Within FY01-FY06, recurring rollaway dollars include the SEP Retrofit Program, which has no additional quantities associated with it.

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

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M1A2 ABRAMS UPGRADE, December 31, 2003

16b. (U) Program Funding Summary (Cont'd):

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 \$
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	5269.8	7441.3	7794.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	1095	1095

(U) Percent Total Program Quantities Delivered: 94.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 5778.3

(U) Percent Total Program Expended: 87.0%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Active Army M1A1 and M1A2 units 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 Integrated 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 Standard Study Number (SSN) GA0700 and averaged per year per vehicle FY03 - FY07. Total M1A2 Abrams Upgrade O&S Cost is for 717 Abrams Upgrade vehicles over 20 years. Total Abrams M1A1 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

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M1A2 ABRAMS UPGRADE, December 31, 2003

18b. (U) Operating and Support Costs (Cont'd):

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
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 Personnn	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)	10053.7	44752.1
TY\$ (In Millions)	13167.4	59327.9

Report Creation Date: 03/18/2004 11:56:31 AM

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N-3 AIM-9X

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: AIM-9X

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): AIM-9X/Air-to-Air Missile

2. (U) DoD Component: Navy

Joint Participants:  
Air Force

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3. (U) Responsible Office and Telephone Number:

Program Executive Officer (PMA259) CAPT Scott Stewart MAR 25 2004 8  
47123 Buse Road Unit IPT, Suite 451 Assigned: October 18, 2002  
Patuxent River, MD 20670-1547 DSN 757-7311; COMM (301) 757-7311  
scott.d.stewart@navy.mil SECURITY REVIEW  
DEPARTMENT OF DEFENSE

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0207161F Project 4132
- (U) PE 0207161N Project E0457
- (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)

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~~Derived from:  
Downgrade instructions: Sidewind  
Declassify on: MFR~~

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AIM-9X, December 31, 2003

5. (U) References:

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 15, 1997.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated August 15, 2003.

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 April 2003, the program received approval from the Assistant Secretary of the Navy (Research, Development, and Acquisition) (ASN(RD&A)) to rebaseline two Acquisition Program Baseline Agreement (APBA) parameters. The Initial Operational Test and Evaluation (IOT&E) completion threshold was changed from May 2003 to April 2004 and the Milestone III (MSIII) threshold was changed from September 2003 to September 2004. These changes were required because of delays in the completion of IOT&E due to the unavailability of QF-4 targets. In addition to these changes, ASN (RD&A) also approved the conversion of Lot 4 missiles from the first Full-Rate Production (FRP) lot to an additional Low-Rate Initial Production (LRIP) lot. LRIP 4 approval was obtained August 14, 2003 and a MSIII decision is anticipated in Spring 2004. As a result of the delay in IOT&E completion and the subsequent delay in the MSIII decision, the House reduced the program's FY04 budget by \$25 million.

Initial Operational Test and Evaluation was completed in August 2003, and the Operational Test (OT) report was released in November 2003. The missile was evaluated as operationally effective, but not operationally suitable due to reliability and maintainability concerns. Fielding was recommended. The program continues to aggressively work identified deficiencies, with root causes identified and fixes already designed and implemented for many of these deficiencies. It is the Program Manager's assessment that with these fixes in place, reliability and maintainability are above threshold. Director, Operational Test and Evaluation (DOT&E) is currently writing the Beyond LRIP report, with an expected completion date of March 31, 2004.

In November 2003, the program celebrated the achievement of Initial Operational Capability (IOC)/Required Asset Availability (RAA) with the Air Force. The

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7. (U) Executive Summary (Cont'd):

Program Manager anticipates the Navy requirements for IOC will be complete in March 2004.

In December 2003, the Engineering and Manufacturing Development (E&MD) contract was completed. Additionally, LRIP 1 deliveries are complete.

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
FMD Contract Award	JAN 1997	JAN 1997	DEC 1996
Critical Design Review	JUL 1998	JUL 1998	MAR 1998
IOT&E Complete	AUG 2001	JUN 2003	AUG 2003 (Ch-1)
LRIP DAB Decision	APR 2000	APR 2000	SEP 2000
Initial Operational Capability	AUG 2002	SEP 2003	NOV 2003 (Ch-2)
Milestone III	MAR 2002	SEP 2003	MAR 2004 (Ch-3)

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9a. (U) Schedule (Cont'd):

(U) ACRONYMS

DEM/VAL - Demonstration and Validation  
 EMD - Engineering and Manufacturing Development  
 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) (Ch-1) The Program Manager's Estimate is revised for IOT&E from May 2003 to Aug 2003. This delay was due to unavailability of Full Scale Targets (QF-4s).

(Ch-2) The Program Manager's Estimate is revised for IOC from Sep 2003 to Nov 2003. This revision reflects actual IOC date that occurred with the Elmendorf Air Force Base, Alaska.

(Ch-3) The Program Manager's Estimate is revised for MSIII SAE Review from Sep 2003 to Mar 2004. This revision was due to unavailability of Full Scale Targets (QF-4s).

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Day/Night Capability				
Infrared counter counter measures (IRCCM)				

Aircraft Interface

Missile Weight (lbs)	<.or.= 192	<.or.= / <.or.= 192 / 210	<.or.= 186	<.or.= 192
Missile Size				
Length (in.)	<.or.= 115	<.or.= / <.or.= 115 / 123	119.2	119.2
Box Size (in.)	<.or.= 12.5 x 12.5	<.or.= / <.or.= 12.5 x / 12.5	<12.15 x 12.15	<.or.= 12.5 x 12.5
Diameter (in.)	5	5 / <.or.= 7	5	5

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AIM-9X, December 31, 2003

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Digital Interface	Employ from current fighter aircraft without digital inter- face	Employ / Employ from / from current / future/ fighter / current aircraft/ fighter without / aircraft digital / with inter- / digital face / inter- / face	Employed from F/A-18 C/D and F-15C with digital inter- face	Employ from current fighter 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 planned / aircraft 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

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AIM-9X, December 31, 2003

10a. (U) Performance Characteristics (Cont'd):

	Development Estimate (GAP)	Approved Program (APB) Cbd/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Captive Carry Reliability (hr.)				
Incoming Missile Reliability				
Detect Non- Operational Missile (BIT) All Components	0.95	0.95	0.95	0.95
Detect Non- Operational Missile (BIT-able Components)	>.or.= 0.95	>.or.= / 0.95 / 0.90	>.or.= .90	>.or.= 0.90
False Alarm Rate	<.or.= .01	<.or.= / .01 / 0.01	18 hours 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

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AIM-9X, December 31, 2003

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	531.4	531.4	580.5
Procurement	1932.6	1932.6	1946.4
Recurring Flyaway	(1677.2)		(1848.3)
Non-Recurring			(4.7)
Total Flyaway	(1677.2)		(1853.0)
Other Weapon System Cost	(138.2)		(0.0)
Peculiar Support	(78.1)		(62.2)
Initial Spares	(39.1)		(31.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1997 Base-Year \$	2464.0	2464.0	2526.9
Escalation	768.9	768.9	514.3
Development (RDT&E)	(22.1)	(22.1)	(17.5)
Procurement	(746.8)	(746.8)	(496.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3232.9	3232.9	3041.2

(U) 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	10000	10000	10097
Total	10049	10049	10142

(U) Note: The LRIP quantities approved on December 19, 1996 at Milestone II were 150 (1st year), 250 (2nd year) and 600 (3rd year). Currently approved LRIP quantities on contract are 130 for LRIP 1, 243 for LRIP 2, 570 for LRIP 3, and 358 for LRIP 4. Total LRIP quantities represent 15 percent of the planned program buy. Permission to exceed the 10 percent planned program buy was granted on April 10 2003 by Assistant Secretary of the Navy, Research, Development and Acquisition (ASN RD&A).

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. In July 2002, Korea signed a Letter of Offer and Acceptance (LOA) to procure AIM-9X for use on their F-15K aircraft. Poland signed a LOA in April 2003 to procure AIM-9X for use on their F-16 aircraft. In January 2004, Switzerland signed a LOA to procure AIM-9X for use on their F-18 aircraft. As part of their F/A-18 Mid-Life Upgrade (MLU) program validation and verification effort, in December 2003 Finland signed a LOA to procure a small

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AIM-9X, December 31, 2003

11c. (U) Total Program Cost and Quantity (Cont'd):

quantity of AIM-9X Captive Air Training Missiles (CATMs) for their F/A-18 aircraft. In October 2003, the Royal Danish Air Force requested a LOA for AIM-9X missiles to equip their F-16 MLU aircraft.

d. (U) Nuclear Costs --  
None.

12. (U) Unit Cost Summary:

	UCR Baseline (AUG 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	2464.0	2526.9	
(2) Quantity	10049	10142	
(3) Unit Cost	0.245	0.249	+1.63
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	1932.6	1946.4	
(2) Quantity	10000	10097	
(3) Unit Cost	0.193	0.193	0.00

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AIM-9X, December 31, 2003

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	-17.7	-312.4	-	-330.1
Quantity	-0.8	+20.3	-	+19.5
Schedule	+25.4	+100.6	-	+126.0
Engineering	+56.5	+151.3	-	+207.8
Estimating	-18.5	+13.7	-	-4.8
Other	-	-	-	-
Support	-	-243.3	-	-243.3
Subtotal	+44.9	-269.8	-	-224.9
Current Changes:				
Economic	+0.7	+12.3	-	+13.0
Quantity	-	-	-	-
Schedule	+0.4	+16.9	-	+17.3
Engineering	-	-	-	-
Estimating	-1.5	+0.8	-	-0.7
Other	-	-	-	-
Support	-	+3.6	-	+3.6
Subtotal	-0.4	+33.6	-	+33.2
Total Changes	+44.5	-236.2	-	-191.7
Current Estimate	598.0	2443.2	-	3041.2

(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	+19.6	-	+40.9
Engineering	+50.9	+116.3	-	+167.2
Estimating	-22.1	+16.9	-	-5.2
Other	-	-	-	-
Support	-	-165.0	-	-165.0
Subtotal	+49.3	+1.5	-	+50.8
Current Changes:				
Quantity	-	-	-	-
Schedule	+0.3	+8.5	-	+8.8
Engineering	-	-	-	-
Estimating	-0.5	+0.8	-	+0.3
Other	-	-	-	-
Support	-	+3.0	-	+3.0
Subtotal	-0.2	+12.3	-	+12.1
Total Changes	+49.1	+13.8	-	+62.9
Current Estimate	580.5	1946.4	-	2526.9

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AIM-9X, December 31, 2003

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	+0.1
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Revised test schedule due to unavailability of QF-4 targets. (Schedule)	+0.3	+0.4
Congressional reductions and rate adjustment. (Estimating)	-0.5	-1.5
RDT&E Subtotal	-0.2	-0.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+12.3
Navy revision of procurement profile resulted in shifting of missiles beyond the FYDP from FY 04 - 09 into FY 10 - 18. (Schedule)	+3.1	+6.6
Air Force revision of procurement profile resulted in shifting of missiles beyond the FYDP from FY 04 - 09 into FY 10 - 18. (Schedule)	+5.4	+10.3
Navy Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Air Force Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
Navy revised initial spares estimate to reflect change in quantity profile. (Support)	+3.8	+4.4
Navy revised peculiar support estimate for training support and equipment. (Support)	-1.0	-1.0
Air Force revised initial spares estimate to reflect change in quantity profile. (Support)	+0.2	+0.2
Procurement Subtotal	+12.3	+33.6

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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
PAUC	Changes									Cur Est
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.322	-0.031	--	+0.014	+0.020	-0.001	--	-0.024	-0.022		0.300

b. (U) 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		
0.268	-0.030	--	+0.012	+0.015	+0.001	--	-0.024	-0.026		0.242

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	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	N/A
IOC	SEP 2003	AUG 2002	N/A	NOV 2003
Total Cost	695.0	3232.9	N/A	3041.2
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. Procurement --  
 (U) AIM-9X:  
 Hughes Aircraft Co., Tucson, AZ  
 N00019-97-C-0027, FFP  
 Award: November 18, 2002  
 Definitized: N/A

Current Contract Price			Initial Contract Price	
Target	Ceiling	Qty	Target	Ceiling
\$204.3	N/A	943	\$49.7	N/A

Estimated Price At Completion	
Contractor	Program Manager
\$204.3	\$204.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

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15. (U) Contract Information (Cont'd):

(U) Contract Comments:

Initial contract price is for LRIP 1. Current contract price combines LRIP 1, LRIP 2 and LRIP 3.

The definitized date is not available at this time. It will be reported in the next SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY95-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-18)</u>	<u>Total</u>
RDT&E	533.0	2.6	9.7	52.7	598.0
Procurement	224.2	82.5	91.4	2045.1	2443.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	757.2	85.1	101.1	2097.8	3041.2

(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				16.2	17.2

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				2.6	2.8
2004				2.0	2.2
2005				3.7	4.1
2006				8.3	9.3
2007				6.9	7.9
2008				2.1	2.5
2009				1.0	1.2
Subtotal	23			286.1	295.3

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				6.4	6.8
2003				2.6	2.8
2004				0.4	0.4
2005				5.1	5.6
2006				13.4	15.0
2007				4.8	5.5
2008				4.8	5.6
2009				4.8	5.7
Subtotal	22			246.8	256.3

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		19.9	23.1	24.8
2003	284		47.2	49.1	53.3
2004	102	0.1	21.6	24.5	27.0
2005	157	0.1	30.7	33.1	37.0
2006	170	0.1	32.5	36.5	41.5
2007	226	0.1	40.1	46.7	54.1

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16b. (U) Program Funding Summary (Cont'd):

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 \$
2008	211	0.1	39.4	46.2	54.6
2009	181	0.2	35.1	40.8	49.2
2010	382	0.2	69.1	72.5	89.1
2011	381	0.1	67.7	71.1	89.1
2012	381	0.2	67.6	71.1	90.9
2013	394	0.1	71.7	75.2	98.1
2014	393	0.1	70.8	74.4	99.0
2015	393	0.2	69.4	73.1	99.2
2016	393	0.1	69.3	73.0	101.1
2017	393	0.1	71.2	75.0	105.9
2018	391	0.1	70.1	70.5	101.6
Subtotal	5000	2.9	914.8	981.8	1243.0

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	27.1	31.9	34.2
2003	286		47.3	51.3	55.7
2004	256	0.1	46.7	50.4	55.5
2005	248	0.1	45.4	48.7	54.4
2006	261	0.1	46.9	49.8	56.6
2007	262	0.1	44.6	47.6	55.2
2008	260	0.1	45.3	47.4	56.0
2009	254	0.1	45.6	47.6	57.4
2010	416	0.1	74.0	74.1	91.1
2011	417	0.1	72.7	72.8	91.3
2012	418	0.1	72.8	72.9	93.3
2013	300	0.1	57.5	57.6	75.2
2014	300	0.1	56.9	57.0	75.9
2015	300	0.1	55.8	55.9	75.9
2016	300	0.1	55.8	55.9	77.4
2017	300	0.2	57.2	57.4	81.0
2018	314	0.1	59.2	59.3	85.4
Subtotal	5097	1.8	933.5	964.6	1200.2

(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.

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16b. (U) Program Funding Summary (Cont'd):

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				47.6	46.4
Navy	5023	2.9	914.8	1267.9	1538.3
USAF	5119	1.8	933.5	1211.4	1456.5
Grand Total	10142	4.7	1848.3	2526.9	3041.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	45	45
Procurement	168	168

(U) Percent Total Program Quantities Delivered: 2.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 702.8

(U) Percent Total Program Expended: 23.1%

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 20-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.

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18a. (U) Operating and Support Costs (Cont'd):

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
	N/A	N/A
Total	19.1	N/A

Total O&S Cost	AIM9X	No Antecedent System
BY\$ (In Millions)	627.4	N/A
TY\$ (In Millions)	1234.8	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: CEC

AS OF DATE: December 31, 2003

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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 Jt 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	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 0603658N Project K2039, K2616  
(U) PE 0603755N Project U2039 (Shared)

PROCUREMENT:

(U) APPN 1611 ICN 1000000000 (Navy) (Shared)  
(U) APPN 1506 ICN 1200000000 (Navy) (Shared)  
(U) APPN 1611 ICN 1400000000 (Navy) (Shared)  
(U) APPN 1611 ICN 1600000000 (Navy) (Shared)  
(U) APPN 1506 ICN 3600000000 (Navy) (Shared)  
(U) APPN 1810 ICN 4700000000 (Navy)

04-C-215  
B. Rodriguez

Derived from:

Downgrade instructions: OPNAV-119.5 of 1 November 1999  
Declassify on: KS

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DEPARTMENT OF DEFENSE

04-C-0711

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CEC, December 31, 2003

5. (U) References:

SAR Baseline (Production Estimate):

(U) Defense Acquisition Executive (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 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. The AN/USG-2 system is scheduled to be deployed on CG, DDG, CV/CVN, LPD, LHD, LHA(R), DD(X), Littoral Combat Ship (LCS), and at various Land Based Test Sites (LBTS).

The equipment nomenclature is AN/USG-3 for the airborne system. The AN/USG-3

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6. (U) Mission and Description (Cont'd):

system is scheduled for installation on E-2C HAWKEYE 2000 aircraft.

7. (U) Executive Summary:

(U) Due to the accelerated deployment of the USS NIMITZ Carrier Strike Group, the planned and approved CEC/E-2C HAWKEYE 2000 aircraft Follow-on Test and Evaluation (FOT&E-2) schedule was not executable. A revised plan was approved by the Chief of Naval Operations and is being accomplished with the USS JOHN F. KENNEDY Carrier Strike Group. Final FOT&E-2 testing is scheduled for completion in March 2004 in the Gulf of Mexico, and is expected to validate performance in an operationally representative environment.

A decision to discontinue Block 2 development planning was made by the USD(AT&L) on September 17, 2003. The decision also directed the Navy to "implement CEC product improvement and continue partnering with both the SIAP SE (Single Integrated Air Picture - System Engineering) to develop Joint Track Management functionality and with GIG (Global Information Grid) horizontal fusion to enable web-based posting of information, as per the CEC Acquisition Decision Memorandum (ADM) dated April 3, 2002." In response to this direction, the Program Manager (PM) has initiated a Pre-planned Product Improvement (P3I) program to modify the current equipment to meet reduced size, weight, cost, power and cooling objectives, and that meets existing Navy design objectives with regard to open system architecture, interoperability and program protection.

A proposed Acquisition Program Baseline (APB) with revised E-2C Follow-on Test and Evaluation (FOT&E-2) program schedule and revised program costs objective and threshold parameters is in process.

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

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8. (U) Threshold Breaches (Cont'd):

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

Accelerated deployment of the USS NIMITZ Battle Group delayed completion of Follow-on Test and Evaluation (FOT&E-2) of the integrated CEC/E-2C HAWKEYE 2000 aircraft from July 2003 to April 2004.

Revised program cost estimates indicate a deviation from the APB applicable to the RDT&E threshold value only. The increase was due to the addition of funds to add new functionality to the program.

A proposed Acquisition Program Baseline (APB) with revised E-2C Follow-on Test and Evaluation (FOT&E-2) program schedule and revised program costs objective and threshold parameters is in process.

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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 (DTIIB/OT-IIIB)E-2C			
Start	MAR 2003	MAR 2003	MAR 2004

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9a. (U) Schedule (Cont'd):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Complete	JUL 2003	JUL 2003	APR 2004
AIR IOC	DEC 2003	DEC 2003	NOV 2004
Full Operational Capability	DEC 2003	DEC 2003	NOV 2004

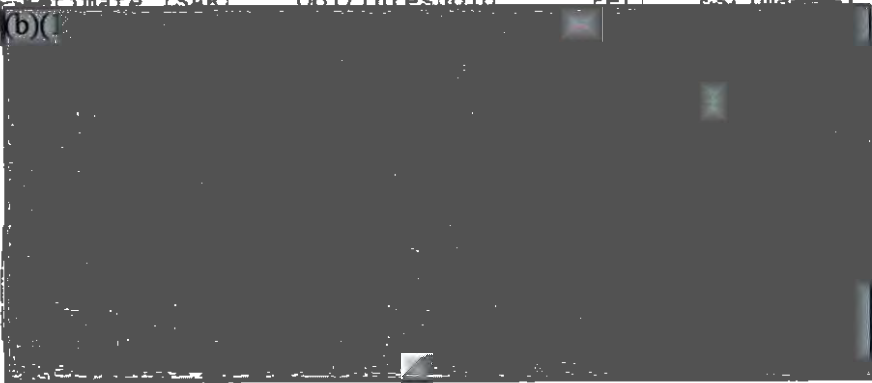
(U) ABBREVIATIONS and ACRONYM LISTING:

Developmental Test (DT)  
 Developmental Test and Evaluation (DT&E)  
 Follow-on Test and Evaluation (FOT&E)  
 Initial Operational Capability (IOC)  
 Initial Operational Test and Evaluation (IOT&E)  
 Low Rate Initial Production (LRIP)  
 Operational Test (OT)

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1) Track Base Size				
(b)(1) Track Measurement				
(b)(1) Update Rate				
(b)(1) Local				
(b)(1) Remote				
(b)(1) Operational				
(b)(1) Availability				
(b)(1) Data Rate (without any Compression Technology Implemented) (Mbps)				
(b)(1) Anti-jam Resistance (kW/MHz)				
(b)(1) Interoperability				
Information Exchange Require- ments (IER)	100% of top- level IERs	100% of / top- level IERs. / designa- ted / critical	TBD	100% of top- level IERs.
Track File Consistency	Integra- tion will improve track	CEC integra- tion will improve	/ CEC / integra- tion / must not / degrade	TBD CEC integra- tion will improve

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10a. (U) Performance Characteristics (Cont'd):

<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
file	track / track		track
consis-	file / file		file
tency	consis- / consis-		consis-
in each	tency as/ tency		tency as
host	measured/ (0%		measured
system	in each / degrada-		in each
	host / tion)as		host
	system / measured		system
	/ 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 for 100% of top-level IERs.

Abbreviations and Acronyms:

Cooperative Engagement Capability - (CEC)

Information Exchange Requirements - (IER)

Kilowatts - (KW)

Mega bytes per second - (Mbps)

MegaHertz - (MHz)

Nautical Mile - (nm)

Seconds - (sec)

To be Determined - (TBD)

b. Current Change Explanations -- None

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	2028.1	2028.1	2353.3
Procurement	2095.2	2095.2	1896.5
Rollaway	(1759.8)		(1794.4)
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	0.0	0.0	0.0
Total FY 2002 Base-Year \$	4123.3	4123.3	4249.8
Escalation	187.4	187.4	177.0
Development (RDT&E)	(-81.6)	(-81.6)	(-46.0)
Procurement	(269.0)	(269.0)	(223.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4310.7	4310.7	4426.8
b. (U) Quantity --			
Development (RDT&E)	16	16	23
Procurement	256	256	256
Total	272	272	279

(U) A total of forty-eight (48) AN/USG-2 (shipboard) and AN/USG-3 (airborne) LRIP systems are being procured. The procurement of LRIP units exceeds 10% of the units planned to be procured under the Engineering and Manufacturing (E&MD) 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 forty-eight (48) 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.

LRIP-4 - Under Secretary of Defense (Acquisition, Technology and Logistics)

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11b. (U) Total Program Cost and Quantity (Cont'd):

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.

LRIP-6/7 - Under Secretary of Defense (Acquisition, Technology and Logistics) memorandum of September 4, 2003 to the Acting Under Secretary of Defense (Acquisition, Technology and Logistics) authorized two (2) more years of LRIP for the airborne version (AN/USG-3) with full rate production pending successful completion of FOT&E. Updated and current Navy plans are to procure six (6) AN/USG-3 systems in FY 2003, and two (2) AN/USG-3 systems in FY 2004 and two in FY 2005 as LRIP 8.

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 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2002 BY\$)	4123.3	4249.8	
(2) Quantity	272	279	
(3) Unit Cost	15.159	15.232	+0.48
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	2095.2	1896.5	
(2) Quantity	256	256	
(3) Unit Cost	8.184	7.408	-9.48

(U) Current estimates are reflected in the revised APB in process.

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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	1946.5	2364.2	-	4310.7
Previous Changes:				
Economic	-5.5	-9.3	-	-14.8
Quantity	+56.3	+30.8	-	+87.1
Schedule	-	-	-	-
Engineering	+234.5	-	-	+234.5
Estimating	+87.4	+55.9	-	+143.3
Other	-	-	-	-
Support	-	-186.6	-	-186.6
Subtotal	+372.7	-109.2	-	+263.5
Current Changes:				
Economic	+12.6	-29.8	-	-17.2
Quantity	+2.3	-32.5	-	-30.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-26.8	-73.2	-	-100.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-11.9	-135.5	-	-147.4
Total Changes	+360.8	-244.7	-	+116.1
Current Estimate	2307.3	2119.5	-	4426.8

(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	+51.4	+30.5	-	+81.9
Schedule	-	-	-	-
Engineering	+218.4	-	-	+218.4
Estimating	+78.4	+127.2	-	+205.6
Other	-	-	-	-
Support	-	-233.3	-	-233.3
Subtotal	+348.2	-75.6	-	+272.6
Current Changes:				
Quantity	+2.2	-65.3	-	-63.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.2	-57.8	-	-83.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-23.0	-123.1	-	-146.1
Total Changes	+325.2	-198.7	-	+126.5
Current Estimate	2353.3	1896.5	-	4249.8

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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	+12.6
Addition of one (1) U.S. Marine Corps RDT&E funded system. (Quantity)	+2.2	+2.3
Addition of FY 2004 funds appropriated by Congress for Technology Refresh for the Cooperative Engagement Capability (CEC) program. (Estimating)	+14.8	+15.3
Addition of U.S. Marine Corps funding programmed for integration with CEC and the Composite Tracking Network (CTN). (Estimating)	+11.0	+11.6
Offset for Congressional reductions; Small Business Innovative Research (SBIR); and miscellaneous budget adjustments. (Estimating)	-6.4	-7.9
Addition of funds programmed for Block 1 FOT&E. (Estimating)	+1.9	+2.0
Addition of funds programmed to support E-2C Radar Modernization Program (RMP). (Estimating)	+3.2	+3.3
Elimination of U.S. Army funding from this report. (Estimating)	-10.1	-9.7
Reprogramming of Single Integrated Air Picture (SIAP) funding to appropriate program element. (Estimating)	-39.6	-41.4
RDT&E Subtotal	-23.0	-11.9
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-29.8
Reduction of twenty-four (24) AN/USG-2/3 (Navy) units to accommodate changes in ship and aircraft requirement profiles. (Quantity)	-123.1	-105.7
Correction to December 2002 SAR to recategorize estimating to quantity. (Quantity)	+57.8	+73.2
(Estimating)	-57.8	-73.2
Procurement Subtotal	-123.1	-135.5

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14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

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	-0.115	-0.193	--	+0.841	+0.155	--	-0.669	+0.019	15.87

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	-0.153	-0.006	--	--	-0.068	--	-0.729	-0.956	8.28

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	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	4426.8
Total Quantity	N/A	183	272	279
Prog Acq Unit Cost	N/A	14.1	15.8	15.9

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --  
 (U) Cont Engr Des/Dev:  
 Raytheon Systems Company, St. Petersburg FL  
 N00024-99-C-5110, CPAF  
 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>
\$224.1	N/A	0	\$223.2	\$223.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$-0.1
Cumulative Variances To Date (12/30/03)	\$0.4	\$-0.7
Net Change	\$0.0	\$-0.6

Explanation of Change:

(U) The schedule variance is due to testing problems associated with the power supply. Testing was stopped because of this failure and had to be rescheduled. Because of this delay an extension of the original schedule was required.

(U) Contract Comments:

The increase to the current contract target price is the result of additional funds for integration of AEGIS Weapon System computer program Baseline 7, Phase 1C, and payment of award fees.

(U) E-2C Integration:

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	\$106.0	\$106.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.0	\$0.0
Cumulative Variances To Date (11/28/03)	\$5.0	\$-0.1
Net Change	\$4.0	\$-0.1

Explanation of Change:

(U) The cost variance is in a very favorable position and the completion cost indicators are in the \$3.4 million range. The schedule variance is due to the contractor completing most of the tasks under the contract and assuming

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15. (U) Contract Information (Cont'd):

mostly a support role. This role appears to be appropriate.

(U) Contract Comments:

The increase in the current contract target price addresses the development and testing of interfacing computer programs for integration of CEC AN/USG-3 (airborne) equipment with the E-2C HAWKEYE 2000 Mission Computer Upgrade (MCU) electronic suite.

b. Procurement --			Initial Contract Price	
(U) LRIP-2/3:	Target	Ceiling	Qty	
Raytheon Systems Co., St. Petersburg, FL				
N00024-99-C-5116, FFP	\$74.3	N/A	7	
Award: September 28, 1999				
Definitized: June 1, 2000				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$104.5	N/A	13	\$104.5	\$104.5

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

On August 30, 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 increase in the current contract price 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 (b) the procurement of CEC equipment for United Kingdom (UK) test purposes, spares and an installation and checkout (INCO) kit.

Thirteen (13) AN/USG-2 systems were procured under N00024-99-C-5116. Seven (7) systems under LRIP-2 (six (6) OP,N, one (1) SC,N) and six (6) systems under LRIP-3 (two (2) OP,N, four (4) SC,N). Six (6) AP,N funded AN/USG-3 systems were procured as part of LRIP-3 under contract N00024-00-C-5145.

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15. (U) Contract Information (Cont'd):

The contract price of N00024-00-C-5145 is less than \$40M and is not reflected in this report.

All deliveries under this contract have been completed. This is the final report.

(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>
\$76.6	N/A	7	\$76.6	\$76.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The Firm Fixed Price 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.

The contract requires delivery of three (3) OP,N funded and three (3) SC,N funded AN/USG-2 (shipboard) systems and one (1) AP,N funded AN/USG-3 (airborne) system. The contract also includes the procurement of Installation and Checkout (INCO) kits, replenishment parts, training and spare part kits for AN/USG-2 systems; and the chassis and foundations and various subsystem assemblies for AN/USG-3 installation aboard E-2C aircraft.

The increase in the current contract target price is the result of additional funds added to the contract to incentivize the contractor for early deliveries and for the addition of four (4) backfit kits for E-2C aircraft.

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15. (U) Contract Information (Cont'd):

(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>
	\$74.0	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>
\$74.4	N/A	10	\$74.4	\$74.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

A letter contract was awarded on April 24, 2002 for procurement of long lead material for the manufacture of CEC systems and the contract was definitized September 6, 2002. 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, and includes options for the procurement of training courses and training material. The option items have not been exercised.

The contract also includes a provision for payment of incentive fees for system deliveries accepted thirty (30) days prior to specified contract delivery dates. Before the contractor is eligible for incentive payments under this contract, all outstanding system deliveries under prior year production contracts must be completed and accepted by the Navy. This provision could add \$1.1 million to the cost of the contract assuming all system deliveries are accomplished 30 days prior to the specified delivery dates.

The increase in the current contract target price reflects the payment to date of incentive fees for system deliveries prior to the specified delivery dates.

The December 2002 SAR incorrectly reported the Initial and Current Contract Prices, and the Estimated Price at Completion. These costs are corrected in this report.

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15. (U) Contract Information (Cont'd):

(U) <u>FY 03 Production:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Raytheon Company, St. Petersburg FL				
N00024-03-C-5104, FFP	\$89.7	N/A	14	
Award: May 1, 2003				
Definitized: May 1, 2003				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$94.9	N/A	14	\$94.9	\$94.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The contract requires delivery of six (6) OP,N funded and two (2) SC,N funded AN/USG-2 (shipboard) systems and six (6) AP,N funded AN/USG-3 (airborne) systems. The contract also includes the procurement of Installation and Checkout (INCO) kits, replenishment parts, and training.

The Fixed Price Incentive Fee contract also allows the contractor to earn incentive payments for performance meeting and exceeding the specified contract delivery requirements.

The increase in the current contract target price is the result of a contract modification to include the delivery of three (3) Planar Array Active Antennas (PAAA). The contract was also modified to include an option for an additional four (4) PAAA.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-19)</u>	<u>Total</u>
RDT&E	1793.2	92.7	106.5	314.9	2307.3
Procurement	654.4	106.8	79.5	1278.8	2119.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2447.6	199.5	186.0	1593.7	4426.8

b. Annual Summary -- CEC

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Rollaway FY 2002 Dollars Nonrec	Rollaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				224.2	202.8
1995				166.8	153.8
1996				272.9	255.9
1997				236.3	224.3
1998				209.4	200.5
1999				195.7	189.6
2000				182.7	179.7
2001				173.8	173.3
2002				105.9	106.6
2003				104.8	106.7
2004				89.8	92.7
2005				101.7	106.5
2006				110.9	118.0
2007				63.0	68.2
2008				58.4	64.5
2009				57.0	64.2
Subtotal	23			2353.3	2307.3

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	5		26.1	26.1	27.3

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16b. (U) Program Funding Summary (Cont'd):

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 \$
2005	2		14.7	14.7	15.6
2006	1		4.9	4.9	5.3
2007	1		4.8	4.8	5.3
2008	3		19.0	19.0	21.3
2009	4		23.7	23.7	27.1
2010	5		21.6	21.6	25.4
2011	6		25.9	25.9	31.0
2012	7		29.1	29.1	35.3
2013	7		34.1	34.1	42.4
2014	7		33.1	33.1	42.0
2015	7		33.1	33.1	42.6
2016	8		32.6	32.6	42.7
2017	8		31.9	31.9	42.8
2018	8		31.2	31.2	42.6
2019	1		3.0	3.0	4.2
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				10.5	10.1
1996				11.2	11.0
1997					
1998	2		21.7	20.9	20.7
1999	1		20.9	48.2	48.0
2000	4		48.2	33.6	33.9
2001	3		33.6		
2002				5.9	6.0
2003	1		5.9	12.4	12.9
2004	8		12.4	12.1	12.9
2005	3		12.1	5.9	6.4
2006	9		5.9	41.3	45.1
2007	1		41.3	17.4	19.3
2008	8		17.4	45.3	51.5
2009	1		45.3	50.0	58.0
2010	9		50.0	55.0	64.4
2011	10		55.0	42.0	50.2
2012	7		42.0	37.5	45.6
2013	6		37.5	37.8	46.2
2014	6		37.8	37.8	47.9
2015	6		37.8	35.8	46.0

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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 \$
2016	6		35.8	35.5	46.2
2017	6		35.5	35.4	46.9
2018	6		35.4	13.8	18.5
2019	1		13.8		
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 the procurement of two (2) AN/USG-2 systems 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		36.3	36.3	36.4
2002	5		75.4	82.8	83.9
2003	6		62.5	68.8	70.1
2004	4		58.2	64.1	66.6
2005	3		48.6	55.1	57.5
2006	3		37.6	42.8	46.7
2007	3		37.5	41.2	46.5
2008	6		49.8	54.6	62.0
2009	4		37.9	43.6	49.8
2010	2		31.0	37.5	43.1
2011				18.2	20.9
2012				12.2	14.0
Subtotal	54		668.1	770.2	805.4

(U) The recurring dollars displayed in FY 2011-12 are budgeted for installation costs after delivery of the systems procured in FY 2010.

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16b. (U) Program Funding Summary (Cont'd):

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	279		1794.4	4249.8	4426.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	16	16
Procurement	28	43

(U) Percent Total Program Quantities Delivered: 21.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2511

(U) Percent Total Program Expended: 56.7%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Operating and Support (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 is 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.

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.

QUANTITY/SERVICE LIFE: The O&S costs are based on 252 total systems with a service life of twenty (20) years.

There is no antecedent system.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 2002 Constant (Base-Year) Dollars in Thousands)

Cost Element	CEC Avg Annual Sys Cost (Thousands)	Avg Annual Sys Cost Antecedent System (Thousands)
Mission Pay & Allowances	2.0	0.0
Unit Level Consumption	476.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	21.0	0.0
Contractor Support	8.0	0.0
Sustaining Support	216.0	0.0
Indirect Costs	5.0	0.0
Total	728.0	0.0

Total O&S Cost	CEC	Avg Annual Sys Cost
BYS (In Millions)	3674.7	N/A
TYS (In Millions)	5327.1	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: T-AKE

AS OF DATE: December 31, 2003

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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 Project S0408 (Shared)  
PE 0604567N Project S1803 (Shared)  
PROCUREMENT:  
APPN 4557 ICN 020 4441N (DoD)  
APPN 4557 ICN 0204441N (DoD)

The National Defense Sealift Fund (NDSF) account is 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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## **5. References:**

SAR Baseline (Production Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated September 20, 2001.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated April 28, 2003.

## **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 fixed price incentive (FPI) contract for the Detail Design and Construction of the lead ship with options for eleven follow ships was awarded to National Steel and Shipbuilding Company (NASSCO). The option for the second ship was exercised October 18, 2001, as well. On July 16, 2002, the FY 2002 third ship option was exercised. On July 18, 2003, the FY 2003 fourth ship option was exercised. NASSCO commenced construction on the first

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7. Executive Summary (Cont'd):

ship in September 2003. On January 27, 2004, the FY 2004 fifth and sixth ship options were exercised.

On November 20, 2003, NASSCO submitted a revised Major Milestone Schedule to the Program Office indicating a five-month delay, on average, for the first four ships. Internal engineering and production schedules were incrementally revised through January 2004. NASSCO provided the budget and resource information that support the reported delay during the Integrated Baseline Review (IBR) the week of February 23, 2004. The Program Office will complete their evaluation of the potential schedule impact by March 30, 2004.

NASSCO has reported Cost Variances (CVs) on the first four T-AKE ships. The CV on the T-AKE 1 is attributable to non-recurring engineering costs incurred due to changes made in response to the Dynamic Load Approach (DLA) analysis results and some rework in the Functional and Transition Design process. NASSCO has experienced a rise in material costs, particularly in composite dunnage and electrical cable. Recurring material cost overruns represent approximately 70% of the total material cost overrun.

NASSCO has reported a Schedule Variance (SV) for T-AKE 1. The negative SV is driven by material costs that are being expended late relative to the contract delivery schedule. Appropriately, NASSCO is delaying delivery of materials to build the ships to match their revised delivery dates reflected in the November 20, 2003 Major Milestone Schedule.

Five initial blocks are currently under construction. Assembly is completed for Blocks 8, 9, and 10 and Blocks 11 and 13 are in assembly. Overall block quality is excellent. This supports NASSCO's current planned delivery date.

A revised APB was approved by the Deputy Undersecretary of Defense (Acquisition, Technology and Logistics) on April 28, 2003. The T-AKE Dry Cargo/Ammunition Ship Program Test Integrated Product Team (TlPT) shortened the duration of the Operational Test IIB (OT-IIB) from 27 to 9 months. The reduction in 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.

On January 9, 2004, the DAE redesignated T-AKE as an ACAT IC program.

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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
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 2004	APR 2004
OT II-B Complete	JUL 2005	DEC 2004	DEC 2004
Lead Ship Delivery	JUL 2005	JUL 2005	MAY 2005
OPEVAL Start	APR 2006	APR 2006	APR 2006
OPEVAL Complete	JUN 2006	JUN 2006	JUN 2006
IOC	OCT 2006	OCT 2006	OCT 2006

The Program Manager's Current Estimate for lead ship delivery and follow-on events remains the same pending review of NASSCO's revised engineering and production schedules.

## Schedule Acronyms:

OIPT: Overarching Integrated Product Team  
 OT: Operational Test  
 OPEVAL: Operational Evaluation  
 IOC: Initial Operational Capability

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9b. Schedule (Cont'd):

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Intership Cargo Handling Interoperability	Provide all REP sys and equip. req'd for seamless interface w/exist- ing 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 equipmen t required for seamless inter- face w/existi ng & planned US ships 100% Top Level and Navy IERS
C4I Interoperability	100% Top Level and Navy IERS	100% Top/ 100% Top Level / Level and / and Navy / Navy IERS / IERS / desig- / nated / as / CRITICAL	TBD	100% Top Level and Navy IERS
Survivability	Survive flooding by shell damage at any location , heel angle NTE 15 deg, margin line not submerge d	N/A / N/A	TBD	N/A (Ch-1)
Survivability	N/A	The ship/ The ship will / will survive / survive flooding/ flooding	TBD	The ship(Ch-1) will survive flooding

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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> <u>caused</u>
		caused / caused		caused
		by / by		by
		damage / damage		damage
		to the / to the		to the
		shell at/ shell at		shell at
		any / any		any
		loca- / location		location
		tion. / except		. The
		The / the		final
		final / trans-		damaged
		damaged / verse		heel
		heel / bulk-		angle
		angle / heads		will not
		will not/ bounding		exceed
		exceed / an aft		15
		15 / machin-		degrees
		degrees / ery		and the
		and the / space.		margin
		margin / The		lines
		lines / final		will not
		will not/ damaged		be
		be sub- / heel		submerge
		merged. / angle		d.
		/ will not		
		/ exceed		
		/ 25		
		/ de		
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 palleti- zed ordnance to CV (CONREP& VERTREP) > 220 MTPH palleti- zed ordnance to CV&CG	> 274 / > 149 MTPH / MTPH palleti-/ palleti- zed / zed ordnance/ ordnance to CV / to CV (CONREP&/ (CONREP& VERTREP)/ VERTREP) > 220 / > 138 MTPH / MTPH palleti-/ palleti- zed / zed ordnance/ ordnance to CV&CG/ to CV&CG	TBD	> 274 MTPH palletiz ed ordnance to CV (CONREP & VERTREP) , > 220 MTPH palletiz ed ordnance

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate to CV&amp;CG SIMULTAN EOUSLY (CONREP) MSC standard s (CG CERT &amp; ABS)</u>
	SIMULTA- NEOUSLY (CONREP)	SIMULTA-/ SIMULTA- NEOUSLY / NEOUSLY (CONREP)/ (CONREP)		
Supportability	MSC Stds (CG CERT & ABS)	MSC Stds/ MSC Stds (CG CERT/ (CG CERT & ABS) / & ABS)	TBD	
Reliability (Ship Systems)	Highest commer- cial stds, ABS Rules, R1 (redunda ncy) notation for propul- sion, steering & aux systems. Redundan cy in excess of com- mercial reqmts for mission critical systems	Highest / Highest commer- / commer- cial / cial stds, / stds, ABS / ABS Rules, / Rules, R1 / R1 (redun- / (redun- dancy) / dancy) notation/ notation for / for propul- / propul- sion, / sion, steering/ steering & aux / & aux sys. / sys. Redun- / Redun- dancy in/ dancy in excess / excess of com- / of com- mercial / merical reqmts / reqmts for / for mission / mission critical/ critical systems / systems	TBD	Highest commerci al standard s, ABS Rules, R1 (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), dated July 3, 2001. 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

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10a. Performance Characteristics (Cont'd):

communications.

Performance Characteristics Acronyms:

TBD: To be determined  
REP: Replenishment  
C4I: Command, Control, Communications, Computers and Intelligence  
IERs: Information Exchange Requirements  
NTE: Not to exceed  
NM: Nautical mile  
MCR: Maximum Continuous Rating  
MTPH: Metric Tons Per Hour  
CONREP: Connected Replenishment  
VERTREP: Vertical Replenishment  
CV&CG: Aircraft Carrier & Cruiser  
CG: Coast Guard (United States)  
CERT: Certification  
ABS: American Bureau of Shipping  
MSC: Military Sealift Command  
Ao: Operational Availability  
R1: ABS Redundancy notation "... indicating that a vessel is fitted with multiple propulsion machines but only one propeller and steering system ..."

b. Current Change Explanations --

(Ch-1) The Survivability performance parameter wording was changed to reflect the wording in the current Operational Requirements Document (ORD), dated July 3, 2001.

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11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	26.0	26.0	26.0
Procurement	4236.6	4236.6	4195.7
Sailaway	(4236.6)		(4195.7)
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 \$	4262.6	4262.6	4221.7
Escalation	627.6	627.6	270.7
Development (RDT&E)	(-0.1)	(-0.1)	(-0.1)
Procurement	(627.7)	(627.7)	(270.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4890.2	4890.2	4492.4
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	12	12	11
Total	12	12	11

There is no approved Low Rate Initial Production (LRIP) for the T-AKE Program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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T-AKE, December 31, 2003

12. Unit Cost Summary:

	UCR Baseline (APR 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	4262.6	4221.7	
(2) Quantity	12	11	
(3) Unit Cost	355.217	383.791	+8.04
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	4236.6	4195.7	
(2) Quantity	12	11	
(3) Unit Cost	353.050	381.427	+8.04

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	-	-153.9	-	-153.9
Quantity	-	-398.8	-	-398.8
Schedule	-	+4.3	-	+4.3
Engineering	-	-	-	-
Estimating	-	+80.9	-	+80.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-467.5	-	-467.5
Current Changes:				
Economic	-	-156.1	-	-156.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+225.8	-	+225.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+69.7	-	+69.7
Total Changes	-	-397.8	-	-397.8
Current Estimate	25.9	4466.5	-	4492.4

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T-AKE, December 31, 2003

13a. Cost Variance Analysis (Cont'd):

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	26.0	4236.6	-	4262.6
Previous Changes:				
Quantity	-	-326.7	-	-326.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+72.2	-	+72.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-254.5	-	-254.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+213.6	-	+213.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+213.6	-	+213.6
Total Changes	-	-40.9	-	-40.9
Current Estimate	26.0	4195.7	-	4221.7

b. Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-156.1
Adjustment for Current and Prior Inflation. (Estimating)	+68.5	+71.5
Restoration of budget shortfalls during the FY 2005 budget cycle (Estimating)	+64.2	+69.7
Revised estimate due to inflation rate adjustments (Estimating)	+80.9	+84.6
Procurement Subtotal	+213.6	+69.7

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**14. Unit Cost and Other History (Then-Year Dollars in Millions):**

**a. Program Acquisition Unit Cost (PAUC) History**

Current SAR Baseline to Current Estimate

PAUC	Changes								PAUC
Prod Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
407.52	-28.18	+0.792	+0.391	--	+27.88	--	--	+0.883	408.40

**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
405.36	-28.18	+0.596	+0.391	--	+27.88	--	--	+0.687	406.05

**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	4492.4
Total Quantity	N/A	N/A	12	11
Prog Acq Unit Cost	N/A	N/A	407.5	408.4

**15. Contract Information (Then-Year Dollars in Millions):**

**a. Procurement --  
T-AKE Construction:**

NASSCO, SAN DIEGO, CA

N00024-02-C-2300, FPI

Award: October 18, 2001

Definitized: October 18, 2001

Initial Contract Price		
Target	Ceiling	Qty
\$689.5	\$788.1	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1826.0	\$2007.0	6	\$1894.7	\$1950.0

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T-AKE, December 31, 2003

**15a. Contract Information (Cont'd):**

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.7	\$9.4
Cumulative Variances To Date	\$-29.3	\$-23.2
Net Change	\$-31.0	\$-32.6

**Explanation of Change:**

NASSCO's Cost Performance Report (CPR) data shows an unfavorable cumulative cost variance (CV) of \$-29.3M, resulting in a Net Change of \$-31M. The CV on the T-AKE 1 is due to non-recurring engineering costs incurred in response to the Dynamic Load Approach (DLA) analysis results and some rework in the Functional and Transition Design process. Material costs have risen, particularly in composite storage devices and electrical cable.

NASSCO's CPR data shows an unfavorable cumulative schedule variance of \$-23.2M, resulting in a Net Change of \$-32.6M. This is driven by material costs that are being expended late relative to the contract delivery schedule. Appropriately, NASSCO is delaying delivery of materials to build the ships to match their revised delivery dates reflected in the November 20, 2003 Major Milestone Schedule.

**Contract Comments:**

On July 18, 2003, the FY 2003 fourth ship option was exercised at NASSCO. On January 27, 2004, the FY 2004 fifth and sixth ship options were 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</u> (FY96-03)	<u>Budget Year</u> (FY04)	<u>Budget Year</u> (FY05)	<u>Balance To Complete</u> (FY06-07)	<u>Total</u>
RDT&E	25.9	-	-	-	25.9
Procurement	1593.8	723.9	792.0	1356.8	4466.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1619.7	723.9	792.0	1356.8	4492.4

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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
1997				3.7	3.6
1998				3.9	3.8
1999				5.9	5.9
2000				11.4	11.5
Subtotal				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	89.5	392.2	481.7	488.9
2001	1		347.8	347.8	357.8
2002	1		348.5	348.5	360.8
2003	1		368.9	368.9	386.3
2004	2		681.9	681.9	723.9
2005	2		735.4	735.4	792.0
2006	2		787.9	787.9	862.4
2007	1		443.6	443.6	494.4
2008					
2009					
2010					
Subtotal	11	89.5	4106.2	4195.7	4466.5

	Qty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	11	89.5	4106.2	4221.7	4492.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

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T-AKE, December 31, 2003

**17b. Delivery/Expenditure Information (Cont'd):**

b. Total Expenditures To Date (In Millions of Dollars): \$ 233.8

Percent Total Program Expended: 5.2%

**18. Operating and Support Costs:**

a. Assumptions and Ground Rules --

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 a Navy Center for Cost Analysis (NCCA) Operating and Support Cost Analysis Model (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 function was used in conjunction with the ship's notional operating schedule (one VR per ship per operating quarter between Depot Level Maintenance periods) to generate the cost of VRs.

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.

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T-AKE, December 31, 2003

18a. Operating and Support Costs (Cont'd):

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.

There is no antecedent system for this program.

The assumed service life for the T-AKE is 40 years.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

Cost Element	T-AKE Avg Annual Cost per T-AKE Ship	No Antecedent
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
Total	28.3	N/A

Total O&S Cost	T-AKE	No Antecedent
BY\$ (In Millions)	12460.0	N/A
TYS (In Millions)	19434.0	N/A

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18b. Operating and Support Costs (Cont'd):

Report Creation Date: 03/22/2004 9:24:18 AM

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# A-4 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, 2003

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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 G80718 (Army) (Shared)  
APPN 2033 ICN GE0163 (Army) (Shared)

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BFVS A3 Upgrade, December 31, 2003

## **5. References:**

SAR Baseline (Production Estimate):

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline (APB) dated April 9, 2001.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated February 25, 2003.

## **6. Mission and Description:**

The M2A3/M3A3 provides infantry and cavalry fighting vehicles with digital command and control capabilities, significantly increased situational awareness, enhanced lethality, survivability, and improved sustainability and supportability. Two second generation forward looking infrared (FLIR) sensors in the Improved Bradley Acquisition System (IBAS) and Commander's Independent Sight (CIV) provide "hunter-killer target handoff" capability with ballistic fire control system; embedded diagnostics; integrated combat command and control (IC3) digital communications suite hosting Force XXI Battle Command Brigade-and-Below (FBCB2) package with digital maps, messages and friend/foe situational awareness; position navigation system with Global Positioning System (GPS) and inertial navigation system; and enhanced squad situational awareness with squad leader display integrated into vehicle digital images and IC3.

## **7. Executive Summary:**

A conditional Material Release was approved in November 2000, for 88 vehicles fielded to 41D. In January 2002, a follow-on conditional Materiel Release was approved by TACOM CG to field 223 M2A3/M3A3 vehicles to 1CD and seven to TRADOC. The conditional Materiel Release was approved with 11 conditions, of which two remain open. Both conditions have a get well date of March 31, 2004. These two conditions are the integration of the Improved Driver's Vision System and a solid state hard drive to eliminate FBCB2 lock-up.

Six M2A3/M3A3 vehicles underwent three Follow-on Production Tests, conducted September 2002, through March 2003. The tests were conducted in accordance with the operational mission profile to verify contract and specification compliance. No major issues were identified from testing.

Since IOT&E in 2000, PM BFVS and PM FBCB2 have made significant improvements in the area of digital communications. These improvements consist of continuing maturity of both FBCB2 and M2A3/M3A3 software, and upgrading the M2A3/M3A3 Turret Processor Unit and the FBCB2 V4 computer. During a digital command and control/situation awareness excursion at Aberdeen Proving Ground (APG), the M2A3/M3A3 completed 100% of selected FBCB2 Block I and II Joint Variable Message Format. However, vehicle vibration caused a degradation of the FBCB2 Integrated Drive Electronics (IDE) hard drive performance. The solution is to use a similar concept as used in the M1A2 SEP, a solid-state hard drive design. The solid-state hard drive was developed for use with the V4 computer and successfully tested at contractor facilities, accumulating over 3,000 miles

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**7. Executive Summary (Cont'd):**

without an incident of FBCB2 becoming non mission capable due to hard drive failure.

The M2A3/M3A3 was approved for full-rate production and Type Classification Standard by the M2A3/M3A3 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 could be converted to a multiyear contract. On May 2, 2001, the contract for 109 M2A3/M3A3 fighting vehicles was signed. The contract conversion was signed June 2001, for a total of 389 M2A3/M3A3 vehicles to be procured via a three year multiyear contract (FY01-FY03). The third and final year of the multiyear contract was awarded in March 2003. The total quantity of M2A3/M3A3 vehicles to be procured has been reduced from 1037 to 595.

**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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BFVS A3 Upgrade, December 31, 2003

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

Acronym: PQT--Production Qualification Test

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
The command & control system must comply with the Army Standard Protocol	MIL-STD- 188-220	MIL-STD- / MIL-STD- 188-220 / 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 Command / and and / Below Control /	Future Battle Command Brigade and Below	Future Battle Command Brigade and Below
Lethality: Command and Control: Improve the target acquisition and fire control system	Dual track and auto track with	Dual / Dual track / track and / and auto / aided track / track with / with	Dual track and aided track with	Dual track and aided track with

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BFVS A3 Upgrade, December 31, 2003

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>
	<u>IBAS and CIV</u>	<u>IBAS and/ CIV</u>	<u>IBAS /</u>	<u>IBAS</u>	<u>IBAS</u>
Survivability:					
NBC protection for dismount element while in vehicle	Ventila- ted face pieces	Ventila- ted face/ pieces	Ventila- ted face/ pieces	Ventila- ted face pieces	Ventila- ted face pieces
Mobility:					
Ability of the BFVS to navigate in all weather conditions with GPS (accuracy plus or minus in meters)	16	16	/ 16	16	16
The driver display will present navigational information	GPS informa- tion and map	GPS informa- tion and/ map	/ GPS informa- tion	GPS Informat ion	GPS Informat ion and map
Maintain cross- country mobility with main battle tank	M1A2 Tank	M1A2 Tank	/ M1A2 Tank	M1A2 Tank	M1A2 Tank
RAM (Mean Miles Between Failure)	500	500	/ 400	530	530
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

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10a. Performance Characteristics (Cont'd):

Integrated Logistics Support: System fault isolation capability was demonstrated in the M2A3/M3A3 IOT&E 1st quarter FY01. The System Evaluation Report of the M2A3/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 --

(CH-1) RAM (Mean Miles between Failure) changed from 417 to 530 based on data from Extended Follow-on Production Tests of the M2A3/M3A3.

11. Total Program Cost and Quantity (Dollars in Millions):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	529.6	532.6	532.7
Procurement	3194.6	2247.8	2179.2
Non-recurring	(25.8)		(25.9)
Recurring	(2784.1)		(1873.3)
Total Rollaway	(2809.9)		(1899.2)
Training Devices	(31.8)		(34.6)
Other	(217.4)		(145.7)
Total Other Wpn Sys	(249.2)		(180.3)
Peculiar Support	(49.9)		(40.5)
Initial Spares	(85.6)		(59.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2001 Base-Year \$	3724.2	2780.4	2711.9
Escalation	135.6	26.7	-0.3
Development (RDT&E)	(-21.0)	(-24.1)	(-24.2)
Procurement	(156.6)	(50.8)	(23.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3859.8	2807.1	2711.6
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	926	595	595
Total	926	595	595

Note: Excludes 8 RDT&E prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

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**11b. Total Program Cost and Quantity (Cont'd):**

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 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 M2A3/M3A3 vehicles. 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.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (FEB 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	2780.4	2711.9	
(2) Quantity	595	595	
(3) Unit Cost	4.673	4.558	-2.46
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	2247.8	2179.2	
(2) Quantity	595	595	
(3) Unit Cost	3.778	3.663	-3.04

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BFVS A3 Upgrade, December 31, 2003

**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	-4.1	-16.7	-	-20.8
Quantity	-	-1019.7	-	-1019.7
Schedule	-	+0.1	-	+0.1
Engineering	-	+6.0	-	+6.0
Estimating	+4.0	+10.1	-	+14.1
Other	-	-	-	-
Support	-	-56.7	-	-56.7
Subtotal	-0.1	-1076.9	-	-1077.0
Current Changes:				
Economic	-	+2.0	-	+2.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.2	-	-0.2
Other	-	-	-	-
Support	-	-73.0	-	-73.0
Subtotal	-	-71.2	-	-71.2
Total Changes	-0.1	-1148.1	-	-1148.2
Current Estimate	508.5	2203.1	-	2711.6

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	-	-910.4	-	-910.4
Schedule	-	-	-	-
Engineering	-	+2.5	-	+2.5
Estimating	+3.1	-2.6	-	+0.5
Other	-	-	-	-
Support	-	-37.8	-	-37.8
Subtotal	+3.1	-948.3	-	-945.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.2	-	-0.2
Other	-	-	-	-
Support	-	-66.9	-	-66.9
Subtotal	-	-67.1	-	-67.1
Total Changes	+3.1	-1015.4	-	-1012.3
Current Estimate	532.7	2179.2	-	2711.9

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-0.3
	Economic adjustment for negative program change. (Economic)	N/A	+2.3
	Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
	Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
	Realignment of Initial Spares funding to support the 3rd Armored Cavalry Regiment (3ACR), which is not being fielded with M2A3/M3A3 vehicles. (Support)	-10.0	-10.8
	Realignment of Peculiar Support funding to support the 3ACR, which is not being fielded with M2A3/M3A3 vehicles. (Support)	-7.0	-7.6
	Realignment of Other Support funding to support the 3ACR, which is not being fielded with M2A3/M3A3 vehicles. Other Support consists of Initial Consummables, New Equipment Training, Contractor Logistic Support, and Program Closure. (Support)	-50.1	-54.8
	Procurement Subtotal	-67.1	-71.2

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Changes									PAUC
Init Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Prod Est
2.52	-0.241	+0.397	+0.264	+0.219	+0.847	--	+0.161	+1.65	4.17

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
4.17	-0.032	+0.606	--	+0.010	+0.023	--	-0.218	+0.389	4.56

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BFVS A3 Upgrade, December 31, 2003

**14b. Unit Cost and Other History (Cont'd):**

**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	
2.26	-0.222	+0.189	+0.264	+0.208	+0.761	--	+0.161	+1.36	3.62

**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	-0.025	+0.300	--	+0.010	+0.017	--	-0.218	+0.084	3.70

**c. Schedule, Cost, and Quantity History**

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	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	2711.6
Total Quantity	N/A	1602	926	595
Prog Acq Unit Cost	N/A	2.5	4.2	4.6

**15. Contract Information (Then-Year Dollars in Millions):**

**a. Procurement --**

**A3 MY Contract:**

United Defense, L.P., York, PA

DAAE07-01-C-M016, FFP

Award: June 1, 2001

Definitized: June 1, 2001

**Initial Contract Price**

Target	Ceiling	Qty
\$593.4	\$593.4	389

**Current Contract Price**

Target	Ceiling	Qty
\$593.4	\$593.4	389

**Estimated Price At Completion**

Contractor	Program Manager
\$593.4	\$593.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

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15. Contract Information (Cont'd):

Contract Comments:

A single year contract was awarded to United Defense which was converted to a multiyear contract on June 1, 2001, after approval of the M2A3/M3A3 O&S Cost Certification, on May 2, 2001. A total of 389 M2A3/M3A3 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 (FY94-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	508.5	-	-	-	508.5
Procurement	2069.6	89.5	44.0	-	2203.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2578.1	89.5	44.0	-	2711.6

b. Annual Summary -- BFVS A3 Upgrade

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2001 Dollars Nonrec</u>	<u>Rollaway FY 2001 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Rollaway FY 2001 Dollars Nonrec</u>	<u>Rollaway FY 2001 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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

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**16b. Program Funding Summary (Cont'd):**

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 \$
2000	80		280.3	323.1	323.8
2001	109	3.9	337.0	390.7	395.3
2002	142	2.1	368.2	384.0	392.7
2003	138		350.0	373.6	387.2
2004				85.2	89.5
2005				41.2	44.0
Subtotal	595	25.9	1873.3	2179.2	2203.1

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	595	25.9	1873.3	2711.9	2711.6

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	368	368

Percent Total Program Quantities Delivered: 61.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2211.6

Percent Total Program Expended: 81.6%

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.

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**18a. Operating and Support Costs (Cont'd):**

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

Report Creation Date: 3/18/2004 11:04:51 AM

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A-18 MCS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: MCS

AS OF DATE: December 31, 2003

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1. Designation and Nomenclature (Popular Name): MANEUVER CONTROL SYSTEM (MCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Project Manager, Ground Combat	COL Harold J. Greene
Command and Control (PM GCC2)	Assigned: August 22, 2003
ATTN: SFAE-C3T-GCC2	DSN 992-4041; COMM 732-532-4041
Fort Monmouth, NJ 07703-5405	harold-grcne@us.army.mil

4. Program Elements/Procurement Line Items:

RDT&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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## **5. References:**

SAR Baseline (Development Estimate):

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline dated December 19, 1997.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 9, 2003.

## **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. The use of Common Hardware/Systems (CHS) computers and peripheral hardware enable the MCS to capitalize on state of the art, ruggedized, commercial equipment and reduce life cycle costs. MCS utilizes ruggedized commercial notebook computers to enhance software development, support and training.

## **7. Executive Summary:**

The MCS Operational Requirements Document (ORD) was approved by the Joint Requirements Oversight Council on December 10, 2002. The MCS software had shown improved performance and stability as evidenced at the Field Test 5 in September 2002 and the IOT&E had been on track for April 2003. Subsequently, that test window become unavailable due to a change in priorities for the Army and the MCS test unit. Due to other priorities, the Army was not able to commit to a test unit and test date at that time.

During 2003, the MCS Acquisition Program Baseline was approved by the Defense Acquisition Executive October 9, 2003. The MCS IOT&E has been scheduled based on the deployment for Operation Iraqi Freedom (OIF) 2 rotation, potential test units become available. Currently, the IOT&E test and subsequent milestones are being planned for FY05. In December 2003, an Acquisition Decision Memorandum (ADM) approved the Army's request to increase the Low Rate Initial Production (LRIP) quantities stated in the August 6, 1999 ADM by 809 systems, to a total of 1294. These additional systems will be production representative articles, and will be undergoing continuous operational assessment and evaluation in given the unique opportunity created by units deploying in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF).

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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:

MCS Initial Operational Test and Evaluation (IOT&E) was delayed due to Operation Iraqi Freedom (OIF) 1 deployments, which included the MCS test unit. Based on the OIF 2 deployment, potential test units are becoming available and the MCS IOT&E test and subsequent milestones are now being planned for FY2005.

## 9. Schedule:

### a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
BLOCK IV			
Award MCS Contract	N/A	SEP 1996	SEP 1996
PEO C3S target for 4ID upgrade	N/A	N/A	SEP 2000
IOT&E			
Start	N/A	MAY 2004	OCT 2004 (Ch-1)
Complete	N/A	JUL 2004	NOV 2004 (Ch-1)
Milestone III	N/A	DEC 2004	MAY 2005 (Ch-1)
FUE	N/A	FEB 2005	JUN 2005 (Ch-1)
BLOCK V			
OA/OT			
Start	N/A	MAY 2005	N/A (Ch-2)
Complete	N/A	JUL 2005	N/A (Ch-2)
AN/TYQ-45 (CHS)			

### ACRONYMS

ABCS - Army Battle Command Systems  
 AROC - Army Requirements Oversight Council  
 Block IV - MCS Version 6X Software

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**9a. Schedule (Cont'd):**

Block V - MCS Version 7X Software  
 CHS - Common Hardware Systems  
 FUE - First Unit Equipped  
 IOT&E - Initial Operational Test and Evaluation  
 JROC - Joint Requirements Oversight Committee  
 OA/OT - Operational Assessment/Operational Test  
 OIF - Operation Iraqi Freedom  
 PEO C3S - Program Executive Office, Communications, Command & Control Systems

**b. Current Change Explanations --**

(Ch-1) MCS IOT&E was delayed due to OIF 1 deployments, which included the MCS test unit. Based on OIF 2 deployment, potential test units are becoming available and the IOT&E test and subsequent milestones are being planned for FY2005.

	FROM	TO
IOT&E		
Start	TBD	Oct 2004
Complete	TBD	Nov 2004
Milestone III	TBD	May 2005
FUE	TBD	Jun 2005

(Ch-2) Current Estimates for the MCS IOT&E Block V OA/OT Start and Complete have been changed from TBD to N/A. A Chief of Staff of the Army Decision Memorandum dated November 12, 2003 directed a new architecture to include ABCS Version 6.4 (MCS Block IV) only, not ABCS Version 7.0 (MCS Block V). As such, MCS Block V is no longer applicable.

	FROM	TO
Block V		
OA/OT		
Start	TBD	N/A
Complete	TBD	N/A

**10. Performance Characteristics:**

**a. Performance --**

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
BLOCK IV				
AN/TYQ-45/53 (CHS)				
Purge Memory (within xx mins)	3	N/A / N/A	N/A	N/A
Mean Time to Repair Organizational (hr)	.5	N/A / N/A	N/A	N/A

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
KPP-1					
Display Common Operational Picture per ORD para 4.1.1.1 and BLK IV function- ality in Table A					
Accuracy per Appendix K for friendly forces displayed	N/A	90% / 90%	TBD	90%	(Ch-1)
Accuracy per Appendix K for enemy forces displayed	N/A	95% / 95%	TBD	95%	(Ch-1)
Accuracy per Appendix K for Combined Arms Operations over- lays displayed	N/A	90% / 90%	TBD	90%	(Ch-1)
KPP-2	N/A	/ N/A	TBD		
Interoperability per ORD para 4.1.2 and BLK IV functionality in Table A					
With joint (i.e. TCO) systems per Table B with 90% accuracy per Appendix K	N/A	100% of / 100% of all IERs/ critical met / IERs met /	TBD	100% of all IERs met	(Ch-1)
With all other systems per Table C with 90% accuracy per Appendix K	N/A	100% of / 100% of all IERs/ critical met / IERs met /	TBD	100% of all IERs met	(Ch-1)
KPP-3					
Disseminate (create and exchange) Orders per ORD para 4.1.3 and Block IV symbology in Table E					

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Accuracy per Appendix K for Warning Orders, Fragmentary Orders and Graphics with FBCB2	N/A	90% / 90%	TBD	90%	(Ch-1)
Accuracy per Appendix K for Warning Orders, Fragmentary Orders, Operations Plans, Operations Orders and Graphics with all other ABCS systems	N/A	90% / 90%	TBD	90%	(Ch-1)
BLOCK IV			TBD		
Common Operational Picture			TBD		
Integrity	N/A	N/A	N/A	N/A	(Ch-2)
Speed			TBD		
Standards Met	N/A	N/A	N/A	N/A	(Ch-2)
Data Consistency	N/A	N/A	N/A	N/A	(Ch-2)
Interoperability			TBD		
With Joint Systems	N/A	N/A	N/A	N/A	(Ch-2)
Limited Messages Information Exchange Reqm'ts (IERs)			TBD		
Disseminate Orders	N/A	N/A	N/A	N/A	(Ch-2)
Integrity			TBD		
Speed	N/A	N/A	N/A	N/A	(Ch-2)
BLOCK V					
KPP-1					
Display Common Operational Picture per ORD para 4.1.1.2 and BLK V functionality in Table A					
Accuracy per Appendix K for friendly forces displayed	N/A	90% / 90%	N/A	N/A	(Ch-3)

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Accuracy per Appendix K for enemy forces displayed	N/A	95% / 95%	N/A	N/A	(Ch-3)
Accuracy per Appendix K for Combined Arms Operations over- lays displayed	N/A	90% / 90%	N/A	N/A	(Ch-3)
KPP-2 Interoperability per ORD para 4.1.2 and BLK V functionality in Table A					
With joint systems per Table B with 90% accuracy per Appendix K	N/A	100% of / 100% of all IERs/ critical met / IERs met	N/A	N/A	(Ch-3)
With all other systems per Table C with 90% accuracy per Appendix K	N/A	100% of / 100% of all IERs/ critical met / IERs met	N/A	N/A	(Ch-3)
KPP-3	N/A	/			
Disseminate (create and exchange) Orders per ORD para 4.1.3.3 and Block V symbology in Table E					
Accuracy per Appendix K for Warning Orders, Fragmentary Orders and Graphics with FBCB2	N/A	90% / 90%	N/A	N/A	(Ch-3)
Accuracy per Appendix K for Warning Orders, Fragmentary Orders, Operations Plans, Operations Orders and Graphics with	N/A	90% / 90%	N/A	N/A	(Ch-3)

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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>
all ABCS systems				
b. Current Change Explanations --				
(Ch-1) MCS Key Performance Parameters 1, 2, and 3 have been added to the MCS Operational Requirements Document (ORD) which was approved by the Joint Requirements Oversight Committee (JROC) in December 2003.				
(Ch-2) These MCS Block IV performance parameters have been changed to N/A as they are no longer a requirement for the MCS Program per the latest approved ORD dated December 2003.				
(Ch-3) MCS Block V performance parameters are no longer a requirement for the MCS program. Block V essentially represented ABCS 7.0. The Army has decided to freeze ABCS development at ABCS 6.4 and not proceed with Block V (ABCS 7.0) development.				

11. Total Program Cost and Quantity (Dollars in Millions):

	Development <u>Estimate (SAR)</u>	Approved Program (APB)	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	50.9	175.3	175.8
Procurement	56.0	447.4	138.0
Flyaway	(56.0)		(60.1)
Other Wpn System Costs			(69.8)
Other Weapons Systems C			(0.0)
Total Other Wpn Sys			(69.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(8.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1980 Base-Year \$	106.9	622.7	313.8
Escalation	125.2	812.2	327.9
Development (RDT&E)	(55.4)	(179.0)	(177.0)
Procurement	(69.8)	(633.2)	(150.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	232.1	1434.9	641.7
b. Quantity --			
Development (RDT&E)	N/A	0	0
Procurement	947	5776	4642
Total	947	5776	4642

Unit of measure quantities include the MCS Notebook Computer Unit - Lap top Rugged (NCU-R, #CF73), and ABCS Information Server - Device (AIS-D) suite of

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**11b. Total Program Cost and Quantity (Cont'd):**

computers, including peripherals and unique as well as commercial-off-the-shelf software.

An Acquisition Decision Memorandum (ADM) dated December 2003 approved the Army's request to increase the Low Rate Initial Production (LRIP) quantities stated in the August 6, 1999 ADM by 809 systems, to a total of 1294.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**12. Unit Cost Summary:**

	UCR Baseline (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1980 BY\$)	622.7	313.8	
(2) Quantity	5776	4642	
(3) Unit Cost	0.108	0.068	-37.04
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1980 BY\$)	447.4	138.0	
(2) Quantity	5776	4642	
(3) Unit Cost	0.077	0.030	-61.04

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**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	-11.9	-12.1	-	-24.0
Quantity	-	+2264.6	-	+2264.6
Schedule	-	+835.1	-	+835.1
Engineering	-	+483.3	-	+483.3
Estimating	+213.1	-3032.8	-	-2819.7
Other	-	-	-	-
Support	-	+364.4	-	+364.4
Subtotal	+201.2	+902.5	-	+1103.7
Current Changes:				
Economic	+0.1	+10.2	-	+10.3
Quantity	-	-416.3	-	-416.3
Schedule	-	-19.9	-	-19.9
Engineering	-	-	-	-
Estimating	+45.2	-198.2	-	-153.0
Other	-	-	-	-
Support	-	-115.2	-	-115.2
Subtotal	+45.3	-739.4	-	-694.1
Total Changes	+246.5	+163.1	-	+409.6
Current Estimate	352.8	288.9	-	641.7

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	-	+924.7	-	+924.7
Schedule	-	-76.6	-	-76.6
Engineering	-	+362.2	-	+362.2
Estimating	+104.6	-936.3	-	-831.7
Other	-	-	-	-
Support	-	+124.5	-	+124.5
Subtotal	+104.6	+398.5	-	+503.1
Current Changes:				
Quantity	-	-170.3	-	-170.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+20.3	-99.6	-	-79.3
Other	-	-	-	-
Support	-	-46.6	-	-46.6
Subtotal	+20.3	-316.5	-	-296.2
Total Changes	+124.9	+82.0	-	+206.9
Current Estimate	175.8	138.0	-	313.8

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13b. Cost Variance Analysis (Cont'd):

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)	-0.2	-0.2
Increase in MCS IOT&E, Development/Support and follow on software efforts for COE, Joint Interoperability and Safety. (Estimating)	+20.5	+45.4
RDT&E Subtotal	+20.3	+45.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+5.6
Economic adjustment for negative program change. (Economic)	N/A	+4.6
Quantity variance associated with decrease of 3987 units from 8629 to 4642 to realign with the Army's directed architecture (MCS Version 6.4). (Quantity)	-170.3	-416.3
Decrease of annual procurement buy profile due to the deletion of Army National Guard and Reserves. (QR)(Schedule)	0.0	-19.9
Decrease in estimating due to a change in requirements to align with the Army's directed architecture (MCS Version 6.4). (Estimating)	-99.6	-198.2
Decrease in Initial Spares due to the reduction of quantities of hardware being procured. (QR)(Support)	-19.3	-46.3
Decrease in Other Wpn System Costs (support and fielding) due to a decrease in hardware procurement to align with the Army's directed architecture (MCS Version 6.4). (QR)(Support)	-27.3	-68.9
Procurement Subtotal	-316.5	-739.4

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	
0.245	-0.003	+0.202	+0.176	+0.104	-0.640	--	+0.054	-0.107	0.138

**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	--	+0.291	+0.176	+0.104	-0.696	--	+0.054	-0.071	0.062

**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	MAY 2005
FUE	N/A	N/A	N/A	JUN 2005
Total Cost	N/A	232.1	N/A	641.7
Total Quantity	N/A	947	N/A	4642
Prog Acq Unit Cost	N/A	0.3	N/A	0.1

**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

Initial Contract Price  
Target      Ceiling      Qty  
 \$63.1      \$95.1      1

Current Contract Price      Estimated Price At Completion  
Target      Ceiling      Qty      Contractor      Program Manager  
 \$170.7      \$0.0      9      \$170.7      \$170.7

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**15a. Contract Information (Cont'd):**

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.5	\$0.0
Net Change	\$0.5	\$0.0

Explanation of Change:

Net cost and schedule variances are considered insignificant.

Contract Comments:

The initial contract price has increased as a result of rebaselining the contract. The current contract price and Performance Measurement Baseline reflect recently definitized contract modifications to accommodate program changes.

**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 (FY06-11)</u>	<u>Total</u>
RDT&E	226.9	39.1	24.8	62.0	352.8
Procurement	74.3	42.8	31.1	140.7	288.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	301.2	81.9	55.9	202.7	641.7

b. Annual Summary -- MCS BLOCK IV

Appropriation: 2040 - Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY 1980 Dollars Nonrec</u>	<u>Flyaway FY 1980 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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				20.2	40.6
2004				19.2	39.1
2005				12.0	24.8
2006				7.8	16.4
2007				5.5	11.8

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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 \$
2008				3.2	6.9
2009				3.1	6.9
2010				4.4	10.0
2011				4.3	10.0
Subtotal				175.8	352.8

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	11.9	23.3
2001	246		7.6	15.5	30.6
2002			1.4	5.0	10.0
2003			1.5	5.2	10.4
2004	809		7.9	21.0	42.8
2005	507		7.0	15.0	31.1
2006	1646		12.7	21.5	45.2
2007	416		6.1	19.5	41.9
2008			0.8	1.8	4.0
2009			0.7	1.3	3.0
2010	242		4.4	9.9	22.5
2011	537		4.3	10.4	24.1
Subtotal	4642		60.1	138.0	288.9

FY2002 recurring flyaway (RFA) costs are for System Project Management.  
FY2003 RFA costs are for System Project Management and the costs for TRADOC  
schools hardware retrofits. FY2008 RFA costs are for System Project  
Management and Interim Contractor Support (ICS). FY2009 RFA costs are for  
System Project Management.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	4642		60.1	313.8	641.7

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**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: 10.4%

b. Total Expenditures To Date (In Millions of Dollars): \$ 301.2

Percent Total Program Expended: 46.9%

**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 at Milestone III. The total annual costs (all systems) represent total program O&S divided by 20 years.

**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 Millions)

Cost Element	MCS BLOCK IV Total Annual Cost (All Systems)	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	1.2	N/A
Depot Level Repairables	1.3	N/A
Software Maintenance/Sup	0.9	N/A
Total	3.4	N/A

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18b. Operating and Support Costs (Cont'd):

Total O&S Cost	MCS BLOCK IV	No Antecedent
BY\$ (In Millions)	67.4	N/A
TY\$ (In Millions)	161.5	N/A

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A-10 FMTV

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: FMTV

AS OF DATE: December 31, 2003

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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 Mr. David Dopp  
PM, Medium Tactical Vehicles Assigned: July 23, 2003  
ATTN: SFAE-CSS-TV-M DSN 786-8665; COMM (586) 574-8665  
Warren, MI 48397-5000 doppd@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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## **5. References:**

SAR Baseline (Production Estimate):

Army Acquisition Executive (AAE) Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated May 25, 2003.

## **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 FMTV A1 is the configuration currently in production.

## **7. Executive Summary:**

The FMTV A1 Competitive Rebuy acquisition strategy was approved by the Army Acquisition Executive on January 22, 2000, and 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 began on April 17, 2003 with the award of a five-year multiyear production contract to Stewart & Stevenson Tactical Vehicle Systems, Sealy, TX.

As of February 27, 2003, a total of 20,461 FMTV vehicles have been accepted or conditionally accepted by the Army, of which 19,977 have been fielded to units.

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## 8. Threshold Breaches:

### a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

### b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

## 9. Schedule:

### a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I/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
First Production Delivery	MAY 1993	N/A	MAY 1993
ASARC IIIB	AUG 1995	AUG 1995	AUG 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
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
A1 Competitive Rebuy Production Contract Award	N/A	MAR 2003	APR 2003 (Ch-1)
A1 Competitive Rebuy FUE	N/A	FEB 2005	FEB 2005 (Ch-2)

### Acronyms:

ASARC - Army Systems Acquisition Review Council

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9a. Schedule (Cont'd):

DAB - Defense Acquisition Board  
 FUE - First Unit Equipped  
 IOC - Initial Operational Capability  
 JSOR - Joint Service Operational Requirement

b. Current Change Explanations --

(Ch-1) Current Estimate reflects A1 Rebuy contact award on April 17, 2003, previously estimated for March 2003.

(Ch-2) New schedule milestone reflected in the FMTV APB approved March 25, 2003.

10. Performance Characteristics:

a. Performance --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>	
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	
LMTV Payload (tons)	2.5	3.5 / 2.5	2.5	3.5	(Ch-1)
MTV Payload (tons)	5	8 / 5	5	8	(Ch-1)
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	48 / 30	30	48	(Ch-1)
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	10000 / 10000	12000	10000	
Truck, Cargo (MTV)	2700	10000 / 10000	12000	10000	
Tractor	3300	3800 / 3800	4800	3800	
Wrecker	2300	2800 / 2800	4800	2800	
Trailer (LMTV)	2800	12000 / 12000	5000	12000	
Trailer (MTV)	2600	12000 / 12000	5000	12000	

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
MMBOMF (miles)					
Truck, Cargo (LMTV)	2228	2200 / 2200	>8279	2200	
Truck, Cargo (MTV)	2035	2000 / 2000	6386	2000	
Tractor	2480	2500 / 2500	3606	2500	
Wrecker	1875	1900 / 1900	4720	1900	
Trailer (LMTV)	2056	2100 / 2100	5000	2100	
Trailer (MTV)	1913	1900 / 1900	5000	1900	
MMHPOM					
Truck, Cargo (LMTV)	.01	.002 / .004	.0037	.002	(Ch-1)
Truck, Cargo (MTV)	.011	.003 / .006	.0048	.003	(Ch-1)
Tractor	.012	.0028 / .0055	.0062	.0028	(Ch-1)
Wrecker	.015	.0032 / .0064	.0069	.0032	(Ch-1)
Trailer (LMTV)	.003	.0007 / .0014	.0003	.0007	(Ch-1)
Trailer (MTV)	.003	.0005 / .001	.0006	.0005	(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-141, C-130, C-5, C-17 / C-141, C-130, C-5, C-17	C-130	C-130	
Air Transportation	C-141	N/A / N/A	C-141	C-141	
Mobility: (vehicle cone index)					
Truck Cargo	25	25 / 25	25	25	
Truck & Trailer	35	35 / 35	30	35	
Combination					
LHS Payload (tons)	N/A	8.5 / 7.5	TBD	8.5	(Ch-1)
Dump truck Payload (tons)	N/A	10 / 8	TBD	10	(Ch-1)

Acronyms:

GCW - Gross Combined Weight  
GVW - Gross Vehicle Weight  
MMBOMF - Mean Miles Between Operational Mission Failure  
MMBOMF - Mean Miles Between Operational Mission Failure  
MMHPOM - Maintenance Man hours/Operating Mile (Unit Level)  
LHS - Load Handling System  
LMTV - Light Medium Tactical Vehicle  
MTV - Medium Tactical Vehicle

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**10b. Performance Characteristics (Cont'd):**

b. Current Change Explanations --

(Ch-1) Current Estimate values reflect technical objectives of the FMTV Operational Requirements Document (ORD) configuration which are outlined in the FMTV ABP, approved March 25, 2003. Demonstrated performance values reflect older FMTV A1 Production Verification Test (PVT) results. A1 Rebuy performance will be demonstrated/evaluated during A1 Rebuy PVT, beginning March 2004. The numbered changes below indicate an update of the current estimate to reflect technical objectives in lieu of previously reported technical thresholds.

<u>Characteristic</u>	<u>From</u>	<u>To</u>
LMTV Payload	2.5 tons	3.5 tons
MTV Payload	5 tons	8 tons
Fording Without Kit	30 inches	48 inches
MMHPOM Truck, Cargo (LMTV)	.004 hours	.002 hours
MMHPOM Truck, Cargo (MTV)	.006 hours	.003 hours
MMHPOM Tractor	.0055 hours	.0028 hours
MMHPOM Wrecker	.0064 hours	.0032 hours
MMHPOM Trailer (LMTV)	.0014 hours	.0007 hours
MMHPOM Trailer (MTV)	.001 hours	.0005 hours
LHS Payload	N/A	8.5 tons
Dump truck Payload	N/A	10 tons

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11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	121.8	134.1	136.0
Procurement	11472.4	14890.6	14194.7
Rollaway	(10677.1)		(13622.2)
Other Wpn Systems Cost	(777.3)		(572.3)
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	15024.7	14330.7
Escalation	7327.1	4631.4	3878.5
Development (RDT&E)	(-6.2)	(-4.5)	(-5.2)
Procurement	(7333.3)	(4635.9)	(3883.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	18921.3	19656.1	18209.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	85488	83185	83185
Total	85488	83185	83185

Note: Excludes 51 RDT&E prototypes from the SAR Baseline and 51 from the Current Estimate that are not considered fully configured.

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, 2003:

Country	Quantity	Estimated Cost
Thailand	117	22.8M
Saudi Arabia	99	\$13.5M
Jordan	51	11.5M
Macedonia	5	.7M
Greece	4	.6M
Djibouti	3	.7M

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11c. Total Program Cost and Quantity (Cont'd):

Taiwan	3	.4M
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d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (MAY 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	15024.7	14330.7	
(2) Quantity	83185	83185	
(3) Unit Cost	0.181	0.172	-4.97
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	14890.6	14194.7	
(2) Quantity	83185	83185	
(3) Unit Cost	0.179	0.171	-4.47

The difference between the UCR baseline and the current estimate for both PAUC and APUC are attributed to the incorporation of pricing from the competitively awarded A1 Rebuy contract in April 2003, and the use of those prices in developing estimates of the remainder of the program to reach the Army Acquisition Objective (AAO).

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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	-3.3	-3848.7	-	-3852.0
Quantity	-	-597.8	-	-597.8
Schedule	+1.5	+120.3	-	+121.8
Engineering	-	+1750.7	-	+1750.7
Estimating	+15.5	+3306.7	-	+3322.2
Other	-	-	-	-
Support	-	-396.1	-	-396.1
Subtotal	+13.7	+335.1	-	+348.8
Current Changes:				
Economic	+0.1	+607.8	-	+607.9
Quantity	-	-	-	-
Schedule	-	-503.4	-	-503.4
Engineering	+0.8	-	-	+0.8
Estimating	+0.6	-1187.8	-	-1187.2
Other	-	-	-	-
Support	-	+21.0	-	+21.0
Subtotal	+1.5	-1062.4	-	-1060.9
Total Changes	+15.2	-727.3	-	-712.1
Current Estimate	130.8	18078.4	-	18209.2

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	-	+1299.2	-	+1299.2
Estimating	+12.5	+2534.5	-	+2547.0
Other	-	-	-	-
Support	-	-250.0	-	-250.0
Subtotal	+12.7	+3529.1	-	+3541.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+0.7	-	-	+0.7
Estimating	+0.8	-834.0	-	-833.2
Other	-	-	-	-
Support	-	+27.2	-	+27.2
Subtotal	+1.5	-806.8	-	-805.3
Total Changes	+14.2	+2722.3	-	+2736.5
Current Estimate	136.0	14194.7	-	14330.7

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Development of an FMTV Armor Kit. (Engineering)	+0.7	+0.8
Additional cost for LHS Program due to test changes and test delays. (Estimating)	+0.8	+0.6
RDT&E Subtotal	+1.5	+1.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+218.2
Economic adjustment for negative program change. (Economic)	N/A	+389.6
Acceleration of annual procurement buy profile. (Schedule)	0.0	-503.4
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.1
Increase in non-recurring costs (engineering, testing, in-house program management, etc.) to reflect actual data, including the A1 Rebuy contract. (Estimating)	+3.4	+10.1
Decrease in recurring costs (hardware, engineering changes, etc.) to reflect actual data, including the A1 Rebuy contract. (Estimating)	-837.2	-1197.8
Revised estimate of Other Weapon Systems Cost. (Support)	+27.2	+21.0
Procurement Subtotal	-806.8	-1062.4

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC 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

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14a. Unit Cost and Other History (Cont'd):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.221	-0.039	--	-0.005	+0.021	+0.026	--	-0.005	-0.002	0.219

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	-0.039	--	-0.005	+0.021	+0.025	--	-0.005	-0.003	0.217

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	18209.2
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 truck quantities only in the December 1993 SAR. This unit of measure continues to be used in the Production Estimate and Current Estimate columns.

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**15. Contract Information (Then-Year Dollars in Millions):**

a. Procurement --

FMTV:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Stewart & Stevenson Svcs., 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>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1480.1	N/A	11345	\$1480.1	\$1480.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Contract Comments:

Total quantity procured to date on the R001 contract is:

Direct Army	10,741
Air Force	194
National Guard	180
Foreign Military Sales	223
Other	7
TOTAL	11,345

FMTV:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Stewart & Stevenson Svcs., Houston TX			
DAAE07-98-C-M005, Firm Fixed Price	\$1016.8	N/A	5390
Award: October 14, 1998			
Definitized: October 14, 1998			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2035.7	N/A	11375	\$2035.7	\$2035.7

Explanation of Change:

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Contract Comments:

Total quantity procured to date on the M005 contract is:

Direct Army	10,688
Air Force	92
National Guard	173

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**15. Contract Information (Cont'd):**

Army Reserve	156
Foreign Military Sales	63
Other	203
TOTAL	<u>11,375</u>

<u>FMTV:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Stewart & Stevenson Svcs., Houston TX			
DAAE07-03-C-S023, Firm Fixed Price	\$1189.5	N/A	7063
Award: April 17, 2003			
Definitized: April 17, 2003			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1202.4	N/A	7063	\$1202.4	\$1202.4

Explanation of Change:

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Contract Comments:

Total quantity procured to date on the S023 contract is:

Direct Army	<u>1,653</u>
TOTAL	<u>1,653</u>

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.

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FMTV, December 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 (FY88-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-23)</u>	<u>Total</u>
RDT&E	100.1	4.3	2.9	23.5	130.8
Procurement	3904.1	344.7	505.7	13323.9	18078.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4004.2	349.0	508.6	13347.4	18209.2

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				3.3	3.6
2004				3.9	4.3
2005				2.6	2.9
2006				1.7	1.9
2007				1.6	1.9
2008				1.8	2.1
2009				1.6	2.0
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				136.0	130.8

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	281.9	318.0	335.6
2000	1930	27.2	345.6	393.3	419.7
2001	2288	37.9	376.2	424.2	457.7
2002	2400	34.3	375.0	421.8	459.9
2003	3431	39.6	531.7	601.6	663.2
2004	1795	30.6	253.0	308.7	344.7
2005	2425	32.6	391.3	446.2	505.7
2006	2363	39.8	382.6	444.3	512.1
2007	2930	36.1	419.4	479.3	562.8
2008	2074	30.4	394.6	446.3	534.4
2009	2932	26.6	539.7	588.4	718.6
2010	2431	26.2	398.4	443.4	552.4
2011	2395	36.5	381.7	434.6	552.2
2012	2430	33.6	382.7	432.7	560.8
2013	3893	32.1	618.0	667.8	882.8
2014	3927	26.4	614.9	661.5	891.9
2015	3889	25.6	593.4	639.2	879.1
2016	3925	35.9	590.5	646.6	907.1
2017	3888	33.0	569.9	623.1	891.5
2018	3924	31.1	638.5	689.7	1006.6
2019	3815	25.3	597.0	641.8	955.4
2020	3812	24.5	584.7	628.4	954.1
2021	3810	24.2	573.0	616.2	954.4
2022	3810	23.5	561.8	604.4	954.8
2023		17.4		32.8	52.9
Subtotal	83185	912.3	12709.9	14194.7	18078.4

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	912.3	12709.9	14330.7	18209.2

**17. Delivery/Expenditure Information:**

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	20461	20461

Percent Total Program Quantities Delivered: 24.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3596

Percent Total Program Expended: 19.7%

Delivery refers to the number of Army trucks accepted or conditionally accepted to date as of February 27, 2003.

**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 will be 36,347 LMTVs and 42,796 MTVs operating of the total 83,185.

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

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	FMTV	FMTV
	Avg Annual Cost Per LMTV	Avg Annual Cost Per MTV
Indirect Costs	0.1	1.7
Total	2.3	11.2

Total O&S Cost	FMTV	FMTV
BY\$ (In Millions)	1672.0	9586.3
TY\$ (In Millions)	2689.7	17375.2

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N-17 JSOW

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: JSOW

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): Joint Standoff Weapon (JSOW), Baseline/Unitary

2. (U) DoD Component: Navy

Joint Participants:  
Air Force

3. (U) Responsible Office and Telephone Number:

Conventional Strike Weapons, PMA 201 Bldg 2272  
47123 Buse Road Unit #IPT  
Patuxent River, MD 20670-1547

CAPT D.A. Dunaway, USN  
Assigned: July 11, 2003  
DSN 757-7477; COMM (301)757-7477  
David.Dunaway@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)

FOR OPEN PUBLICATION

MAR 25 2004

8

SECURITY REVIEW  
DEPARTMENT OF DEFENSE

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**5. (U) References:**

Baseline/BLU-108

SAR Baseline (Production Estimate):

(U) Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated October 30, 1998.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 14, 2003.

Unitary

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) Approved Program Baseline (APB) dated April 26, 1995.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 14, 2003.

**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 lethal package, termed Broach, is produced by BAE Royal Ordnance and incorporates an advanced 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 Company (JSOW Prime Contractor) has maintained a 100% on-time delivery rating for JSOW-A weapons for 28 consecutive months. As of December 31 2003, 640 combat-ready JSOW-A weapons are available to Navy and Air Force warfighters.

The FY05 President's Budget reflects the Department's concurrence with the US Air Force decision to withdraw from the JSOW-A program after FY04. Approval of the decision included a transfer of \$100M in Total Obligation Authority (TOA) from the USAF to the US Navy to partially offset higher unit prices resulting from a single service procurement. Due to lost material economies of scale on the common truck components associated with a combined service buy, procurement of 358 JSOW-C weapons was moved outside the Future Years Defense Program (FYDP).

Supplemental funding was received and placed on contract in September 2003 to replenish the 300+ JSOW-A weapons expended in combat by the US Navy in support of Operation IRAQI FREEDOM. Weapon deliveries are slated to begin in November 2004.

The fifth JSOW-A Full Rate Production (FRP) contract was awarded to Raytheon Company on December 18 2003 to procure 307 JSOW-A weapons for the US Air Force, 231 weapons for the US Navy, jettison test vehicles in support of Joint Strike Fighter aircraft integration and other support items.

The Milestone Decision Authority approved Low Rate Initial Production (LRIP) of the JSOW-C variant on June 26 2003. On July 1 2003, the first JSOW-C LRIP contract was awarded for 42 weapons. Following completion of developmental flight-testing and a successful Operational Test Readiness Review, a follow-on contract for 97 JSOW-C LRIP-2 weapons was awarded on December 18 2003. LRIP-1 deliveries are scheduled to begin in September 2004 and complete in February 2005. LRIP-II deliveries begin in March 2005.

The December 2002 SAR reported on the completion of an 18-month-long engineering change to modify the JSOW control section to withstand the harsher vibration environment of the F-16 during high speed, low altitude captive carriage. In January 2003, developmental testing was successfully completed and formed the basis for entry into Follow-on Test and Evaluation (FOT&E). Eleven weapons configured with the modified control sections were launched from F-16 and F/A-18 aircraft during a highly successful FOT&E (OT-III) test program. The resulting report, issued November 26 2003 by Commander, Operational Test and Evaluation Force (COMOPTEVFOR), concluded that the weapon was operationally effective and suitable and recommended introduction to the warfighter. All US Air Force weapons have been retrofitted with the new control section design at no cost to the Government.

The FY04 President's Budget zeroed the JSOW-B Anti-armor weapon procurement to reflect the Air Force withdrawal and Navy production deferral of JSOW-B. On October 14 2003, the Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN(RD&A)) approved the Acquisition Program Baseline (APB) reflecting the changed requirement. The updated APB eliminated JSOW-B unique

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7. (U) Executive Summary (Cont'd):

schedule parameters and revised JSOW-A and JSOW-C cost parameters as a result of removal of JSOW-B procurement quantities and funding.

For JSOW-C the time allocated in the approved APB between Operational Evaluation (OPEVAL) start and Milestone III (MS-III) did not provide sufficient time to execute OPEVAL and publish the Beyond LRIP and Live Fire Test and Evaluation (LFT&E) Reports required at the MS-III decision meeting. As a result, the Program Manager submitted a Program Deviation Report (PDR) in August 2003 to notify the Navy Acquisition Executive (NAE) of this oversight. Also, to complete Unitary developmental testing objectives and reduce OPEVAL risk, the Program Manager submitted a PDR in September 2003 notifying the NAE that it would breach its OPEVAL start threshold date of September 2003. The program has since commenced OPEVAL (December 2003). An APB revision which contains these two changes is currently in routing to ASN(RD&A). The changes do not affect the FY05 full-rate production contract award or the Initial Operational Capability (IOC) dates, which are both within APB threshold.

The December 2002 SAR reported an issue with a premature initiation of the JSOW-C follow-through warhead during a sled test. Since that time, an engineering change to the follow-through bomb was incorporated and successfully demonstrated during static ground tests, sled testing and free flight events.

On June 11 2003, during final developmental test events against objective targets, the Unitary follow-through-bomb failed to detonate. The program initiated an engineering investigation. Preliminary analysis from the engineering investigation discovered an area of risk in the fuze. The program incorporated a fuze modification and successfully performed an end-to-end demonstration of the system during developmental testing.

On May 23 2003, COMOPTEVFOR completed an Operational Assessment of the JSOW-C Seeker and Autonomous Target Acquisition (ATA) system. Two areas of risk were identified. The program successfully tested updates associated with the risk areas during developmental testing. The weapon's Autonomous Targeting Acquisition (ATA) system performed well, achieving a Circular Error Probable of 4 feet. The Broach lethal package demonstrated the capability to penetrate hardened concrete targets.

COMOPTEVFOR commenced JSOW-C OPEVAL in December 2003. OPEVAL is expected to complete in FY04 to support a JSOW-C MSIII decision in September 2004.

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8. (U) Threshold Breaches:

Baseline/BLU-108

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- 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

Unitary

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:

In order to allow additional time to complete Unitary developmental testing objectives and reduce OPEVAL risk, the Program Manager submitted a Program Deviation Report to revise the OPEVAL start threshold date from September 2003

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**8c. (U) Threshold Breaches (Cont'd):**

to May 2004. The program has since entered OPEVAL (December 2003). These APB changes do not affect the FY05 production contract award or the Initial Operational Capability (IOC) date, which are both within APB threshold. MS-III date slipped from April 2004 to September 2004 as there was not sufficient time to execute OPEVAL and publish the Beyond LRIP and Live Fire Test and Evaluation (LFT&E) reports required at the MS-III decision meeting.

**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
DEVAL 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	N/A	N/A	(Ch-1)
Initial Operational Capability	SEP 2002	N/A	N/A	(Ch-1)
IOT&E	N/A	N/A		
Start	JUL 2000	N/A	N/A	
Complete (report)	MAR 2001	N/A	N/A	
MOT&E				
Start	N/A	N/A	N/A	(Ch-1)

(U) Acronyms:

DEMVAL - Demonstration and Validation  
DEV - Development  
DT&E - Developmental Test and Evaluation  
E&MD - Engineering and Manufacturing Development  
ENG - Engineering  
IOC - Initial Operational Capability  
IOT&E - Initial Operational Test and Evaluation  
LRIP - Low Rate Initial Production  
MOT&E - Multi-Service Operational Test and Evaluation  
OPEVAL - Operational Evaluation

b. Current Change Explanations --

(U) (Ch-1) BLU-108 MS-III, IOC and MOT&E schedule milestones were removed in APB update signed October 14, 2003 (milestones no longer apply as a result of removal of JSOW-B from FY2004 President's Budget, and JROC approval to defer procurement of JSOW-B).

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9a. (U) Schedule (Cont'd):

Unitary

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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	DEC 2003 (Ch-1)
Complete (Report)	MAY 2002	N/A	N/A
Milestone III	SEP 2002	DEC 2003	SEP 2004 (Ch-1)
Initial Operational Capability	SEP 2002	AUG 2004	JAN 2005 (Ch-1)
Organization Level Support	TBD	N/A	N/A
Intermediate Level Support	TBD	N/A	N/A
Depot Level Support	TBD	N/A	N/A

(U) Acronyms:

DT&E - Developmental Test and Evaluation  
E&MD - Engineering and Manufacturing Development  
IOC - Initial Operational Capability  
IOT&E - Initial Operational Test and Evaluation  
LRIP - Low Rate Initial Production  
OPEVAL - Operational Evaluation

b. Current Change Explanations --

(U) (Ch-1) OPEVAL start (from May 2003 to December 2003) date slipped to complete Developmental Testing (DT) and reduce Operational Testing (OT) risk. MS-III (from April 2004 to September 2004) date slipped as there was not sufficient time to execute OPEVAL and publish the Beyond LRIP and Live Fire Test and Evaluation (LFT&E) reports required at the MS-III decision meeting. Updated APB currently in routing to revise schedule milestones. IOC date (from November 2004 to January 2005) still within APB threshold.

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10. (U) Performance Characteristics:

Baseline/BLU-108

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Launch Envelope				
Airspeed (IMN/KCAS)				
	to 600	to 600 / to 550		to 600
Off Axis Launch Angle	+/-30	+/-30 / +/-30	+/-180	+/-180
Survivability	IAW Sys Spec (SD-901- 1)	IAW Sys / IAW Sys Spec / Spec (SD-901- / (SD-901- 1) / 1)	IAW Sys Spec (SD-901- 1)	IAW Sys Spec (SD-901- 1)
Accuracy (CEP)				
Weapon (Air Vehicle) (ft)	70	70 / 91	35	35
Reliability				
System Mission				
Range (nm from launch at specified conditions)				
Low Altitude (NM)	>or=15 (200 ft MSL, .8 IMN)	>or=15 / >or=12 (200 ft / (500 ft MSL, .8 / MSL, .8 IMN) / IMN)	>or=12 (500 ft MSL, .8 IMN)	>or=12 (500 ft MSL, .8 IMN)
High (NM @30K ft MSL, .8 IMN)				
BLU-108 System				
Weapon Effective- ness (Kill per Weapon) Non- Countermeasures Environment				
Reliability				
System Mission				

(U) Acronyms and Abbreviations:

AGL = Above Ground Level  
 CEP = Circular Error Probable  
 IAW = In Accordance With  
 IMN = Indicated Mach No.  
 KCAS = Knots Calibrated Air Speed  
 LBA = Limits of Basic Airframe  
 MSL = Mean Sea Level  
 NM = Nautical Mile

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10b. (U) Performance Characteristics (Cont'd) :  
Baseline/BLU-108

b. Current Change Explanations -- None

Unitary

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Launch Envelope					
Airspeed (IMN/KCAS)	(b)(1)				
Off Axis Launch Angle (deg)					
Survivability	IAW Sys spec SD-901-1	IAW Sys / IAW Sys spec / spec SD-901-1/ SD-901-1	IAW Sys Spec SD-901-1	IAW Sys Spec SD-901-1	
Accuracy (CEP)					
Weapon (ft)	10	10 / 10	4.0	8.0	(Ch-1)
Weapon (Air Vehicle) (ft)	70	70 / 91	78	78	
Range (nm from launch at specified conditions)					
Low Altitude (NM)	>or=15 (200 ft MSL, .8 IMN)	>or=15 / >or=12 (200 ft / (500 ft MSL, .8 / MSL, .8 IMN) / IMN)	>12	>or=12 (200 ft MSL, .8 IMN)	
High (NM @ 30K ft MSL, .8 IMN)	(b)(1)				
Reliability					
System Mission					

(Ch-2)

(U) Acronyms:  
AGL = Above Ground Level  
CEP = Circular Error Probable  
IAW = In Accordance With  
IMN = Indicated Mach No.  
KCAS = Knots Calibrated Air Speed  
LBA = Limits of Basic Airframe  
MSL = Mean Sea Level  
NM = Nautical Mile

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10b. (U) Performance Characteristics (Cont'd):

Unitary

b. Current Change Explanations --

(U) (Ch-1) Accuracy updated from 10 ft. to 8 ft. to reflect demonstrated performance and predicted performance against designated target set.

(U) (Ch-2) System Mission Reliability updated from (b)(1) to reflect demonstrated performance.

(U) (Ch-2) System Mission Reliability updated from (b)(1) to reflect demonstrated performance.

11. (U) Total Program Cost and Quantity (Dollars in Millions):

Baseline/BLU-108

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	554.0	563.4	596.0
Procurement	2990.5	2168.2	1768.8
Recurring	(2876.7)		(1454.5)
Nonrecurring	(78.7)		(281.4)
Total Flyaway	(2955.4)		(1735.9)
Fleet Support	(34.2)		(32.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.9)		(0.7)
Construction (MILCON)	21.8	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	3566.3	2731.6	2364.8
Escalation	1332.4	996.2	813.1
Development (RDT&E)	(91.0)	(79.2)	(90.1)
Procurement	(1234.6)	(917.0)	(723.0)
Construction (MILCON)	(6.8)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4898.7	3727.8	3177.9
b. (U) Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	16124	11811	9334
Total	16124	11811	9334

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 in June 1992 are 280 for JSOW Baseline and 11 for JSOW BLU-108. This does not represent 10% or more of the planned buy quantities.

9334 procurement units include 8800 Navy Baselines, 523 Air Force Baselines, and 11 Air Force BLU-108s. The change from 11811 units reported in the December

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**11b. (U) Total Program Cost and Quantity (Cont'd):**  
**Baseline/BLU-108**

2002 SAR reflects the pull-out of the Air Force (2477 units) from FY05 and out.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

**Unitary**

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	257.2	249.5	250.7
Procurement	3103.7	654.5	651.9
Recurring Flyaway	(2825.2)		(608.7)
Nonrecurring Flyaway	(102.1)		(41.3)
Total Flyaway	(2927.3)		(650.0)
Fleet Support	(35.5)		(1.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(140.9)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1990 Base-Year \$	3360.9	904.0	902.6
Escalation	2946.3	327.1	342.4
Development (RDT&E)	(79.1)	(53.3)	(53.6)
Procurement	(2867.2)	(273.8)	(288.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6307.2	1231.1	1245.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	7800	3000	3000
Total	7800	3000	3000

Note: Excludes 19 RDT&E prototypes from the SAR Baseline and 19 from the Current Estimate that are not considered fully configured.

(U) Note: Unitary LRIP quantities on contract total 139. LRIP quantities approved at Milestone II in June 2003. This does not represent 10% or more of the planned buy quantities.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

Baseline/BLU-108

	UCR Baseline (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	2731.6	2364.8	
(2) Quantity	11811	9334	
(3) Unit Cost	0.231	0.253	+9.52
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	2168.2	1768.8	
(2) Quantity	11811	9334	
(3) Unit Cost	0.184	0.190	+3.26

(U) The increase in PAUC and APUC is a result of Air Force removal of 2477 weapons from total program.

Unitary

	UCR Baseline (OCT 2003 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	904.0	902.6	
(2) Quantity	3000	3000	
(3) Unit Cost	0.301	0.301	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	654.5	651.9	
(2) Quantity	3000	3000	
(3) Unit Cost	0.218	0.217	-0.46

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**13. (U) Cost Variance Analysis:**  
Baseline/BLU-108

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	645.0	4225.1	28.6	4898.7
Previous Changes:				
Economic	+0.1	-114.5	-	-114.4
Quantity	-	-1223.7	-	-1223.7
Schedule	-	+315.4	+0.4	+315.8
Engineering	-	+59.9	-	+59.9
Estimating	-2.5	-184.7	-29.0	-216.2
Other	-	-	-	-
Support	-	+7.7	-	+7.7
Subtotal	-2.4	-1139.9	-28.6	-1170.9
Current Changes:				
Economic	+0.1	+25.5	-	+25.6
Quantity	-	-641.5	-	-641.5
Schedule	-	+11.2	-	+11.2
Engineering	+43.5	-	-	+43.5
Estimating	-0.1	+23.8	-	+23.7
Other	-	-	-	-
Support	-	-12.4	-	-12.4
Subtotal	+43.5	-593.4	-	-549.9
Total Changes	+41.1	-1733.3	-28.6	-1720.8
Current Estimate	686.1	2491.8	-	3177.9

(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	-	-804.6	-	-804.6
Schedule	-	-	-	-
Engineering	-	+43.5	-	+43.5
Estimating	+9.4	-64.5	-21.8	-76.9
Other	-	-	-	-
Support	-	+3.3	-	+3.3
Subtotal	+9.4	-822.3	-21.8	-834.7
Current Changes:				
Quantity	-	-423.7	-	-423.7
Schedule	-	-	-	-
Engineering	+32.7	-	-	+32.7
Estimating	-0.1	+29.8	-	+29.7
Other	-	-	-	-
Support	-	-5.5	-	-5.5
Subtotal	+32.6	-399.4	-	-366.8
Total Changes	+42.0	-1221.7	-21.8	-1201.5
Current Estimate	596.0	1768.8	-	2364.8

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13b. (U) Cost Variance Analysis (Cont'd):  
Baseline/BLU-108

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&amp;E</u>		
	Revised escalation indices. (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	Revised estimate for SAASM (Selective Availability Anti-spoofing Module) and High Powered Microwave (HPM) bomblets integration. (Engineering)	+32.7	+43.5
	RDT&E Subtotal	+32.6	+43.5
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+11.0
	Economic adjustment for negative program change due to reduction in quantity and support across the life of the program. (Economic)	N/A	+14.5
	Total Quantity Variance associated with decrease of 2,477 weapons from 11,811 to 9,334. (Quantity)	-423.7	-641.5
	Stretchout of annual procurement buy profile that reflects buy profile changes in various years. (Schedule)	0.0	+11.2
	Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.8
	Navy warranty cost projections removed from program FY04 and out. (Estimating)	-23.1	-36.8
	Adjustment to support requirements originally shared between Navy and Air Force as a result of Air Force withdrawal from the Program. (QR) (Estimating)	+12.4	+7.0
	Cost Model update based on projected weapon cost decreases. (Estimating)	-88.9	-139.2
	Full Rate Production Lot 4 (FRP-4) Negotiated Cost Model update to account for pull out of Air Force (FY05 and out). (QR) (Estimating)	+128.8	+192.0
	Recalculation of Spares requirements. (Support)	+0.7	+0.8
	Decrease in Fleet Support based on Air Force pull out. (QR) (Support)	-6.2	-13.2
	Procurement Subtotal	-399.4	-593.4

QR = Quantity related changes.

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13. (U) Cost Variance Analysis (Cont'd):

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	-21.2	-386.1	-	-407.3
Quantity	-	-1322.5	-	-1322.5
Schedule	-	-86.8	-	-86.8
Engineering	-	-	-	-
Estimating	-12.3	-2936.6	-	-2948.9
Other	-	-	-	-
Support	-	-310.6	-	-310.6
Subtotal	-33.5	-5042.6	-	-5076.1
Current Changes:				
Economic	-	+3.6	-	+3.6
Quantity	-	-	-	-
Schedule	-	+20.5	-	+20.5
Engineering	-	-	-	-
Estimating	+1.5	-9.7	-	-8.2
Other	-	-	-	-
Support	-	-2.0	-	-2.0
Subtotal	+1.5	+12.4	-	+13.9
Total Changes	-32.0	-5030.2	-	-5062.2
Current Estimate	304.3	940.7	-	1245.0

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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	-7.7	-1494.0	-	-1501.7
Other	-	-	-	-
Support	-	-173.4	-	-173.4
Subtotal	-7.7	-2449.2	-	-2456.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.2	-1.5	-	-0.3
Other	-	-	-	-
Support	-	-1.1	-	-1.1
Subtotal	+1.2	-2.6	-	-1.4
Total Changes	-6.5	-2451.8	-	-2458.3
Current Estimate	250.7	651.9	-	902.6

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) <u>RDT&amp;E</u>		
Revised estimate for Seeker Development (Estimating)	+1.2	+1.5
RDT&E Subtotal	+1.2	+1.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Economic adjustment for negative program change. (Economic)	N/A	+3.5
Stretchout of annual procurement buy profile (by adding one year to the program) due to common truck impact as a result of Air Force withdrawal from Baseline program. (Schedule)	0.0	+20.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.4
Navy warranty cost projections removed from program FY04 and out. (Estimating)	-8.6	-12.7
Adjustment to Engineering Change Orders (ECO), additional Contractor testing, and Special Tools/Special Test Equipment (ST/STE) requirements. (Estimating)	+20.6	+29.2

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13b. (U) Cost Variance Analysis (Cont'd):  
Unitary

b. (U) Current Change Explanations -

	(Dollars in Millions)	
	Base-Year	Then-Year
Cost Model update based on projected weapon cost changes. (Estimating)	-29.9	-45.3
Full Rate Production Lot 4 (FRP-4) Negotiated Cost Model update to account for pull out of Air Force (FY05 and out). (QR) (Estimating)	+16.1	+18.7
Reduced requirements for Logistics Requirements Funding Summary (LRFS). (Support)	-1.1	-2.0
Procurement Subtotal	-2.6	+12.4

QR = Quantity related changes.

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):  
Baseline/BLU-108

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	
0.340	-0.030	-0.060	--	--	+0.064	--	-0.010	-0.036	0.304

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	+0.023	+0.035	+0.011	-0.021	--	-0.001	+0.037	0.340

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	
0.290	-0.030	-0.040	--	--	+0.052	--	-0.010	-0.028	0.262

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**14b. (U) Unit Cost and Other History (Cont'd):**

Baseline/BLU-108

**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	+0.035	+0.006	-0.017	--	-0.001	+0.005	0.267

**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	N/A
IOC	SEP 1995	JUL 1998	SEP 2002	N/A
Total Cost	260.0	2969.2	4898.7	3177.9
Total Quantity	0	8800	16124	9334
Prog Acq Unit Cost	6.0	0.3	0.3	0.3

**Unitary**

**a. (U) Program Acquisition Unit Cost (PAUC) History**

**Current SAR Baseline to Current Estimate**

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.809	-0.135	+0.853	-0.022	--	-0.986	--	-0.104	-0.394	0.415

**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	
0.765	-0.128	+0.784	-0.022	--	-0.982	--	-0.104	-0.452	0.314

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14c. (U) Unit Cost and Other History (Cont'd):

Unitary

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	SEP 2004
IOC	N/A	SEP 2002	N/A	JAN 2005
Total Cost	0.0	6307.2	0.0	1245.0
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			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$229.1	N/A	19	\$236.1	\$236.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this CPFF contract.

(U) Contract Comments:

Delta increase in the target is driven by increased scope such as extra Mission Planning Model build, extra seeker software builds, and update of a captive flight vehicle.

The Unitary E&MD contract is 100% complete as of January 2004. The program was given authority to stop reporting on this contract as of the May 2003 DAES.

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15b. (U) Contract Information (Cont'd):

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
b. Procurement --				
(U) JSOW BASELINE FRP:				
Raytheon Systems, Tucson, AZ				
N00019-99-C-1014, FFP	\$133.9	N/A	427	
Award: December 30, 1998				
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>
\$345.2	N/A	942	\$345.2	\$345.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The difference between the initial contract price and the estimated price at completion is related to the exercise of the FY00 FFP production option. The deliveries on this contract are complete and this will be the final reporting date.

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
(U) Disp FRP4/5 Unitary LRIP:				
Raytheon Systems, Tucson, AZ				
N00019-03-C-0001, FFP	\$80.9	N/A	337	
Award: March 14, 2003				
Definitized: March 14, 2003				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$279.6	N/A	1197	\$279.6	\$279.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The difference between the initial contract price and the current contract price is related to the award of the FY03 Supplemental Iraqi Freedom Funds (IFF) and the award of the FY04 Full Rate Production Lot 5 (FRP-5).

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-17)</u>	<u>Total</u>
RDT&E	943.2	5.0	9.5	32.7	990.4
Procurement	844.0	196.6	139.5	2252.4	3432.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1787.2	201.6	149.0	2285.1	4422.9

Baseline/BLU-108

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 (FY06-17)</u>	<u>Total</u>
RDT&E	638.9	5.0	9.5	32.7	686.1
Procurement	804.3	149.9	74.7	1462.9	2491.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1443.2	154.9	84.2	1495.6	3177.9

(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 (FY92-03)</u>	<u>Budget Year (FY04)</u>	<u>Budget Year (FY05)</u>	<u>Balance To Complete (FY06-14)</u>	<u>Total</u>
RDT&E	304.3	-	-	-	304.3
Procurement	39.7	46.7	64.8	789.5	940.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	344.0	46.7	64.8	789.5	1245.0

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Baseline/BLU-108

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway 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				0.2	0.2
2004				3.9	5.0
2005				7.2	9.5
2006				10.0	13.3
2007				9.4	12.8
2008				4.5	6.2
2009				0.3	0.4
Subtotal				430.9	491.7

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

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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		20.4		20.4	24.3
1997	100	10.6	38.3	50.4	60.8
1998	135	8.8	47.6	59.4	72.4
1999	328	27.4	67.4	96.9	119.6
2000	454	8.4	82.7	91.8	114.8
2001	29	26.5	95.0	123.2	155.6
2002					
2003	490	15.4	80.5	96.4	124.4
2004	231	6.7	46.9	54.2	70.9
2005	216	10.8	43.5	56.2	74.7
2006	216	9.8	43.3	54.8	74.1
2007	216	10.0	43.6	55.3	76.1
2008	216	8.8	43.9	53.4	75.0
2009	216	8.7	43.7	53.0	75.9
2010	260	7.3	40.1	48.0	70.1
2011	513	8.7	63.2	72.5	108.1
2012	780	8.5	86.6	95.7	145.5
2013	775	10.4	84.9	95.9	148.7
2014	1080	9.7	110.6	121.0	191.4
2015	1080	9.8	112.5	123.0	198.4
2016	1080	9.6	111.3	121.7	200.2
2017	385	6.6	51.8	59.2	99.4
Subtotal	8800	242.9	1337.4	1602.4	2280.4

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		17.1		22.2	28.1
2002		7.6		8.0	10.2
2003	22	2.1	7.3	9.5	12.2
2004	307	5.8	54.4	60.4	79.0
2005					
2006					
2007					
2008					
2009					
2010					

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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					
2012					
Subtotal	534	38.5	117.1	166.4	211.4

(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	242.9	1337.4	2033.3	2772.1
USAF	534	38.5	117.1	331.5	405.8
Grand Total	9334	281.4	1454.5	2364.8	3177.9

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				24.1	30.4
2003				12.9	16.5
Subtotal				250.7	304.3

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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		3.6		3.6	4.5
2002					
2003	42	4.5	22.8	27.3	35.2
2004	97	5.9	29.8	35.7	46.7
2005	173	3.5	45.1	48.8	64.8
2006	196	1.8	49.3	51.3	69.4
2007	164	2.3	42.6	45.1	62.1
2008	206	1.9	49.2	51.3	72.0
2009	228	2.7	52.5	55.4	79.3
2010	300	3.4	58.2	61.9	90.4
2011	412	3.3	70.0	73.5	109.6
2012	412	2.6	67.0	69.7	105.9
2013	412	3.1	65.7	69.0	107.0
2014	358	2.7	56.5	59.3	93.8
Subtotal	3000	41.3	608.7	651.9	940.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3000	41.3	608.7	902.6	1245.0

17. (U) Delivery/Expenditure Information:

Baseline/BLU-108

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	1231	1231

(U) Percent Total Program Quantities Delivered: 13.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1385

(U) Percent Total Program Expended: 43.6%

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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): \$ 295.2

(U) Percent Total Program Expended: 23.7%

18. (U) Operating and Support Costs:

Baseline/BLU-108

a. (U) Assumptions and Ground Rules --

SOURCE: Joint Standoff Weapon Dispenser Program Life Cycle Cost Estimate prepared to support JSOW-A MS-III / JSOW-B LRIP in October 1998.

ASSUMPTIONS:

There is no antecedent system.

15 JSOW Expenditures per year.

Deployed aboard 6 CVBG each year - 100 JSOW per CV.

30 year missile life.

No additional operational/maintenance personnel at O-Level.

No additional operational/maintenance personnel at I-Level.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Baseline/BLU-108 Avg Annual Cost Per Weapon	No Antecedent Prgrm.
Mission Pay & Allowances	1.0	N/A
Unit Level Consumption	9.3	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	1.8	N/A
Contractor Support	0.8	N/A
Sustaining Support	13.9	N/A
Indirect Costs	0.2	N/A
Total	27.0	N/A

Total O&S Cost	Baseline/BLU-108	No Antecedent Prgrm.
BY\$ (In Millions)	252.0	0.0
TY\$ (In Millions)	498.1	0.0

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**18b. (U) Operating and Support Costs (Cont'd):**  
Baseline/BLU-108

**Unitary**

**a. (U) Assumptions and Ground Rules --**

SOURCE: Joint Standoff Weapon Unitary Program Life-Cycle Cost Estimate dated 15 April 2003.

**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 additional operational/maintenance personnel at I-Level.

Contractor Depot Component Repair Program.

**b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)**

Cost Element	Unitary Avg Annual Cost Per Weapon	No Antecedent Prgrm.
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.6	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	17.2	0.0
Contractor Support	5.8	0.0
Sustaining Support	0.2	0.0
Indirect Costs	0.0	0.0
Total	23.8	0.0

Total O&S Cost	Unitary	No Antecedent Prgrm.
BY\$ (In Millions)	71.3	0.0
TY\$ (In Millions)	147.9	0.0

Report Creation Date: 03/25/2004 5:30:55 PM

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# A-16 LONGBOW APACHE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)  
PROGRAM: LONGBOW APACHE

AS OF DATE: December 31, 2003

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1. (U) Designation and Nomenclature (Popular Name): AH-64D LONGBOW APACHE

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

ATTN: SFAE-AV-AAH

Building 5681

Redstone Arsenal, AL 35898-5000

COL RALPH PALLOTTA

Assigned: September 21, 2001

DSN 897-4200; COMM 256-313-4200

ralph.pallotta@peoavn.redstone.army.mil

4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U) PE 23744

(U) PE 63776

(U) PE 64816

PROCUREMENT:

(U) APPN 2031 ICN AA0978 (Army) (Shared)

(U) APPN 2031 ICN AA6607 (Army) (Shared)

(U) APPN 2031 ICN AA6608 (Army) (Shared)

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SECURITY CODE  
DEPARTMENT OF DEFENSE

Classified by:

Downgrade instructions: Apache Attack Helicopter SCG - Dated 24 Feb 97

Declassify on: A3

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Longbow Apache, December 31, 2003

5. (U) References:

Airframe Modifications

SAR Baseline (Production Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated May 18, 2001.

Fire Control 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 is 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 is used to 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) The Apache Project Manager awarded a second multi-year contract to the Boeing 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, 2003, 105 of the 269 aircraft have been delivered.

Multiyear contracts for Lots 3 - 7, for both the Fire Control Mission Kits (FCMK) and the Radar Frequency Interferometer (RFI) were awarded November 26, 1997. As of December 31, 2003, all of the RFIs and 217 (95.6%) of the FCMKs have been delivered. Therefore, this will be the final reporting for the FCR portion of the SAR.

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7. (U) Executive Summary (Cont'd):

The Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor (MTADS/PNVS) System Development and Demonstration (SDD) contract was awarded to Team Apache Systems (Lockheed Martin/Boeing Limited Liability Company) on October 26, 2000. Purpose of the SDD contract was to develop and test the second generation Forward Looking Infrared Radar (FLIR) on the Apache helicopter. As a follow-on to this effort, the MTADS/PNVS Lot 1 FFP production contract was awarded to Team Apache Systems on November 11, 2003. This contract includes 19 MTADS/PNVS systems for Army, 20 systems for Singapore, and 16 systems for Kuwait.

The following significant tests were completed during calendar year 2003:

Airworthiness and Flight Characteristics Test

MTADS Development Test

Lot 7 Qualification Tests

Instrument Flight Rules/Instrument Meteorological Conditions Test

Enhanced Position Location Reporting System Installation Test

Blue Force Tracker Installation Test

Lot 7 Central Technical Support Facility Test

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

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Longbow Apache, December 31, 2003

8. (U) Threshold Breaches (Cont'd):

Fire Control 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 --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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

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9a. (U) Schedule (Cont'd):  
Airframe Modifications

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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

b. Current Change Explanations -- None

Fire Control 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:

DAB - Defense Acquisition Board

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Longbow Apache, December 31, 2003

9a. (U) Schedule (Cont'd):

Fire Control Mission Kit

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  
RF - Radar Frequency

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

Airframe Modifications

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Vertical Rate of Climb for AH-64D with FCR Mission Kit (ft/min)	450	450 / 450	705	450
Ordnance Load (primary mission config)				
Hellfire (no.)	16	16 / 12	8	12
Target Handover	No	No / 15%	13%	No
	degrada- tion	degrada- / degrada- tion / tion	Degrada- tion	degrada- tion
Engagement time (RF Hellfire) in seconds	(b)(1)	(b)(1)	(b)(1)	(b)(1)
Ao, Operational Availability (%) of AH-64D w/FCR Kit	79	79 / 75	91.4	79

AS AMENDED

(U) Acronyms:

FCR - Fire Control Radar  
RF - Radio Frequency

The objective for Ordnance Load (primary mission configuration) refers to AH-64A goal. The Longbow primary mission configuration is 8 Longbow Hellfire missiles, and 320 30mm rounds.

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Longbow Apache, December 31, 2003

10b. (U) Performance Characteristics (Cont'd):  
Airframe Modifications

b. Current Change Explanations -- None

Fire Control Mission Kit

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1) Probability of Detection				
2) Ground Targets, Benign Conditions	(b)(1)			
3) Stationary @6KM /2				
4) Moving @6KM /2/3				

AS AMENDED

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):  
Airframe Modifications

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	638.4	761.3	758.0
Procurement	5052.2	5829.5	6179.4
Flyaway	(4161.5)		(4680.2)
Non recurring Flyaway			(240.2)
Total Flyaway	(4161.5)		(4920.4)
Other Weapon System	(737.4)		(1190.3)
Peculiar Support	(42.6)		(19.6)
Initial Spares	(110.7)		(49.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	5690.6	6590.8	6937.4
Escalation	1337.2	533.3	543.7
Development (RDT&E)	(-46.1)	(-28.1)	(-28.1)
Procurement	(1383.3)	(561.4)	(571.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	7027.8	7124.1	7481.1
b. (U) Quantity --			
Development (RDT&E)	N/A	0	0
Procurement	758	501	501
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.

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LONGBOW APACHE, December 31, 2003

**11b. (U) Total Program Cost and Quantity (Cont'd):**  
**Airframe Modifications**

(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**

1) Effective Date - February 26, 1999  
Quantity - 8 New Build  
Includes 8 FCRs  
Net estimated cost - \$399M  
2) Effective Date - September 5, 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 - December 27, 2002  
Quantity - 3 Remanufactured  
Includes 12 FCRs  
Net estimated cost - \$336M

**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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Longbow Apache, December 31, 2003

11a. (U) Total Program Cost and Quantity (Cont'd):

Fire Control Mission Kit

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	885.2	885.2	863.6
Procurement	813.9	813.9	813.0
Flyaway	(741.3)		(720.3)
Non recurring Flyaway			(33.8)
Total Flyaway	(741.3)		(754.1)
Other Weapon System	(22.2)		(25.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(50.4)		(33.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	1699.1	1699.1	1676.6
Escalation	2.3	2.3	-56.0
Development (RDT&E)	(-117.5)	(-117.5)	(-101.7)
Procurement	(119.8)	(119.8)	(45.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1701.4	1701.4	1620.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	227	227	227
Total	227	227	227

Note: Excludes 10 RDT&E prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

(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. Nuclear Costs -- None.

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Longbow Apache, December 31, 2003

12. (U) Unit Cost Summary:

Airframe Modifications

	UCR Baseline (MAY 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	6590.8	6937.4	
(2) Quantity	501	501	
(3) Unit Cost	13.155	13.847	+5.26
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	5829.5	6179.4	
(2) Quantity	501	501	
(3) Unit Cost	11.636	12.334	+6.00

Fire Control Mission Kit

	UCR Baseline (MAY 2001 APB)	Current Estimate (DEC 2003 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	1699.1	1676.6	
(2) Quantity	227	227	
(3) Unit Cost	7.485	7.386	-1.32
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	813.9	813.0	
(2) Quantity	227	227	
(3) Unit Cost	3.585	3.581	-0.11

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Longbow Apache, December 31, 2003

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	-1.5	-371.7	-	-373.2
Quantity	-	-2003.6	-	-2003.6
Schedule	-	+17.5	-	+17.5
Engineering	+134.9	+1878.1	-	+2013.0
Estimating	+3.9	+442.9	-	+446.8
Other	-	-	-	-
Support	-	+357.4	-	+357.4
Subtotal	+137.3	+320.6	-	+457.9
Current Changes:				
Economic	-	-3.7	-	-3.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.3	-22.0	-	-21.7
Other	-	-	-	-
Support	-	+20.8	-	+20.8
Subtotal	+0.3	-4.9	-	-4.6
Total Changes	+137.6	+315.7	-	+453.3
Current Estimate	729.9	6751.2	-	7481.1

(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	+1607.6	-	+1731.3
Estimating	-4.3	+767.6	-	+763.3
Other	-	-	-	-
Support	-	+351.3	-	+351.3
Subtotal	+119.4	+1126.5	-	+1245.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.2	-16.3	-	-16.1
Other	-	-	-	-
Support	-	+17.0	-	+17.0
Subtotal	+0.2	+0.7	-	+0.9
Total Changes	+119.6	+1127.2	-	+1246.8
Current Estimate	758.0	6179.4	-	6937.4

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Longbow Apache, December 31, 2003

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>		
Programmatic changes to the Modernized Target Acquisition Designation Sight (M-TADS) program. (Estimating)	+0.2	+0.3
RDT&E Subtotal	+0.2	+0.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.8
Increase in GFE requirements for Remanufacture line, Helmet Display Unit, and Launchers. (Estimating)	+5.0	+5.4
Increase in Premodification Program (Engine and Corpus Christi Army Depot). (Estimating)	+11.9	+13.2
Increase in Direct Engineering Support and airframe production. (Estimating)	+10.1	+11.3
Programmatic changes to the Auxiliary Fuel Tanks program. (Estimating)	-24.2	-31.0
Programmatic changes to the Reliability and Safety/Recapitalization program. (Estimating)	-34.9	-38.7
Increase in estimate for production line and testing aircraft. (Estimating)	+15.2	+17.0
Reduction in initial spares due to clarification of initial spares requirement. (Support)	-7.5	-8.7
Increase in salary, matrix support, contractor support and other internal program adjustments. (Support)	+26.5	+31.6
Revised estimate due to trainer requirement clarification. (Support)	-2.0	-2.1
Procurement Subtotal	+0.7	-4.9

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Longbow Apache, December 31, 2003

13. (U) Cost Variance Analysis (Cont'd):

Fire Control 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	-	-15.9	-	-15.9
Quantity	-	+127.0	-	+127.0
Schedule	-	+16.3	-	+16.3
Engineering	-	+36.8	-	+36.8
Estimating	-5.8	-220.6	-	-226.4
Other	-	-	-	-
Support	-	-20.0	-	-20.0
Subtotal	5.8	-76.4	-	-82.2
Current Changes:				
Economic	-	+0.1	-	+0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+0.7	-	+0.7
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	-	+1.4	-	+1.4
Total Changes	-5.8	-75.0	-	-80.8
Current Estimate	761.9	858.7	-	1620.6

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Longbow Apache, December 31, 2003

13a. (U) Cost Variance Analysis (Cont'd):  
Fire Control Mission Kit

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDTE	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	-138.0	-	-159.6
Other	-	-	-	-
Support	-	-14.3	-	-14.3
Subtotal	-21.6	-2.1	-	-23.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+0.6	-	+0.6
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	-	+1.2	-	+1.2
Total Changes	-21.6	-0.9	-	-22.5
Current Estimate	863.6	813.0	-	1676.6

b. (U) Current Change Explanations --

(Dollars in Millions)  
Base-Year Then-Year

(1) Procurement		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
Increase in estimate as a result of contractual modification changes. (Estimating)	+0.7	+0.8
Increase in support requirements and spares (Support)	+0.3	+0.3
Increase in support requirements for Narrow Field of View (NFOV). (Support)	+0.3	+0.3
Procurement Subtotal	+1.2	+1.4

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Longbow Apache, December 31, 2003

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):  
Airframe Modifications

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.34	-1.22	--	-0.410	--	+3.28	--	+0.280	+1.93	9.27

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	-0.752	+0.754	+0.035	+4.02	+0.849	--	+0.755	+5.66	14.93

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	
6.77	-1.13	--	-0.410	--	+2.98	--	+0.280	+1.72	8.49

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.49	-0.749	+0.354	+0.035	+3.75	+0.840	--	+0.755	+4.99	13.48

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	7481.1
Total Quantity	N/A	758	758	501
Prog Acq Unit Cost	N/A	7.3	9.3	14.9

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Longbow Apache, December 31, 2003

14a. (U) Unit Cost and Other History (Cont'd):

Fire Control Mission Kit

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	
6.36	-1.03	--	+0.080	--	+2.51	--	-0.420	+1.13	7.50

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.50	-0.070	+0.559	+0.072	+0.162	-0.994	--	-0.085	-0.356	7.14

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.96	-0.630	--	+0.080	--	+2.12	--	-0.420	+1.15	4.11

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.11	-0.070	+0.560	+0.072	+0.162	-0.969	--	-0.085	-0.330	3.78

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Longbow Apache, December 31, 2003

14c. (U) Unit Cost and Other History (Cont'd):

Fire Control Mission Kit

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	1701.4	1701.4	1620.6
Total Quantity	N/A	227	227	227
Prog Acq Unit Cost	N/A	7.5	7.5	7.1

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) Lot 1 MTADS Production:

Team Apache Systems, Orlando, FL

DAAH23-03-C-0164, FFP

Award: November 11, 2003

Definitized: November 11, 2003

Initial Contract Price  
Target Ceiling Qty

\$262.6 N/A 55

Current Contract Price  
Target Ceiling Qty  
\$262.6 N/A 55

Estimated Price At Completion  
Contractor Program Manager  
\$262.6 \$262.6

Explanation of Change:

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.

b. Procurement --

(U) AH-64D FCR MY PRODUCTION:

Longbow LLC, Orlando, FL

DAAH23-98-C-0008, FFP

Award: November 11, 1997

Definitized: November 11, 1997

Initial Contract Price  
Target Ceiling Qty

\$565.3 N/A 207

Current Contract Price  
Target Ceiling Qty  
\$574.2 N/A 207

Estimated Price At Completion  
Contractor Program Manager  
\$574.2 \$574.2

Explanation of Change:

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Longbow Apache, December 31, 2003

15b. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Target price increase is due to deployment of Contractor Field Service Representative, repair of equipment, and reset in support of Operation Iraqi Freedom.

Final delivery of the FCRs is scheduled for March 2004. This contract will not appear in subsequent SAR submissions.

(U) <u>Modernized TADS/PNVS:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
Team Apache Systems, Orlando, FL				
DAA-H23-00-C0174, CPIF	\$78.5	N/A	0	
Award: October 26, 2000				
Definitized: October 26, 2000				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$84.0	N/A	0	\$137.1	\$137.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-34.6	\$-3.7
Cumulative Variances To Date	\$-57.0	\$-1.7
Net Change	\$-22.4	\$2.0

Explanation of Change:

(U) The net unfavorable cost variance and favorable schedule variance are due to redesign efforts associated with subcontracted power supplies, as well as hardware redesign and rework resulting from integrated system tests and flight testing. The program is expected to complete on time to the current schedule and within the funding projected by the Program Manager.

(U) <u>AH-64D RFI MY PRODUCTION:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
LOCKHEED MARTIN, OWEGO, NY				
DAAJ09-97-C-0124, FFP	\$92.3	N/A	207	
Award: September 20, 2000				
Definitized: September 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>
\$105.3	N/A	207	\$105.3	\$105.3

Explanation of Change:

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Longbow Apache, December 31, 2003

15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

In October 2003, final deliveries of the RFI were completed ahead of schedule. This contract will not be reported in subsequent SAR submissions.

(U) R&S/Recapitalization:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
McDonnell Douglas, Mesa, AZ					
DAAH23-01-C-0092, FFP	\$20.7	N/A	559		
Award: July 31, 2001					
Definitized: July 31, 2001					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$375.9	N/A	559	\$375.9	\$375.9

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Increase to current contract price is due to additional modifications to the contract.

(U) AH-64D Multi year II:			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
McDonnell Douglas, Mesa, AL					
DAAH23-00-C-0001, FFP	\$2329.7	N/A	269		
Award: September 20, 2000					
Definitized: September 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>
\$2560.8	N/A	269	\$2560.8	\$2560.8

Explanation of Change:

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Longbow Apache, December 31, 2003

15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Increase to current contract price is due to additional modifications to the 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	1491.8	-	-	-	1491.8
Procurement	5419.7	749.5	490.0	950.7	7609.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6911.5	749.5	490.0	950.7	9101.7

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	729.9	-	-	-	729.9
Procurement	4580.3	743.7	485.1	942.1	6751.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5310.2	743.7	485.1	942.1	7481.1

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Longbow Apache, December 31, 2003

16a. (U) Program Funding Summary (Cont'd):

Fire Control 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	839.4	5.8	4.9	8.6	858.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1601.3	5.8	4.9	8.6	1620.6

b. Annual Summary -- Airframe Modifications

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>
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				40.4	44.4
Subtotal				758.0	729.9

Appropriation: 2031 - Aircraft Procurement, 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>
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	266.4	375.7	392.3
1999	66	3.5	402.6	488.3	513.6

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16b. (U) Program Funding Summary (Cont'd):  
Airframe Modifications

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 \$
2000	74	0.5	473.2	609.8	649.8
2001	52		443.8	586.0	631.4
2002	60		594.0	725.6	790.4
2003	74		657.9	791.6	873.8
2004	64		563.1	664.0	743.7
2005	19		343.8	426.6	485.1
2006			287.9	373.6	432.1
2007			194.8	274.6	323.7
2008			54.2	79.4	95.4
2009			33.4	54.8	67.0
2010			6.1	19.1	23.9
Subtotal	501	240.2	4680.2	6179.4	6751.2

(U) Fiscal years 2006 through 2010 contain recurring flyaway costs with no associated end item quantities. These funds are programmed for the Reliability and Safety Program, the Focused Recapitalization Program, and the Internal Auxiliary Fuel Tanks Program.

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	4680.2	6937.4	7481.1

b. Annual Summary -- Fire Control 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

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16b. (U) Program Funding Summary (Cont'd):

Fire Control 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 \$
1990				106.0	93.5
1991				86.3	79.0
1992				82.2	77.0
1993				124.0	118.9
1994				82.2	80.3
1995				22.2	22.1
Subtotal				863.6	761.9

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway 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		110.0	102.7	111.9
2003				2.6	2.9
2004				5.2	5.8
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	720.3	813.0	858.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	227	33.8	720.3	1676.6	1620.6

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17. (U) Delivery/Expenditure Information:

Airframe Modifications

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	337	337

(U) Percent Total Program Quantities Delivered: 67.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 4284.5

(U) Percent Total Program Expended: 57.3%

Fire Control Mission Kit

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	217	217

(U) Percent Total Program Quantities Delivered: 95.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1549.7

(U) Percent Total Program Expended: 95.6%

(U) The FCR is both 90% expended and delivered. This end item will not be reported in subsequent SARs.

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. Estimate is based on a 20 year useful life of the aircraft. The airframe Mean Time Between Failure (MTBF) goal is 19.5 hours at maturity (50,000 flight hours). Costs are updated annually to reflect the Operating and Support Management Information System (OSMIS) database. The Longbow Apache 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

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18b. (U) Operating and Support Costs (Cont'd):  
Airframe Modifications

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Airframe Modifications Avg Annual Cost Per Longbow aircraft	Antecedent System Avg Annual Cost Per antecedent system
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Replenishment	629.8	0.0
Military Personnel	590.9	0.0
Other	206.1	0.0
Total	1429.2	0.0

Total O&S Cost	Airframe Modifications	Antecedent System
BY\$ (In Millions)	8325.6	N/A
TY\$ (In Millions)	10731.7	N/A

Fire Control Mission Kit

a. (U) Assumptions and Ground Rules --

Assumes 227 fielded operational Fire Control Mission Kits (FCMKs) each flying 18.0 hours per month. Maintenance concept is 2-level maintenance, contractor depot support. At maturity (50,000 flight hours), the FCMKs Mean Time Between Failure (MTBF) goal is 150 hours. Source: Army Cost Position Update (January 2001) and is updated annually. The Longbow Apache Fire Control Radar System has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Fire Control 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	60.4	0.0
Other	9.7	0.0
Total	70.1	0.0

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18b. (U) Operating and Support Costs (Cont'd):  
Fire Control Mission Kit

Total O&S Cost	Fire Control Mission Kit	Antecedent System
BY\$ (In Millions)	302.3	N/A
TY\$ (In Millions)	389.3	N/A

Report Creation Date: 03/17/2004 1:31:13 PM

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