N-25 USMC H-1 UPGRADES

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

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AS OF DATE: December 31, 2001

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

2. DoD Component: Navy

3. Responsible Office and Telephone Number: PROGRAM EXECUTIVE OFFICER (PMA-276) COL DOUG ISLEIB AIR ASW ASSAULT AND SPECIAL MISSION Assigned: June 29, 2001 PROGRAM, 21960 NICKLES RD, BLDG 3221 DSN 757-5534; COMM 301 757-5534 PATUXENT RIVER, MD 20670-1539 ISLEIBDR@NAVAIR.NAVY.MIL

4. Program Elements/Procurement Line Items: RDT&E: PE 0603266N (Shared) (FY96) SUNK Project H2279 PE 0604245N Project H2279, H2419 PROCUREMENT: APPN 1506 ICN 017800 (Navy)

5. References:

SAR Baseline (Development Estimate): DAE Approved Acquisition Program Baseline dated October 10, 1996, at the Milestone II decision.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated June 12, 2000.



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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. The mission of the UH-1Y utility helicopter is to provide command, control and assault support under day/night and adverse weather conditions. The USMC H-1 Upgrades effort involves conversion of the AH-1W and UH-1N to the AH-1Z and UH-1Y, respectively. Major modifications include: a new four-bladed rotor system with semiautomatic blade fold of the new composite rotor blades, new performance matched transmissions, a new four-bladed tail rotor and drive system, upgraded landing gear, and pylon structural modifications. The H-1 Upgrades aircraft will have increased maneuverability, speed, and payload capability. Both aircraft will have fully integrated common cockpits/avionics that will reduce operator workload and improve situational awareness, thus increasing safety.

7. Executive Summary:

The H-1 Upgrades program is in the process of executing a program restructure to recognize a significant cost and schedule overrun condition in the Engineering, Manufacturing and Development (EMD) phase and production estimate update. Recognition of these cumulative changes results in a significant breach to the current Acquisition Program Baseline (APB) major milestones, the Program Acquisition Unit Cost (PAUC), as well as the Average Procurement Unit Cost (APUC). The schedule breach was initially reported in the September 2001 Selected Acquisition Report (SAR). The unit cost breach was reported in the January 2002 Defense Acquisition Executive Summary (DAES). Eighty percent of the cost breach results from the production estimate update and the remaining twenty percent is attributable to EMD cost growth. Details of the major cost growth drivers for EMD and the production estimate are contained in section 12. A Program Deviation Report (PDR), a revised Acquisition Strategy Report (ASR) and a revised Acquisition Program Baseline (APB) were submitted for approval January 2002. PB03 realigned funds to support the proposed program restructure.

There are 4 EMD aircraft (Zulu-1, Zulu-2, Yankee-1 and Yankee-2) in flight test status. Zulu-1 is conducting combined contractor/government developmental flight testing at Patuxent River, MD. After achieving first flight, Yankee-1 is conducting combined contractor/government developmental flight testing at Fort Worth, TX. Yankee-2 is completing instrumentation and final checkout at Bell Helicopter Textron, Inc. (BHTI) flight test research facility. Zulu-2 recently entered fight test status and the last EMD aircraft (Zulu-3) is in final manufacturing. Zulu-3 is projected to move to flight test status by 2nd quarter FY02 and, by the end of 3rd quarter FY02, all aircraft will be at Patuxent River, MD.

AH-12 (Zulu-1): BHTI continues developmental flight testing on Zulu-1 at Patuxent River. As of 12 March 2002, Zulu-1 had flown 206 sorties totaling 215 flight hours. Flight testing continues to focus on evaluation of yoke loads at various rotor speeds to investigate yoke fatigue issues with additional tests planned for early 2nd guarter FY02. Additional tests continue to focus on

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7. Executive Summary (Cont'd):

flight stability, handling qualities, hydraulic systems, temperature surveys and tail rotor tracking.

UH-1Y (Yankee-1): Yankee-1 achieved first flight on 20 December 2001 at the BHTI Flight Research Center (Plant 6). The commonality between AH-1Z and UH-1Y platforms (mainly due to the identical drive system already qualified on Zulu-1) played a major role in the rapid progression from initial ground run to first flight. As of 12 March 2002, Yankee-1 had flown 45 sorties totaling 38 flight hours and had attained a top speed of 160 knots, easily surpassing maximum flight speed for UH-1N models.

UH-1Y (Yankee-2): Yankee-2 is at the BHTI Flight Test Research Center (Plant 6) where build up continues. Electrical system build-up is ongoing. Continuing assembly of the power plant cowls and modification work is ongoing. Recently, throttle rigging tail rotor proof loads testing was completed. First flight is scheduled for the 3rd quarter FY 2002 timeframe.

AH-12 (Zulu-2): Recently achieved flight test status. Zulu-2 completed formal final assembly stage manufacturing with initial and successful application of electrical power.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

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

b. Nunn-McCurdy Unit Cost:

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

c. Explanation of Breach:

The USMC H-1 Upgrades Program breaches the current APB in the following categories: Schedule, Procurement cost, RDT&E cost, PAUC, APUC, based upon the program manager's latest Estimate at Completion (EAC). The current EAC indicates a total EMD program cost growth of \$408M (BY96\$) and procurement program cost growth of \$1,347M over the 12 June 2000 APB Update, which will

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8c. Threshold Breaches (Cont'd):

result in an APUC increase of 53.06% and a PAUC increase of 50.44%. The H-1 Upgrades program is being restructured in order to lower program risk to an acceptable level. Existing program funding was realigned in the OSD FY03 submit and production quantities were reduced in the FYDP to fund the program restructure. The restructure has resulted in a breach of all major APB schedule milestones by over 6 months, including: Low Rate Initial Production (LRIP) Defense Acquisition Board (DAB) review, LRIP #2 Component Acquisition Executive (CAE) review, Operational Evaluation (OPEVAL) Testing Complete, Milestone III, and Initial Operational Capability (IOC). An APB revision is in process.

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	SEP 2003	FEB 2005
Milestone III (SAE FRP Review - Nav	y) FEB 2004	FEB 2004	AUG 2005
IOC (AH-1Z)	SEP 2006	SEP 2006	MAR 2008(Ch-1)
Navy Support Date (AH-1Z)	SEP 2008	SEP 2008	MAR 2011(Ch-1)
OPEVAL Testing Complete (UH-1Y)	MAY 2003	SEP 2003	FEB 2005
IOC (UH-1Y)	JUN 2005	JUN 2005	MAR 2008(Ch-1)
Navy Support Date (UH-1Y)	SEP 2007	SEP 2007	MAR 2011(Ch-1)
AH-12/UH-1Y			
Integrated Testing Complete	N/A	DEC 2002	JUN 2004
DAB LRIP Review	DEC 2001	JAN 2002	AUG 2003
CAE LRIP #2 Review	N/A	FEB 2003	AUG 2004(Ch-1)

b. Current Change Explanations - (Ch-1) PM's current estimate reflect the revised operational test event
 schedule. The current change estimates are:

Milestones	From	To
CAE LRIP Review #2	OCT 04	AUG 04
IOC (AH-1Z)	SEP 07	MAR 08
Navy Support Date (AH-1Z)	SEP 11	MAR 11
IOC (UH-1Y)	SEP 07	MAR 08
Navy Support Date (UH-1Y)	SEP 11	MAR 11

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10. <u>Performance Characteristics</u>:

a. Performance --

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	Development <u>Estimate (SAR)</u>	Apr Progra <u>Obj/T</u> ł	im ITe	(APB) eshold	Demon- strated <u>Perf</u>	Current Estimate	9
4BW (AH-1W) (AH-1Z)						· · ···	•
MFHBA (hre)	35.0	35.0	1	24.0	TBD	35.0	
MMH/FH (hrs)	3.6	3.6	1	4.3	TBD	2.5	
Cruise Speed (kts)	165	165	1	140	TBD	142	(Ch-1)
Payload (Hot Day) (lbs)	3500	3500	/	2500	TBD	2996	
Weapon Stations							
Universal Mounts	6	6	1	4	TBD	4	
Precision Guided Munitions	15	16	1	12	TBD	16	
Maneuverability/	-0.5 to	-0.5 to	1	-0.5 to	TBD	-0.5 to	
Agility (G's)	+2.5	+2.5	1	+2.5		+2.8	
Mission Radíus (nm)	200nm x 1 (Aux	200nm x 1 (Aux	111	50nm x 2 or 110nm x 1	TBD	126nm x 1	
4BN (UH-1N) (UH-1Y)							
MFHBA (hrs)	40.2	40.2	/	33.1	TBD	40.2	
MMH/FH (hrs)	2.9	2.9	1	3.9	TBD	2.5	
Cruise Speed (kts)	165	165	1	140	TBD	155	
Payload (Hot Day) (lbs)	4500	4500	/	2800	T9D	3211	
Weapon Stations	2 Univ. Mounts	2 Univ. Mounts	1	2 Hard Mounts	TBD	2 Hard Mounts	
Maneuverability/	-0.5 to	-0.5 to	7	-0.5 to	TBD	0.5 to	
Agility (G's)	+2.5	+2.5	1	+2.5		+2.8	
Mission Radius (nm)	200nm x 1 (Aux	200nm x 1 (Aux	/ / /	50nm x 2 or 110nm x 1	TBD	115nm x 1	

Zulu-1 is undergoing contractor/developmental flight testing at Patuxent River. Demonstrated performance data will be entered upon entering government DT period.

Acronyms: MFHBA - Mean Flight Hours Between Abort MMH/FH - Maintenance Man Hours per Flight Hours

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10b. Performance Characteristics (Cont'd):

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b. Current Change Explanations --

(Ch-1) Cruise speed for the AH-1Z changed from 140 to 142 based on the most recent NAVAIR performance model update. Further changes are likely to occur as the flight test program continucs.

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

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	537.8	633.5	1041.2
	Procurement	2254.7	2726.7	4102.0
	Flyaway	(1892.2)		(3237.4)
	Non-Recurring			(19.8)
	Total Flyaway	(1892.2)		(3257.2)
	Other Wpn System Costs	(240.4)		(341.7)
	Peculiar Support	(40.1)		(140.0)
	Initial Spares	(82.0)		(363.1)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	00	0.0	0.0
	Total FY 1996 Base-Year \$	2792.5	3360.2	5143.2
	Escalation	755.0	370.8	1091.4
	Development (RDT&E)	(54.5)	(33.4)	(83.5)
	Procurement	(700.5)	(337.4)	(1007.9)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	3547.5	3731.0	6234.6

Current estimate procurement costs included in this SAR represent President's Budget FY03. The Program Office is pursuing internal reprogramming in conjunction with additional resources to fund to the CAIG estimate.

b. Quantity --

Development	(RDT&E)	4	4	4
Procurement		280	_280	280
Total		284	284	284

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

		UCR Baseline (JUN 2000 APB)	Current Estimate (Dec 2001 SAR)	Percent Change
a. Prog. Acq. Unit ((1) Cost (FY 1 (2) Quantity (3) Unit Cost	Cost (PAUC) L996 BY\$)	3360.2 284	5143.2 284	
(J) ONIC COSC		11.832	18.110	+53.06
b. Avg. Proc. Unit ((1) Cost (FY 1 (2) Quantity (3) Unit Cost	Cost (APUC) 1996 BY\$)	2726.7 280 9.738	4102.0 280 14.650	+50.44
		UCR	Current	
		Baseline	Estimate	Percent
c. Prog. Acg. Unit C	Ost (PAUC)	TOON 2000 APBI	(Dec 2001 SAR)	Change
(1) Cost (TY\$)	(1100)	3731.0	6234.6	
(2) Unit Cost		13.137	21.953	+67.11
d. Avg. Proc. Unit C	Cost (APUC)			
(1) Cost (TY\$)		3064.1	5109.9	
(2) Unit Cost		10.943	18.250	+66.77
. Changes from Previous	SAR (SEP 2001) Dol	lars/Qty Pe	rcent
(2) APUC (BY\$)			5.949 +	68 37
(3) PAUC Quantity			5	+1.79
(4) PAUC (TY\$)			8.652 +	65.05
(5) APUC (TY\$)			7.577 +	70. 99
. Initial SAR Informati Initial SAR Date (on DEC 1996):			
(1) Program Acquis	ition Cost (BY	\$) 2)	2787.7	
(2) Program Acquis	ICION COSC (TY	>]	12/11	

g. Unit Cost PAUC Changes --

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f

Twenty (20%) of the total cost breach is attributable to EMD cost growth. Eighty percent (80%) of the cost breach results from a production estimate update.

The following are major drivers to the (PAUC) cost increase:

Prime Contractor Performance - 10%

The H-1 Upgrades' contractor significantly underestimated the design and development tasks primarily in airframe integration and software.

Material Update Based on EMD Actuals - 21%

Original material estimates were developed from a parts list provided by the contractor based on similar programs. Three of the five EMD aircraft have now completed manufacturing and are in flight test. The current estimate is

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12g. Unit Cost Summery (Cont'd):

based upon this information and comparisons with analogous systems.

Learning Curve Update Based on V-22/Industry Trend - 20%

Previous labor and material learning curve projections were based on AH-1W data. The learning curves have been updated based on V-22 actuals and updated industry trends that are much flatter than the previous projections.

Contractor Rate Increases - 12%

The revised production estimate incorporates the current Forward Pricing Rate Agreement (FPRA)dated December 2001. The updated projections are based on lower forecasts for both commercial and military business including reduced V-22 and H-1 buys.

Increased Support Funds - 13%

Shortly after the June 2000 APB was signed significant funding was added in the OPNAV spares requirement generation process to adequately spare to an 85% readiness goal. In addition, H-1 simulators were moved into the APN-1 program from APN-7 account. Finally, the USMC conducted a review of their Simulator Master Plan and subsequently doubled the number of simulators from seven to fourteen.

Unit Cost APUC Changes --

Twenty (20%) of the total cost breach is attributable to EMD cost growth. Eighty percent (80%) of the cost breach results from a production estimate update.

The following are major drivers to the (APUC) cost increase:

Material Update Based on EMD Actuals - 27%

Original material estimates were developed from a parts list provided by the contractor based on similar programs. Three of the five EMD aircraft have now completed manufacturing and are in flight test. The current estimate is based upon this information and comparisons with analogous systems.

Learning Curve Update Based on V-22/Industry Trend - 25%

Previous labor and material learning curve projections were based on AH-1W data. The learning curves have been updated based on V-22 actuals and updated industry trends that are much flatter than the previous projections.

Contractor Rate Increases - 15%

The revised production estimate incorporates the current FPRA dated December 2001. The updated projections are based on lower forecasts for both commercial and military business including reduced V-22 and H-1 buys.

Increased Support Funds - 17%

Shortly after the June 2000 APB was signed, significant funding was added in the OPNAV spares requirement generation process to adequately spare to an 85% readiness goal. In addition, H-1 simulators were moved into the APN-1 program from APN-7 account. Finally, the USMC conducted a review of their Simulator Master Plan and subsequently doubled the number of simulators from

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12. Unit Cost Summary (Cont'd):

seven to fourteen.

- h. Impact of Perf or Sched Changes --There were no changes made to the performance parameters. The two-year schedule slip increases cost to complete EMD by \$301M. Low Rate Initial Production decision was delayed two years, quantities were adjusted and escalation factors increased cost by \$56M.
- i. Program Management & Control --Col Douglas Islieb, USMC is the Program Manager and Ms. Lisa Baile is the Deputy Program Manager responsible for program management and cost control.
- j. Cost Control Actions --

The EMD cost overrun was mainly driven by late engineering drawings to manufacturing. The Engineering Mockup Unit (EMU) was not revised to adequately model the upgrade systems, hindering the contractor's ability to make predictive engineering changes, analyze manufacturing impacts, leading to cost and schedule increases. Engineering drawings are over 90% complete. The restructure provides funds necessary to completely revise the EMU to fully model the AH-1Z and UH-1Y upgrade systems, to ensure the engineering analysis, manufacture impacts and efficiencies are realized for any future changes.

Lack of contractor Earned Value Management (EVM) tools, processes, procedures and training hampered realistic forecasting and predictive change measures. The new contractor management team brought in outside consultant expertise to identify EVM process and procedure issues. The independent consultant along with a joint surveillance team consisting of Defense Contract Management Agency (DCMA) and NAVAIR EVM experts are working with the contractor to oversee the implementation of a corrective action plan. EVM system processes and procedures were overhauled and updated. The contractor trained all program personnel within the organization on EVM to re-institutionalize it as a management tool. The organizational structure was modified to centralized accountability of EVM through a single Chief Financial Officer. Additional schedulers were added to the staff to implement, track, and integrate the TIER V schedules with the cost accounting system for increased management control. TIER V schedules are now linked across IPTs for critical path analysis. Early identification of potential schedule issues, critical path analysis, and realistic forecasting and predictive change is now possible by the contractor on the H-1 program.

Production cost growth was mainly driven by revisions to the Bill of Material (BOM) estimates based on updated contractor data, EMD actuals, and flatter labor and material learning curves based on industry trends. A bottom up review of the production estimate has resulted in these revisions to provide an accurate estimate for budgeting. Three of the five EMD aircraft have completed manufacturing and moved to flight test status. Actual manufacturing hours and material costs are now available on the H-1 program. The previous production estimate was based on analytical

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12j. Unit Cost Summary (Cont'd):

predictions which have now been updated with actual material costs and manufacturing hours. The EMD aircraft were manufactured with production tools to minimize transition to production risk. The contractor and government have staffed a production team to analyze and implement transition to production cost control and efficiency measures.

The contractor has invested in implementing Advanced Planning and Scheduling (APS) and Component and Supplier Management (CSM) programs to manage and control costs. The business case analysis for these programs includes commitments for direct material cost savings, inventory reduction, administrative and equipment utilization efficiencies as well as improvements in manufacturing and design productivity.

The revised EMD acquisition strategy includes increased contract cost control measures. The government is currently negotiating an EMD contract modification that includes a production price commitment curve for the first two LRIP lots. In addition, the revised acquisition strategy includes an EMD performance based incentive structure if the contractor achieves predetermined scheduled or performance milestone events and EVM performance goals to further control costs.

k. Contract Information (In Millions of Then-Year Dollars) --

(1) Contractor(s): Bell Helicopter Textron

- (2) Contract Title: EMD
- (3) Contract Number: N00019-96-C-0128
- (4) Actual Cost of Work Performed (ACWP) to date: 589.9
- (5) Percent contract completed (BCWP/target cost): 78.40
- (6) Variances:

	Cost Var	riance	Schedule Var	riance
	(\$/%))	(\$/%))
Baseline Report	\$0.4/	+2.80	\$0.7/	+3.20
Previous SAR	\$7.3/	+8.70	\$13.5/	+14.00
Current Values	\$29.3/	+23.30	\$17.2/	+12.00
Change from the Baseline Report	\$28.9/	+20.50	\$16.5/	+8.80
Change from the Previous SAR	\$22.0/	+14.60	\$3.7/	-2.00

Explanation of Variances --

The primary drivers of the poor cost and schedule performance have been underestimation of tasks, schedule delays and increasing labor rates. The contractor significantly underestimated design and development tasks, primarily in airframe integration and software. Late engineering drawings, poor systems engineering management, excessive changes in electrical system design/layout, and parts shortages caused significant schedule delays that required additional unplanned resources to mitigate the delays. The H-1 program has also experienced significant cost growth due to increases in contractor labor rates and unanticipated overhead burden changes.

Impact of Variances on Contract -- None.

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12. Unit Cost Summary (Cont'd):

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Impact of Variances on Unit Costs -- None.

1. General Comments -- None.

13. Cost Variance Analysis:

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

	RDTLE	PROC	MTLCON	TO TA T
Development Development	RDIGE	PROC	MILCON	TUTAL
Development Estimate	592.3	2955.2	-	3547.5
Previous Changes:	1			
Economic	-23.1	-178.9	-	-202.0
Quantity	-		-	_
Schedule	-5.1	- '	-	-5.1
Engineering	+32.3	+236.2	-	+268.5
Estimating	+179.3	-103.2	-	+76.1
Other	-	-	-	-
Support	-	+25.9	_	+25.9
Subtotal	+183.4	-20.0	-	+163.4
Current Changes:				
Economic	+0.2	-42.6	-	-42.4
Quantity	-	-	-	
Schedule	-	+123.4	-	+123.4
Engineering	+73.9	+88.3		+162.2
Estimating	+274.9	+1443.2		+1718.1
Other	-	-	-	-
Support		+562.4	-	+562.4
Subtotal	+349.0	+2174.7		+2523.7
Total Changes	+532.4	+2154.7	_	+2687.1
Current Estimate	1124.7	5109.9	-	6234.6

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

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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	- 1	-	-4.8
Engineering	+30.1	+190.7	-]	+220.8
Estimating	+167.0	-88.0	-	+79.0
Other	-	-	-	-
Support	-	+35.4	-	+35.4
Subtotal	+192.3	+138.1		+330.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+32.6	-	+32.6
Engineering	+66.2	+73.0	-	+139.2
Estimating	+244.9	+1156.7	- '	+1401.6
Other	-	-	- 1	-
Support	-	+446.9	-	+446.9
Subtotal	+311.1	+1709.2	-	+2020.3
Total Changes	+503.4	+1847.3	-	+2350.7
Current Estimate	1041.2	4102.0	-	5143.2

b. Current Change Explanations --

		(Dollars i <u>Base-Year</u>	n Millions) <u>Then-Year</u>
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+0.2
	Increase estimate to accomodate additional scope to reduce risk in OPEVAL (Engineering)	+66.2	+73.9
	Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
	Adjustment to program schedule to accomodate development and integrated flight test (Estimating)	+245.3	+275.3
	RDT&E Subtotal	+311.1	+349.0
(2)	Procurement		
, – ,	Revised escalation indices. (Economic)	N/A	-42.6
	Budget increase for incorporation of	+8.5	+9.8
	T-700-GE-401C engines in place of T-700-GE-4(engines (Engineering))1	
	Modification to the Electronic Warfare Suite and targeting system (Engineering)	-23.8	-30.0
	Addition of Tactical Aircraft Moving Man Canability (TAMMAC) (Engineering)	+88.3	+108.5
	Delay in start of Production from FY02 to FY04 (Schedule)	0.0	+79.9

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

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b. Current Change Explanations --

	(Dollars i	n Millions)
	<u>Base-Year</u>	<u>Then-Year</u>
Realignment of contract costs for delay in	+32.6	+43.5
Production start from FY02 to FY04 (Schedule)		
Increase in contractor labor and overhead rates	+279.1	+342.0
(Estimating)		
Change in assembly site from Fort Worth, TX to	-158,6	-198.6
Amarillo, TX (Estimating)		
Change in estimate to reflect a more realistic	+355.4	+450.7
composite learning curve (Estimating)		
Update of materials cost estimate based on	+362.0	+461.6
prototype actual costs (Estimating)		
Refinement of estimate for airframe and engine	+126.2	+157.7
repair and refurbishment (Estimating)		
Refinement of estimate for Target Sight System	+42.1	+52.5
(TSS) (Estimating)		
Refinement of estimate to reflect an increase	+150.5	+177.3
of prototype actuals (Estimating)		
Increase in Initial Spares requirements to	+260.6	+314.1
meet current Readiness objectives (Support)		
Increase of Simulator Peculiar Support to	+55.6	+70.3
reflect USMC Simulator Master Plan. (Support)		
Correction of FY02 Procurement Support	+37 8	+51 6
contract cost increases		, 71.0
(Support)		
Change in Other Won System Costs to include	+92 9	+126 4
Blade Fold Backs Ground Handling Wheels and	1	120.4
dovernment support (Support)	-	
government support. (Support)		
Procurement Subtotal	+1709 2	+21747
L'EQUEILE DUDEVEUL		·

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		с с							Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.49	-0.861	-0.004	+0.417	+1.52	+6.32		+2.07	+9.46	21.95

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*** UNCLASSIFIED *** USMC H-1 Upgrades, December 31, 2001

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

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC		Changes							
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.55	-0.791	-0.005	+0.441	+1.16	+4.79		+2.10	+7.70	18.25

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	6234.6
Total Quantity	N/A	284	N/A	284
Prog Acq Unit Cost	N/A	12.5	N/A	22.0

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

Program restructure will result in a change to the current EMD contract. This may change the Program Manager's Estimated Price at Completion.

a. RDT&E			Initial	Contract Pr	ice
EMD:			Target	Ceiling	Oty
Bell Helicopt	er Textron, Fo	ort Worth TX		-	
N00019-96-C-0	128, CPAF		\$498.0	N/A	4
Award: Novemb	er 15, 1996				
Definitized:	November 15,	1996			
Current	Contract Prid	ce	Estimated Pr	ice At Comp	letion
Target	<u>Ceiling</u>	Oty	Contractor	Program	<u>Manager</u>
\$725.3	N/A	4	\$833.3	\$8	63.8
			Cost Variance	<u>Schedule V</u>	ariance
Previous Cumu	lative Variand	ces	\$-7.2	\$-13.	5
Cumulative Va	riances To Dat	te (12/31/01)	5-29.3	<u>\$-17.</u>	2
Net Chang	re		\$-22.1	\$-3.	7

Explanation of Change:

The previous September 2001 SAR reflected a cumulative cost variance of -\$49.7 which should have been -\$7.2 for a net change of +\$35.3. The cumulative schedule variance was reported as -\$27.9 which should have been

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USMC H-1 Upgrades, December 31, 2001

15. Contract Information (Cont'd):

-\$13.5 for a net change of +\$0.9. The positive net changes reflected January 2001 rebaseline actions which reset cost and schedule variances to zero. The cumulative negative variances as of August 31, 2001 reflected the continued deterioration of contractor performance.

The primary drivers of the poor cost and schedule performance have been underestimation of tasks, schedule delays and increasing labor rates. The contractor significantly underestimated design and development tasks, primarily in airframe integration and software. Late engineering drawings, poor systems engineering management, excessive changes in electrical system design/layout, and parts shortages caused significant schedule delays that required additional unplanned resources to mitigate the delays. The H-1 program has also experienced significant cost growth due to increases in contractor labor rates and unanticipated overhead burden changes.

The H-1 Upgrades program has proposed a program restructure and funds were realigned as part of the FY03 President's Budget to acknowledge an overrun condition and correct cost and schedule deficiencies. The program restructure provides sufficient funds to cover increased costs and identified revised cost risks. Revised incentive clauses are being incorporated within the restructure in order to improve overall contractor performance.

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

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

Appropriation	Prior <u>Years</u> (FY97-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-12)	<u>Total</u>
RDT&E	577.8	170.5	241.4	135.0	1124.7
Procurement	6.0	-	-	5103.9	5109.9
MILCON	-	-	-	~	-
O&M		-	-	-	-
Total	583.8	170.5	241.4	5238.9	6234.6

USMC H-1 Upgrades, December 31, 2001

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

b. Annual Summary -- H-1 Upgrades

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 \$
1997				66.4	67.9
1998				78.9	81.3
1999				111.8	116.7
2000				168.6	178.6
2001		2. 20.7 m 00.40 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		123.7	133.3
2002				155.8	170.5
2003				217.4	241.4
2004				71.2	80.5
2005				47.4	54.5
Subtotal	4			1041.2	1124.7

Excludes FY96 funds which were used for studies and analyses.

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001		5.5		5.5	6.0
2002					
2003					
2004	9	10.7	169.0	284.0	326.1
2005	11	3.6	162.9	286.0	334.6
2006	22	and the standard states of	285.9	489.0	582.9
2007	28		338.6	499.9	607.3
2008	44		500.6	575.2	712.0
2009	44		486.7	539.8	680.9
2010	44		475.0	528.1	678.8
2011	44		462.7	507.4	664.6
2012	34		356.0	387.1	516.7
Subtotal	280	19.8	3237.4	4102.0	5109.9

Appropriation: 1506 - Aircraft Procurement, Navy

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	284	19.8	3237.4	5143.2	6234.6

USMC H-1 Upgrades, December 31, 2001

<u>Actual</u>

17. Delivery/Expenditure Information:

		D 1		,	-	-
а		Del	1 V	erles	TO	Date
~	•			<u></u>		

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RDT&E	0	0
Procurement	0	0

<u>Plan</u>

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 629.4

Percent Total Program Expended: 10.1%

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 2000. There is no antecedent system for the H-1 Upgrades Program.

	H-1 Upgrades Avg Annual Cost Per	No Antecedent System Avg Annual Cost Per
Cost Element		1
Mission Pay & Allowances	2528.0	N/A
Unit Level Consumption	2099.0	N/A
Intermediate Maintenance	101.0	N/A
Depot Maintenance	967.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	388.0	N/A
Indirect Costs	630.0	N/A
Demil & Disposal	2.0	N/A
Total	6715.0	N/A

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

USMC H-1 Upgrades, December 31, 2001

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

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	······································	
Total O&S Cost	H-l Upgrades	No Antecedent System
BY\$ (In Millions)	6548.0	N/A
TYS (In Millions)	13148.0	N/A

Report Creation Date: 03/30/2002 2:39:10 PM

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*** UNCLASSIFIED ***

A-18 PATRIOT PAC-3

*** 920102 ***

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

INDEX

AS OF DATE: December 31, 2001

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

2. (U) DoD Component: Army

Joint Participants: Missile Defense Agency

3. (U) Responsible Office and Telephone Number:

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

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

RDT&E: PE 0203801A Project 036 (U) PE 0603216C (Shared) Project 2207, 2208 (U) PE 0604216C (Shared) (U) PE 0604225C (Shared) Project 2207 (U) PE 0604865A Project 01C (U) PE 0604865C Project 2014, 2257 (U)PE 0604866C Project 2257 (U) PROCUREMENT : APPN 0300 ICN 0208060C (DCA/DNA) (Shared) (U)

reation Guide dated 6 Jun 00 Classified by: PATRIOT See separated from CLASS sections Regraded UNCLASS Downgrade instructi on: Originating Agency Determination Require

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PATRIOT PAC-3, December 31, 2001

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

 (U)
 APPN 0300 ICN 0208865C (DCA/DNA)

 (U)
 APPN 2032 ICN C49200 (Army)

 (U)
 APPN 2032 ICN C50700 (Army)

 (U)
 APPN 2032 ICN CA0267 (Army)

5. (U) References:

J. (V) <u>Nororomeon</u>

FIRE UNIT

SAR Baseline (Development Estimate):

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

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated October 20, 2001.

MISSILE SEGMENT

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

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated October 20, 2001.

6. (U) Mission and Description:

(U) PATRIOT, the centerpiece of the Army's air defense forces, is an extremely capable high-to-medium 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. In the Field Army, PATRIOT air defenses will be complemented by short-range, low altitude forward area defense weapons and will be integrated with other ground and air assets in the overall air defense of the theater of operations. The system can conduct multiple simultaneous engagements of high performance air breathing targets and TBMs with a high probability of target kill. The system will provide air defense protection in all weather conditions and in hostile ECM environments. At the battery level or Fire Unit (FU) level, the PATRIOT missile system consists of an Engagement Control Station (ECS), one Radar Set (RS), an Electric Power Plant (EPP), eight Launching Stations (LS), and associated communications equipment. At the battalion level, command and control is exercised through the Information and Coordination Central (ICC) and associated communications equipment including Communications Relay Groups (CRG). The PATRIOT RS is a multifunction phased

PATRIOT PAC-3, December 31, 2001

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

array radar which performs a variety of surveillance, acquisition, and guidance tasks. The only manned element of the FU during air battle, the ECS, provides the human interface for control of automated operations.

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

7. (U) Executive Summary:

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(U) The PAC-3 Engineering and Manufacturing Development (EMD) flight test program concluded on October 19, 2001. The final successful test included the engagement and intercept of a very low altitude cruise missile target at short range with a PAC-3 missile and intercept of a low altitude sub-scale aircraft target at long range with a PAC-2 missile. The completion of the Developmental Test phase of the program allowed transition into Operational Testing. The Operational Test and Evaluation phase of the PAC-3 program commenced in January 2002 when the Army Test and Evaluation Command (ATEC) assumed temporary configuration control of the PAC-3 hardware and software for the duration of operational testing. The Director, Operational Test and Evaluation formally approved the ATEC Event Design Plan and Missile Flight Test Plan on February 12, 2002. The first operational test was conducted on February 16, 2002 at White Sands Missile Range, New Mexico. The flight objective was to conduct a multiple simultaneous engagement against an attacking full-scale air breathing threat (ABT), a cruise missile, and a sub-scale ABT. A PAC-2 missile successfully intercepted and destroyed a full-scale drone aircraft. The second PAC-2 missile and a PAC-3 missile missed their assigned sub-scale targets. The causes of the two intercept failures are under investigation and a rigorous post-flight test analysis process is ongoing. Operational testing is continuing on schedule through third quarter fiscal year (FY) 2002.

A revised PAC-3 Acquisition Program Baseline (APB) was approved by the Under Secretary of Defense (Acquisition, Technology & Logistics) (USD(AT&L)) on October 20, 2001. The revised EMD program provides an operational capability as soon as possible and improves the executability of the flight test program.

The revised PAC-3 Acquisition Strategy was approved by the USD(AT&L) on October 20, 2001. The Acquisition Strategy increased the PAC-3 missile Low Rate Initial Production (LRIP) quantity from 120 to 164. The increased LRIP quantity was required to prevent a break in production between EMD and Full

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

Rate Production. The request for proposal for the LRIP-3 missile buy for 72 missiles was released upon approval of the Acquisition Strategy. Contract award is anticipated in second quarter FY 2002.

8. (U) Threshold Breaches:

FIRE UNIT

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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

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

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:

FIRE UNIT

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a. Milestones --

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

b. Current Change Explanations -- None

MISSILE SEGMENT

a. Milestones --

Development	Approved	Current	
Estimate (SAR)	Program (APB)	Estimate	
MAY 1994	MAY 1994	MAY 1994	
SEP 1994	SEP 1994	OCT 1994	
SEP 1995	SEP 1995	OCT 1995	
MAR 1996	MAR 1996	MAR 1996	
JAN 1997	APR 1997	SEP 1997	
DEC 1997	OCT 2001	OCT 2001	
JUN 1997	OCT 1999	OCT 1999	
JUL 1997	NOV 1999	DEC 1999	
MAY 1998	MAY 2001	SEP 2001	
SEP 1998	SEP 2001	SEP 2001	
JAN 1998	JAN 2002	JAN 2002	
JUN 1998	SEP 2002	SEP 2002	
AUG 1998	SEP 2002	SEP 2002	
AUG 1998	OCT 2002	OCT 2002	
	Development Estimate (SAR) MAY 1994 SEP 1994 SEP 1995 MAR 1996 JAN 1997 DEC 1997 JUN 1997 JUL 1997 MAY 1998 SEP 1998 SEP 1998 JAN 1998 JUN 1998 AUG 1998 AUG 1998	Development Estimate (SAR) Approved Program (APB) MAY 1994 SEP 1994 SEP 1994 SEP 1994 SEP 1995 SEP 1995 MAR 1996 MAR 1996 JAN 1997 APR 1997 DEC 1997 OCT 2001 JUN 1997 NOV 1999 JUL 1997 NOV 1999 MAY 1998 SEP 2001 SEP 1998 SEP 2002 JUN 1998 SEP 2002 AUG 1998 SEP 2002 AUG 1998 SEP 2002 AUG 1998 SEP 2002	

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

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	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Follow-On Test				
Start	N/A	OCT 2002	OCT 2002 (Ch-1)	
Complete	N/A	AUG 2005	AUG 2005 (Ch-1)	
Service Depot Support	SEP 2001	SEP 2004	SEP 2004	
Initial Operational Capability	NOV 1999	SEP 2005	SEP 2005	

(U) PAC-3 Missile First Unit Equipped (FUE) was achieved on September 26, 2001 when the Army took delivery of the first sixteen PAC-3 missiles.

PAC-3 Missile Initial Operational Capability (IOC) is considered achieved when a PATRIOT Battalion, consisting of five Fire Units (FU), is equipped

10.

FIRE UNIT

a. Performance --

		P	pproved	Demon-		
	Developmen	t Prog	ram (APB)	strated	Current	
4	Estimate (SA	R) Obj/	Threshold	Perf	Estimate	
(b)(1)	N/A	N/A	/ N/A		1	
Theater Ball	istič N/A	N/A	/ N/A		To An	
Keepout Ra (km)	nge (b)(1)	N/A	/ N/A	N/A	N/A	
Missile Th Ranges (k	m)	N/A	/ N/A	N/A	N/A	•
Air Breathin Threats (AB	(g N/A) (Ts) (h)(1)	N/A	/ N/A			
First Inte Capability	(km)	N/A	/ N/A	N/A	N/A	
Altitude	N/A	N/A	/ N/A		-	
TBMs (Keepou	t) (km) (b)(1)	N/A	/ N/A	N/A	N/A TP	
ABTs (above level, give	ground N/A	N/A	/ N/A		E.	
of sight) Altitude ((meters)	(b)(1)	N/A	/ N/A	N/A	N/A	

Discasta

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

FIRE UNIT							
		2	Appro	ved	Demon-		· •.
	Development	Pro	Tram	(APB)	strated	Current	
	Estimate (SAR)	Obi	/Thre	shold	Perf	Estimate	
Altitude (Max) (km)	(b)(1)	N/A	1	N/A	N/A	N/A	
Single Shot Engagement Kill Probability	N/A	N/A	1	N/A			_
(SSEKP)	b)(1)	NT / D	1	NT / N	BT / D	NT / D	Er.
TBMS		N/A	',	N/A	N/A	N/A	-0
ABTS		N/A	1	N/A	N/A	N/A	1
Multiple Simultaneous	N/A	N/A	/	N/A			F
Engagements TBMs (arriving	(b)(1)	N/A	1	N/A	N/A	N/A	190
ABTs (within 1 second while doing		N/A	1	N/A	N/A	N/A	
a TBM mission)		2012	1.0				
System Effectiveness	N/A	N/A	1	N/A	1.11		
TBMs (two shots)	(b)(1)	N/A	1	N/A	N/A	N/A	
ABTs (one shot)		N/A	1	N/A	N/A	N/A_	
Fire Unit Mean Time Between Failure (hrs) Nuclear Hardening (EMP) missile in	The second	-					TARF
b)(1)] .	4 \/4 \			***		
Theater Ballistic Missiles (TBMs)	N/A	(0)(1)					
TBM Threat Range	N/A						E
TBM Keep-Out Altitude	N/A						

Battlespace (Non-TBMs)

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10a. (2) Performance Characteristics (Cont'd): FIRE UNIT



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

Non-TBM	Development Estimate (SAR) N/A	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current	Ch-1)
System Effectiveness (TBM)	N/A				
Joint Interoperability	7 N/A	Battery / Tactical and Bn / Data should / Link be / TADIL-J 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	Jemon- strated via HWIL, ASCIET/ JCIET and Roving Sands	Battery and Bn should be capable of integra- ting into a joint compos- ite tracking network	
(U) All performation otherwise stated.	ance parameters	are for a PATRIOT F	ire Unit	unless	S REE
	- 2) -			

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

b. Current Change Explanations - (U) (Ch-1) Data previously suppressed by reporting software due to parameter having only Threshold requirement.

MISSILE SEGMENT

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No data entered.

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



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

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b. Current Change Explanations -- None

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

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	366.7	644.0	644.4
	Procurement	1284.4	1787.4	1860.6
	Recurring Flyaway	(803.3)		(667.1)
	Nonrecurring Flyaway	(441.4)		(996.7)
	Total Plyaway	(1244.7)		(1663.8)
	Total Other Wpn Sys			(0,0)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(39.7)		(196.8)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1988 Base-Year \$	1651.1	2431.4	2505.0
	Escalation	494.3	769.5	806.0
	Development (RDT&E)	(86.0)	(167.4)	(167.8)
	Procurement	(408.3)	(602.1)	(638.2)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2145.4	3200.9	3311.0
b.	(U) Quantity			
I	Development (RDT&E)	0	0	0
1	Procurement	54	40	40
	Potal	54	40	40

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

The Fire Unit procurement quantity reflects the number of existing PATRIOT systems modified to PAC-3 capability, therefore, there is no Low Rate Initial Production quantity for this end item. The Fire Unit end item quantity is changed from 36 to 40 to include Table of Organization and Equipment requirements for seven Battalions consisting of five Fire Units per Battalion and the five forward positioned assets in Southwest Asia. This is a redefinition/reallocation from the previous approved program of 36 Fire Units which required six Fire Units in each of the six tactical Battalions.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

Total

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

MISSILE SEGMENT

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	1648.9	2370.8	2331.4
	Procurement	1498.8	3666.1	3779.8
	Recurring Flyaway	(1459.2)		(3377.3)
	Nonrecurring Flyaway	(39.6)		(402.5)
	Total Flyaway	(1498.8)		(3779.8)
	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 1988 Base-Year \$	3147.7	6036.9	6111.2
	Escalation	1088.5	2355.6	2383.6
	Development (RDT&E)	(334.2)	(590.9)	(574.5)
	Procurement	(754.3)	(1764.7)	(1809.1)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	4236.2	8392.5	8494.8

(U) The current estimate does not include the PAC-3 Evolutionary Development RDT&E funding for FY 2003 - FY 2007 which is reported in the December 2001 Ballistic Missile Defense System SAR.

b. (U) Quantity			
Development (RDT&E)	N/A	N/A	0
Procurement	1200	1130	1159
Total	1200	1130	1159

(U) The Low Rate Initial Production (LRIP) quantity for the PAC-3 missile was 90 as established by the July 7, 1994, Milestone IV/II Acquisition Decision Memorandum. The LRIP quantity was increased to 164 PAC-3 missiles in the Acquisition Strategy approved by the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on October 20, 2001. The LRIP missile quantity exceeds the 10% limit of the total planned production quantity of 159. This is the minimal LRIP quantity needed to avoid a production break between Engineering and Manufacturing Development (EMD) and Full Rate Production.

c. Foreign Military Sales -- None.

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

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

FIRE UNIT

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	UCR	Current	
	Baseline	Estimate	Percent
	(OCT 2001 APB) (Dec	2001 SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)		<u>_</u>	
(1) Cost (FY 1988 BY\$)	2431.4	2505.0	
(2) Quantity	40	40	
(3) Unit Cost	60.785	62,625	+3.03
• • • • • • • • • • • •			
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1988 BYS)	1787.4	1860.6	
(2) Quantity	40	40	
(3) Unit Cost	44.685	46 515	+4 10
(5) 6112 6666	11,005	40.515	11,10
MISSILE SECMENT			
MIDDIDE DEGRAM	LICP	Current	
	Bacolino	Patimata	Dercent
	LOCT 2001 ADD (Dog	CSCIMALE	Chapter
	(OCT 2001 APB) (Dec	ZUUI SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)	6006.0	(111 0	
(1) COSE (FY 1988 BYS)	6036.9	6111.2	
(2) Quantity	1130	1159	
(3) Unit Cost	5.342	5.273	-1.29
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1988 BY\$)	3666.1	3779.8	
(2) Quantity	1130	1159	
(3) Unit Cost	3.244	3.261	+0.52

(U) The RDT&E funding required for the PAC-3 Evolutionary Development program for PY 2003 - FY 2007 is being reported in the Ballistic Missile Defense System annual SAR submitted by the Missile Defense Agency. If this funding is included above, the Program Acquisition Unit Cost (1988 BY\$) for the Missile Segment is \$5.319M with a percent change of -0.43%.

13. (U) Cost Variance Analysis: FIRE UNIT

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	452.7	1692.7		2145.4
Previous Changes:				
Economic	-27.0	-21.2	~	-48.2
Quantity	-	-294.0	-	-294.0
Schedule	-	+53.2	-	+53.2
Engineering	+93.4	+445.9	-	+539.3
Estimating	+251.5	+94.0	-	+345.5
Other		-	-	-
Support	-	+198.1	-	+198.1
Subtotal	+317.9	+476.0	-	+793.9
Current Changes:				
Economic		-5.0	-	-5.0
Quantity	-	-	-	-
Schedule		-	-	
Engineering	-	-	-	
Estimating	+41.6	+316.8	-	+358.4
Other	-	-	-	-
Support	-	+18.3	-	+18.3
Subtotal	+41.6	+330.1	-	+371.7
Total Changes	+359.5	+806.1	-	+1165.5
Current Estimate	812.2	2498.8	-	3311.0

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	366.7	1284.4	-	1651.1
Previous Changes:				
Quantity	-	-167.0	-	-167.0
Schedule	-		-	-
Engineering	+65.4	+314.0	-	+379.4
Estimating	+186.4	+61.6	-	+248.0
Other	-	-	-	-
Support	_	+145.0	-	+145.0
Subtotal	+251.8	+353.6		+605.4
Current Changes:				
Quantity	-	-	-	-
Schedule		-	-	-
Engineering	-		-	- [
Estimating	+25.9	+210.5	-	+236.4
Other	-	-	-	-
Support		+12.1	-	+12.1
Subtotal	+25.9	+222.6	-	+248.5
Total Changes	+277.7	+576.2		+853.9
Current Estimate	644.4	1860.6	-	2505.0

13b. (0) Cost Variance Analysis (Cont'd): FIRE UNIT

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	b. (U) Current Change Explanations		
		(Dollars Base-Year	in Millions) <u>Then-Year</u>
(1)	<u>RDT&E</u> Adjustment for Current and Prior Inflation. (Estimating)	-0.3	-0.6
	Increased estimate for future software efforts (FY 2008 - FY 2012). (Estimating)	+26.2	+42.4
	Reductions for Small Business Innovative Research (SBIR). (Estimating)	0.0	-0.2
	RDT&E Subtotal	+25.9	+41.6
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-5.0
	Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.9
	Revised Base Year component due to transfer of FY 2002 funding from Army to Missile Defense Agency. (Estimating)	-0.7	0.0
	Added funding for Reliability, Availability and Maintainability (RAM) Modifications. (Estimating)	+67.0	+107.4
	Revised estimate for Radar/Classification Discrimination Identification increases for FY 2003 and FY 2004. (Estimating)	+68.9	+99.1
	Increase to provide additional Remote Launch/Communication Enhancement Upgrades (RLCEU). (Estimating)	+53.6	+77.8
	Refinement of estimate to include the Tactical Command System requirement. (Estimating)	+40.0	+59.0
	Revised estimate due to Department reductions for FY 2002 - FY 2005. (Estimating	-9.6	-14.2
	Revised estimate due to Congressional reductions. (Estimating)	-9.4	-13.2
	Reduced Initial Spares Requirement, (Support)	+11.9	+18.1
	Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
	Procurement Subtotal	+222.6	+330.1

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

MISSILE SEGMENT

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1983.1	2253.1	-	4236.2
Previous Changes:				
Economic	-2.2	~150.8	-	-153.0
Quantity		+403.9	-	+403.9
Schedule	+296.6	+160.6	-	+457.2
Engineering	+29.9	+170.2	-	+200.1
Estimating	+492.9	+2092.8	-	+2585.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+817.2	+2676.7	-	+3493.9
Current Changes:				
Economic	+1.3	-19.1	-	-17.8
Quantity	-	+391.1	-	+391.1
Schedule	-	-31.3	-	-31.3
Engineering	-	+11.0	-	+11.0
Estimating	+104.3	+307.4	-	+411.7
Other	-	-	-	-
Support	-	-		-
Subtotal	+105.6	+659.1		+764.7
Total Changes	+922.8	+3335.8	-	+4258.6
Current Estimate	2905.9	5588.9	-	8494.8

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1648.9	1498.8	-	3147.7
Previous Changes:				
Quantity	-	+567.7	- 1	+567.7
Schedule	+218.6	-480.0	-	-261.4
Engineering	+22.8	+93.6	-	+116.4
Estimating	+365.5	+1635.2	-	+2000.7
Other	-	-	-	-
Support	-	-	-	
Subtotal	+606.9	+1816.5	_	+2423.4
Current Changes:				
Quantity	-	+250.1	-	+250.1
Schedule	~	-39.2	-	-39.2
Engineering	-	+7.6	-	+7.6
Estimating	+75.6	+246.0	-	+321.6
Other	-		-	-
Support	-	-	-	-
Subtotal	+75.6	+464.5	-	+540.1
Total Changes	+682.5	+2281.0		+2963.5
Current Estimate	2331.4	3779.8		6111.2

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

111			
(1)	RUIGE		
	To correct the variance categories reported		
	in the September 2001 SAR.	/ -	
	(Economic)	N/A	+1.9
	(Estimating)	0.0	-1.9
	Revised escalation indices. (Economic)	N/A	-0.6
	Adjustment for Current and Prior Inflation.	+0.4	+0.6
	(Detimeting)		•
	(Estimating)	-0.7	-0.9
	Revised estimate due to congressional	-0.7	012
	adjustments. (Estimating)		• •
	Revised base year component due to transfer	+0.3	0.0
	of FY 2002 funds from the Army to Missile		
	Defense Agency, (Estimating)		
	Retablish follow-on flight testing for FY	+58.2	+82.5
	2002 EV 2004 (Fetimating)		
	2003 - FI 2004. (Escineting)	+15.9	+22.0
	FY 2002 Congressional increase for the 5	1	
	Evolutionary Development program. (Estimating	1 E	+2 0
	Refinement of estimate to reflect actuals for	+1.5	+2.0
	FY 2001. (Estimating)		
	RDT&E Subtotal	+75.6	+105.6

(Dollars in Millions)

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

b. (U) Current Change Explanations --

		<u>Base-Year</u>	<u>Then-Year</u>
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-24.6
	Economic adjustment for negative program change. (Economic)	N/A	+5.5
	Adjustment for Current and Prior Inflation. (Estimating)	+6.4	+9.0
	Total Quantity Variance associated with increase of 103 missiles from 1056 to 1159.	+337.8	+534.3
	Quantity increase of 103 PAC-3 missiles. (Quantity)	+250.1	+391.1
	Allocation to Schedule variance resulting from Quantity Change. (QR) (Schedule)	-39.2	+12.4
	Allocation to Engineering variance resulting from Quantity Change. (QR) (Engineering)	+7.6	+11.0
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+119.3	+119.8
	Acceleration of annual procurement buy profile. (Schedule)	0.0	-43.7
	Revised estimate for inflation. (Estimating)	+55.1	+82.5
	Army and Missile Defense Agency adjustments for missile procurement in FY 2008 - FY 2012. (Estimating)	+45.0	+69.6
	FY 2002 Congressional increase for PAC-3 missiles or Initial Production Facilitization and obsolescence. (Estimating)	+43.1	+60.0
	Revised estimate for Department reductions. (Estimating)	-22.9	-33.5
	Procurement Subtotal	+464.5	+659.1

OR = Quantity related changes.

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PATRIOT PAC-3, December 31, 2001

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

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

Current SAR Baseline to Current Estimate

PAUC		Changes							PAUC
Dev Est				·					Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
39.73	-1.33	+6.56	+1.33	+13.48	+17.60		+5.41	+43.05	82.78

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

Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Dev Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
31.35	-0.655	+3.62	+1.33	+11.15	+10.27		+5.41	+31.12	62.47

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DELETE	N/A	N/A
Milestone III	N/A	DELETE	N/A	N/A
FUE	N/A	SEP 1998	N/A	DEC 2000
Total Cost	N/A	2145.4	N/A	3311.0
Total Quantity	N/A	54	N/A	40
Prog Acg Unit Cost	N/A	39.7	N/A	82.8

MISSILE SEGMENT

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

PAUC	Changes						PAUC		
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.53	-0.147	+0.807	+0.367	+0.182	+2.59			+3.80	7.33

Current SAR Baseline to Current Estimate

PATRIOT PAC-3, December 31, 2001

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

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

Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Dev Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.88	-0.147	+0.754	+0.112	+0.156	+2.07			+2.94	4.82

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAY 1994	N/A	MAY 1994
Milestone III	N/A	AUG 1998	N/A	SEP 2002
IOC	N/A	NOV 1999	N/A	SEP 2005
Total Cost	N/A	4236.2	N/A	8494.8
Total Quantity	N/A	1200	N/A	1159
Prog Acq Unit Cost	N/A	3.5	N/A	7.3

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

a. RDT&E ---

1. <u>1</u>.

(U) PAC-3 MISSILE EMD:		Initial <u>Target</u>	Contract Pr Ceiling	ice <u>Qty</u>
DAAH01-95-C-0021, CPIF/AF		\$515.8	N/A	0
Award: October 26, 1994 Definitized: November 7, 1995				
Current Contract Price		Estimated P	rice At Comp	letion
Target Ceiling	Qty	Contractor	Program	Manager
\$748.9 N/A	0	\$993.7	\$9	96.9
Provious Cumulative Variances		Cost Variance	e Schedule V	ariance

Previous Cumulative Variances Cumulative Variances To Date (12/31/01) Net Change
 Cost Variance
 Schedule Variance

 \$-171.1
 \$-39.0

 \$-175.6
 \$-35.5

 \$-4.5
 \$3.5

Explanation of Change:

(U) Although cost and schedule performance trends remain unfavorable, developmental flight testing has been successful. The Engineering and Manufacturing Development (EMD) contract is greater than 97% complete and remaining risk is assessed as low. Operational testing began in January

PATRIOT PAC-3, December 31, 2001

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

2002, and flight testing will complete by May 2002. The contractor is reassigning personnel as the development effort nears completion.

(U) Contract Comments:

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The initial Contract Price has increased from \$515.8M to the Current Price of \$748.9M due to several contract changes that have added scope or reduced schedule risk in the program. The major contract changes include: risk abatement/mitigation modifications of \$153.2M in 3rd Quarter FY 1996, two additional flight tests for \$18.2M in 4th Quarter FY 1996, Security Classification Guide update for \$3.4M in 4th Quarter FY 1997, special inspection and test equipment for \$8.1M in 1st Quarter FY 1998, engage-on-remote feasibility study and implementation for \$3.0M in 2nd Quarter FY 1999, seeker design verification testing for \$25.5M in 3rd Quarter FY 1999, approximately \$11M in FY 2000 and FY 2001 for Cost Reduction Initiatives, and \$8.7M issued in November 2001 for contractor test and evaluation support for operational tests. Several other smaller contract modifications have also been implemented for such efforts as canister stacking, missile assembly building, and enhanced launcher electronics system hardware. The cost growth in the EMD effort is attributed primarily to missile seeker software development and integration complexity, missile simulation testing, missile seeker rework, and range and target availability.

(U) PAC-3 MSL INTEGRATION:	Initial (<u>Target</u> (Contract Price Ceiling Oty
RAYTHEON CO., BEDFORD, MA DAAH01-95-C-0022, CPIF/AF Award: October 31, 1994 Definitized: October 23, 1995	\$104.8	N/A 0
Current Contract Price <u>Target Ceiling Qty</u> \$193.3 N/A 0	Estimated Pri <u>Contractor</u> \$188.2	ce At Completion <u>Program Manager</u> \$193.3
Previous Cumulative Variances Cumulative Variances To Date (12/30/01) Net Change	Cost Variance \$1.8 \$1.8 \$1.8 \$0.0	<u>Schedule Variance</u> <u>\$-0.6</u> <u>\$0.0</u> \$0.6

Explanation of Change:

(U) The favorable cost variance is attributable to completion of the PAC-3 Developmental Test flights, delivery of the Initial Operational Test & Evaluation (IOT&E) software build, and closure of the Dynamic Missile Model task for the fixed Flight Mission Simulator (FMS). The favorable schedule variance is attributed to the completion of the Tracking Improvements (TI) Radar Performance task, completion of the Comprehensive Test Plan (CTP) requirements analysis for the IOT&E software build; and progress in integration and testing of TI Build 1 software with the PAC-2 missile in

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

the Guidance Test and Simulation Facility (GTSF).

(U) Contract Comments:

1.1

The initial Contract Price has increased from \$104.8M to the Current Price of \$193.3M due to contract changes that have added scope and/or reduced schedule risk in the program. The major contract changes include risk abatement/mitigation modification for \$31.3M in 4th Quarter FY 1996, extension of the program period of performance (POP) through 3rd Quarter FY 2001 for \$46.2M in 1st Quarter FY 2000, and extension of program POP through 4th Quarter FY 2002 for \$11.2M in 4th Quarter FY 2001. The Target Contract Price is expected to decrease due to de-scoping of the Tracking Improvements Build 2 software task.

The increase from \$181.5M to \$193.3M in the Current Target Contract Price is attributed to two contract modifications. The contract was modified on September 7, 2001 to extend the Period of Performance through September 2002. The second modification was implemented on December 11, 2001 to add scope for support of an air breathing target (ABT) pilot test at White Sands Missile Range (WSMR). Changes to the Contractor and Program Manager Estimated Price at Completion are due to the change in the target price.

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

Target	Ceiling	Qty	Contractor	Program Manager
\$501.1	N/A	40	\$501.1	\$501.1

Explanation of Change:

(U) The Current Contract Price and Estimated Prices at Completion increased \$4.4M due to spares.

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

(U) Contract Comments:

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

PATRIOT PAC-3, December 31, 2001

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

	_			Initia.	l Contract Pi	rice
(U) <u>PAC-3</u>	LRIP:			Target	Ceiling	Qty
LOCKHEED, DAI	LAS, TX					
DAAH01~98-C-0	062, CPIF		1	\$39.5	N/A	0
Award: Decemb	er 12, 1997					
Definitized:	September 29,	1998				
Current	Contract Pric	e		Estimated 1	Price At Comp	letion
Target	Ceiling	Qty	(Contractor	Program	Manager
\$530.4	N/A	92		\$556.2	\$5	63.1
			(Cost Variand	ce Schedule V	<i>ariance</i>
Previous Cumu	lative Varianc	es		\$-15.4	\$-11.	8
Cumulative Va	riances To Dat	e (12/31/01)		\$-14.6	\$4.	0
Net Chang	e			\$0.8	\$15.	8

Explanation of Change:

(U) The favorable cost and schedule net variance changes are attributable to replanning of the Low Rate Initial Production (LRIP)-2 effort to a revised master schedule.

(U) Contract Comments:

The PAC-3 LRIP contract was awarded as the PAC-3 Long Lead Time Item (LLTI) for LRIP contract in December 1997 to procure materials for the first 20 missiles, at a not-to-exceed (NTE) value of \$39.5M. The contractor's original proposal in October 1997, was for \$39.5M, but subsequent to the contract award, the contractor submitted a firm proposal in May 1997, for \$56.7M. The LLTI contract was modified in December 1999, May 2000 and December 2000 for additional LRIP effort. The contract changes include: LRIP Basic, awarded December 3, 1999, for \$48.4M, for assembly of the first 20 PAC-3; Special Configuration Test Hardware, awarded December 8, 1999, for \$17.6M, for three additional EMD test missiles; LLTI for LRIP-1, awarded December 20, 1999, for \$78.0M, for long lead components for the LRIP 1 procurement; LRIP 1, awarded May 19, 2000, for \$208.0, for assembly of 32 missiles; LRIP 2, awarded December 20, 2000, for assembly of 40 additional missiles.

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

PATRIOT PAC-3, December 31, 2001

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

Total Program

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

Appropriation	Prior <u>Years</u> (FY83 01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-12)	Total
RDT&E	3407.4	132.7	69.2	108.8	3718.1
Procurement	2655.0	757.2	613.0	4062.5	8087.7
MILCON	-	-	-	-	-
0&M	-	-	~	-	~
Total	6062.4	889.9	682.2	4171.3	11805.8

FIRE UNIT

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

Appropriation	Prior <u>Years</u> (FY89-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-12)	Total
RDT&E	712.2	4.5	6.7	88.8	812.2
Procurement	1680.3	107.6	141.3	569.6	2498.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2392.5	112.1	148.0	658.4	3311.0

MISSILE SEGMENT

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

Appropriation	Prior <u>Years</u> (FY83-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-12)	Total
RDT&E	2695.2	128.2	62.5	20.0	2905.9
Procurement	974.7	649.6	471.7	3492.9	5588.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3669.9	777.8	534.2	3512.9	8494.8

(U) The RDT&E funding required for Evolutionary Development in FY 2003 - FY 2007 (\$78.7M TY\$) is reported in the December 2001 Ballistic Missile Defense System SAR submitted by the Missile Defense Agency, therefore this funding is not included in the Missile Segment RDT&E funding above.

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

b. Annual Summary -- FIRE UNIT

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Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1988 Dollars Nonrec	Flyaway FY 1988 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				16.5	19.0
1992				56.6	67.0
1993				24.2	29.3
1994				17.9	22.1
1995				55.0	69.3
1996				50.3	64.3
1997				42.2	54.7
1998				6.6	8.6
Subtotal				269.3	334.3

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

		Flyaway	Flyaway		
		FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1989				21.8	23.4
1990				28.8	32.1
1991				39.6	45.9
1992				32.0	37,9
1993				37.8	45.8
1994				30.9	38.2
1995				18.2	22.9
1996				33.6	43.1
1997				34.6	44.9
1998				16.1	21.0
1999				6.7	8.8
2000				5.6	7.5
2001				4.7	6.4
2002				3.2	4.5
2003				4.7	6.7
2004				6.8	9.7
2005				5.3	7.8
2006				5.4	
2007				5.3	8.1
2008				5.4	8.4
2009				5.5	8.7
2010				5.6	9.0
2011				5.8	9.5
2012				11.7	19.5
Subtotal				375.1	477.9

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

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(U) Only funding associated with the approved PAC-3 program has been included above.

Appropriation: 0300 - Procurement, Defense Agencies

		Flyaway	Flyaway		
1	1	FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992		20.6		20.6	24.9
1993		60.9		60.9	75.2
1994		96.0		96.0	120.1
1995	6	16.6	180.3	196.9	251.1
1996	6		221.5	221.5	285.1
1997	6		67.6	87.4	113.9
1998	6		71.9	101.8	133.5
1999	6		55.0	78.3	104.0
2000	6		35.3	50.1	67.6
2001	4		35.5	48.0	65.9
2002		47.0		58.7	81.9
Subtotal	40	241.1	667.1	1020.2	1323.2

Appropriation: 2032 - Missile Procurement, Army

		Flyaway	Flyaway		
		FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1990		16.5		16.5	19.1
1991		126.1		126.1	149.6
1992		39.8		39.8	48.3
1993		13.7		14.3	17.7
1994	· · ·	14.9		20.2	25.4
1995		20.3		25.2	32.3
1996		5.3	· _ ·	7.9	10.2
1997		17.8		21.8	28.5
1998		5.9		7.9	10.4
1999		10.5		14.1	19.0
2000		36.4		39.0	53.2
2001		16.4		18.3	25.3
2002		17.8		18.3	25.7
2003		86.8		98.7	141.3
2004		135.5		148.4	216.4
2005		37.6		45.1	67.0
2006		21.8		29.3	44.4
2007		33.2		36.8	56.8
2008		15.1		18.6	29.3
2009		15.2		18.7	29.9
2010		18.5		21.9	35.7

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

Appropriation: 2032 - Missile Procurement, Army

		Flyaway	Flyaway		
		FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2011		19.8		21.3	35.5
2012		30.7		32.2	54.6
Subtotal		755.6		840.4	1175.6

		Flyaway	Flyaway	Total	Total
1		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD	40	241.1	667.1	1289.5	1657.5
Army		755.6		1215.5	1653.5
Grand Total	40	996.7	667.1	2505.0	3311.0

b. Annual Summary -- MISSILE SEGMENT

Appropriation: 0400 - RDT&E, Defense Agencies

		Flyaway	Flyaway		
		FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year Ş
1983				38.0	33.3
1984				26.5	24.1
1985				21.8	20.4
1986				15.7	15.1
1987				30.5	30.2
1988				17.6	18.0
1989				60.9	65.2
1990				34.5	38.3
1991				110.7	127.5
1992				201.9	239.0
1993					200.2
1994				157.2	194.1
1995				219.3	276.1
1996				243.5	311.6
1997				253.3	328.1
1998				179.4	234.1
1999				179.8	237.3
2000				164.6	220.7
2001				60.1	81.9
2002				92.6	128.2
Subtotal				2273.2	2823.4

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

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

Fiscal	Otar	Flyaway FY 1988 Dollars	Flyaway FY 1988 Dollars	Total Program Base-Year S	Total Program Then-Year S
2003		Nomec	Nec	44.3	62.5
2004				13.9	20.0
Subtotal				58.2	82.5

(U) Only funding associated with the approved PAC-3 program is included above. RDT&E funding required for Evolutionary Development in FY 2003 - FY 2007 (\$78.7M TY\$) is reported in the December 2001 Ballistic Missile Defense System SAR in anticipation that the funds will transfer from the Army to the Missile Defense Agency.

Appropriation:	0300		Procurement,	Def	ense	Agenci	es
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		Flyaway	Flyaway		
		FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997		80.7		80.7	105.1
1998	20		139.7	139.7	183.3
1999		66.1		66.1	87.8
2000	32		227.2	227.2	306.7
2001	40		212.5	212.6	291.8
2002	72	111.2	354.8	466.0	649.6
Subtotal	164	258.0	934.3	1192.3	1624.3

Appropriation: 2032 - Missile Procurement, Army

		Flyaway	Flyaway		
		FY 1988	FY 1988	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003	72	27.9	301.5	329.4	471.7
2004	72	13.7	295.2	308.9	450.5
2005	131		337.2	337.2	501.1
2006	144		332.2	332.2	503.0
2007	144		325.3	325.3	502.0
2008	144		297.7	297.7	468.0
2009	144		287.7	287.7	461.0
2010	144		266.2	266.2	434.6
2011		52.4		52.4	87.1
2012		50.5		50.5	85.6
Subtotal	995	144.5	2443.0	2587.5	3964.6

PATRIOT PAC-3. December 31, 2001

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

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD	164	258.0	934.3	3465.5	4447.7
Army	995	144.5	2443.0	2645.7	4047.1
Grand Total	1159	402.5	3377.3	6111.2	8494.8

17. (U) Delivery/Expenditure Information:

FIRE UNIT

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•	(U) Deliveries To Date	Plan	Actual
	RDT&E	0	0
	Procurement	20	20

(U) Percent Total Program Quantities Delivered: 50.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2198.5

(U) Percent Total Program Expended: 66.4%

(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	Plan	Actual
		RDT&E Procurement	0 16	0 18

(U) Percent Total Program Quantities Delivered: 1.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3232.2

(U) Percent Total Program Expended: 38.0%

18. (U) Operating and Support Costs:

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

FIRE UNIT

a. (U) Assumptions and Ground Rules --The O&S assumptions and costs are based on PATRIOT Operating Tempo, Fire Unit Mean Time Between Failure (MTBF), and the PATRIOT O&S Cost Estimate dated January 2002.

The concept of operation is 54 tactical Fire Units (FUs) of which 40 are being upgraded to PAC-3 capability. The costs are the direct cost to support the primary personnel and to operate the FUs. The O&S consumables are replenishment spares, repair parts, and petroleum, oil and lubricants (POL). The Direct Depot Maintenance costs are the labor, materials, and transportation for repair of major FU component parts, and software support. The sustaining investment consists of modification kits and support operations. Other Direct Support costs include maintenance civilian labor, and other direct support for mod kit installation. The Indirect Costs are for indirect support operations, Military Occupational Specialty (MOS) training costs, Quarters Maintenance and Utilities, Post Production Engineering, Central Supply, Unit Operations, Base Operations, and training activities. PAC-3 is an upgrade program to the fielded PATRIOT system, therefore, O&S costs remain unchanged. There is no antecedent system.

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

	FIRE UNIT	ANTECEDENT SYSTEM
Cost Element	PAC-3 Fire Unit	Antecedent System
Mission Pay & Allowances	1.2	0.0
Unit Level Consumption	1.1	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.6	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.5	0.0
Indirect Costs	0.8	0.0
Total	4.2	0.0

Total O&S Cost	FIRE UNIT	ANTECEDENT SYSTEM
BY\$ (In Millions)	10968.6	N/A
TY\$ (In Millions)	20586.7	N/A

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

MISSILE SEGMENT

a. (U) Assumptions and Ground Rules --Same assumptions and ground rules as Fire Unit. As stated in the Acquisition Program Baseline, the missile O&S cost are for all missile configurations in the PATRIOT system.

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

	MISSILE SEGMENT	ANTECEDENT SYSTEM
Geet Element	Avg Annual Cost Per	Avg Annual Cost Per
COST ETEMENT	PAC-3 MISSITE	Antecedent System
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	4.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	34.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	3.0	0.0
Indirect Costs	43.0	0.0
	N/A	N/A
Total	84.0	0.0

Total O&S Cost	MISSILE SEGMENT	ANTECEDENT SYSTEM
BY\$ (In Millions)	2603.9	N/A
TY\$ (In Millions)	4697.1	N/A

Report Creation Date: 03/21/2002 8:47:00 AM

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

AS OF DATE: December 31, 2001

SUBJECT	PAG
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Executive Summary	2
Threshold Breaches	3
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Total Program Cost and Quantity	8
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INDEX



1. (U) Designation and Nomenclature (Popular Name): CVN-68 Class/Carrier Replacement Program (Nuclear Aircraft Carriers)

2. (U) DoD Component: Navy

N-6 CVN 68

3. (U) Responsible Office and Telephone Number:

Program Executive Officer Aircraft Carriers 614 Sicard Street SE Stop 7007 Washington, DC 20376-7007 CAPTs C. Bush/ D. Berthold Assigned: December 18, 1999 DSN 326-0470; COMM (202) 781-0470 BushCA@navsea.navy.mil/BertholdDB@n avsea.navy.mil

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0604567N Project 42301 PROCUREMENT: (U) APPN 1611 ICN 32200100 (Navy)

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> > on 3 dated February 1996

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CVN-68 Class, December 31, 2001

5. (U) References:

CVN-76

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SAR Baseline (Production Estimate): (U) The FY 1992 President's Budget.

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

CVN-77

SAR Baseline (Production Estimate): (U) FY 1994 President's Budget dated April 08, 1993.

Approved Program:

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

6. (U) Mission and Description:

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

Construction of the CVN 68 Class aircraft carriers began in October 1967 with the start of the NIMITZ (CVN 68). To date eight ships have been delivered. The USS NIMITZ (CVN 68), USS DWIGHT D. EISENHOWER (CVN 69), USS CARL VINSON (CVN 70), USS THEODORE ROOSEVELT (CVN 71), USS ABRAHAM LINCOLN (CVN 72),USS GEORGE WASHINGTON (CVN 73), USS JOHN C. STENNIS (CVN 74), and USS HARRY S. TRUMAN (CVN 75) were delivered in 1975, 1977, 1982, 1986, 1989, 1992, 1995, and 1998 respectively. Two new ships, the RONALD REAGAN (CVN 76),and the USS LEXINGTON (CVN 77)are targeted for delivery in March 2003 and January 2008, respectively.

7. (U) Executive Summary:

(U) A revised delivery date for the CVN 76 has been negotiated for March 28, 2003. The revised delivery is in response to progress shortfalls caused by yard-wide labor resource issues at Northrop Grumman Newport News (NGNN). Cost, schedule and performance are within APB parameters, however senior Navy acquisition officials were briefed in December 2001 on an additional projected \$55M shortfall to complete construction of CVN 76 to current contract requirement. The funding shortfall was also the result of labor resource issues related to

CVN-68 Class, December 31, 2001

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

performance efficiency, required overtime and rate changes. The program manager proposed cost mitigation actions, including contract de-scoping, to match available funds. As of March 2002 the cost mitigation actions taken by PEO Carriers and Navy acquisition officials have retired this \$55M shortfall liability. Contract de-scoping action will not be necessary.

In January 2001, after successful negotiations, NGNN was awarded the CVN 77 detail design and construction contract. This award was made within the parameters of a constrained budget, and features a prototype acquisition strategy that enables the shipbuilder to design, procure, install, and integrate the warfare system for a new construction nuclear aircraft carrier.

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

8. (U) Threshold Breaches:

CVN-76

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

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

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

b. (U) Nunn-McCurdy Unit Cost:

	Ítem			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Ūnit	Cost	No

CVN-77

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

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

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

Cost breach in RDT&E is a result of additional funds provided in the FY02 & FY03 President's Budget to provide for new Integrated Warfare System.

9. (U) <u>Schedule</u>:

CVN-76

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a. Milestones ---

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

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CVN-68 Class, December 31, 2001

Annual Comment

9b. (U) <u>Schedule (Cont'd)</u>: CVN-76

b. Current Change Explanations -- None

CVN-77

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a. Milestones --

	Estimate (SAR)	Program (APB)	Estimate
CVN 77			
Definitization of Contracts	DEC 2000	JUN 2001	JAN 2001
Start Production	NOV 2001	NOV 2001	MAR 2001
Lav Keel	DEC 2003	DEC 2003	MAY 2003(Ch-1)
Launch	DEC 2006	DEC 2006	MAR 2006
Delivery	DEC 2008	DEC 2008	JAN 2008

b. Current Change Explanations --

(U) (Ch-1) Lay Keel schedule milestone changed from FEB 2002 to MAY 2003 to correct misreported date in the previous SARs.

10. (U) Performance Characteristics:

CVN-76

a. Performance --

		App	DIC	oved	Demon-	
	Production Estimate (SAR)	Progra Obj/Th	m	(APB) eshold	strated Perf	Current Estimate
Length Overall	1092	1092	1	1092	1092	1092
Beam	134	134	1	134	134	134
Maximum Width	252	252	1	252	252	252
Draft (Combat Load) (ft)	38.4	39.0	1	40.4	40.4	38.9
Displacement (tons)	96300	99000	1	102500	102500 1/	97337
Propulsion	NUCLEAR	NUCLEAR	1	NUCLEAR	NUCLEAR	NUCLEAR
Shaft Horsepower Trial Speed (kts) Dendurance (at 20 kts)	(b)(1)		1 Maria			
Stores (davs)	75	75	1	75	75	75
Close In Weapon Systems	4	4	1	4	4	4
NATO Sea Sparrow Missile Systems	3	3	1	3	3	3
Aviation Strike Ordnance (long tons)	2400	2400	1	2400	2451	2451
Ave. fuel (gals)	(b)(1)	1	1	Server State	an Sela an	1050

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10a. (U) <u>Performance Characteristics (Cont'd)</u>: CVN-76

	Production Estimate (SAR)	Ap Progr Obj/1	am	oved (APB) eshold	Demon- strated <u>Perf</u>	Current Estimate
Operational Number of Aircraft (deck multiple in A4	151	151	1	151	151 3/	151
Equivalents)						
Core Life (yrs)	13	N/A	1	N/A	2/	20
Number of Reactors	2	N/A	1	N/A	2	2
Crew (Including Air Wing)	6280	N/A	1	N/A	6040	6048

(U) 1/ Actual based on CVN 68 Class standardization trials.
2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and is currently undergoing a Refueling Complex Overhaul (RCOH). Contract award was April 98.
3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156. The CVN 76 is a modified repeat of the CVN 74/75. RDT&E funding became available in FY 1991 to begin contract design for CVN 76 which continued through to FY 95.

b. Current Change Explanations -- None

CVN-77

a. Performance --

		App	ord	oved	Demon-	
	Production	Progra	m	(APB)	strated	Current
	Estimate (SAR)	Obj/Th	nre	eshold	Perf	Estimate
Length Overall	1092	1092	1	1092	1092	1092
			1			
Beam	134	134	1	134	134	134
Maximum Width	252	252	1	252	252	252
Draft (Combat Load) (ft)	40.4	39.0	1	40.4	40.4	40.4
Displacement (tons)	97337	99000	1	102500	102500 1/	97337
Propulsion	Nuclear	Nuclear	1	Nuclear	Nuclear	Nuclear
Shaft Horsepower	(b)(1)					ALC: NOT THE OWNER OF
C) Trial Speed (kts)						and a second sec
Endurance (at 20 kts)					N SI	- Anna and
Store (days)	75	75	1	75	75	75
Close in Weapons Systems	4	4	1	4	4	4
NATO Sea Sparrow Missile Systems	3	3	1	3	3	3

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10a. (U) <u>Performance Characteristics (Cont'd)</u>: CVN-77

Aviation Strike	Production <u>Estimate (SAR)</u> 2451	App: Program <u>Obj/Th:</u> 2400	roved m (APB) <u>reshold</u> / 2400	Demon- strated <u>Perf</u> 2451	Current <u>Estimate</u> 2451
Ordnance (Long Tons) NAverage Fuel (gals)	(b)(1)				
Multiple in A4	121	191	/ 151	191 3/	191
Equivalents)					
Core Life (yrs)	15	N/A	/ N/A	2/	20
Number of Reactors	2	N/A	/ N/A	2	2
Crew (Including Air Wing)	6048	N/A	/ N/A	6040	6048

(U) 1/ Actual based on CVN 68 Class standardization trials.
2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and is currently undergoing a Refueling Complex Overhaul (RCOH). Contract award was April 98.
3/ The operational number of aircraft (deck multiple) in A7 equivalents is

156.

b. Current Change Explanations -- None

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CVN-68 Class, December 31, 2001

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

<pre>a. (U) Cost Development (RDT&E) Procurement Basic Government Furnished Other OF/PD Total Sailaway Total Other Wpn Sys Peculiar Support Initial Spares Construction (MILCON) Acquisition O&M Total FY 1995 Base-Year \$ Escalation Development (RDT&E)</pre>	Production <u>Estimate (SAR)</u> 48.1 3862.7 (2458.7) Eq (1311.7) (18.6) (73.7) (3862.7) (0.0) (0.0) (0.0) 0.0 3910.8 386.4 (71.1)	Approved <u>Program (APB)</u> 48.1 4488.6 0.0 <u>0.0</u> 4536.7 433.2 (-1.1)	Current <u>Estimate</u> 38.2 4608.1 (3237.1) (1198.2) (63.2) (109.6) (4608.1) (0.0) (0.0) (0.0) 0.0 <u>0.0</u> 4646.3 140.2 (-0.8)
Development (RDT&E) Procurement Construction (MILCON) Acquisition O&M Total Then Year \$	(21.1) (387.5) (0.0) (0.0) 4297.2	(434.3) (0.0) <u>(0.0)</u> 4969.9	(141.0) (0.0) <u>(0.0)</u> 4786.5
b. (U) Quantity			
Development (RDT&E) Procurement Total	0 1 1	0 1 1	0 1 1

c. Foreign Military Sales -- None.

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

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

CVN-77

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		Production	Approved	Current
а.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	0.0	215.5	345.9
	Procurement	4557.1	4719.2	4439.8
	Basic	(2901.1)		(3870.3)
	Government Furnished	Eq (1547.8)		(265.4)
	Other Costs	(21.9)		(250.2)
	OF/PD	(86.3)		(53.9)
	Total Sailaway	(4557.1)		(4439.8)
	Total Other Wpn Sys	(0.0)		(0.0)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1995 Base-Year \$	4557.1	4934.7	4785.7
	Escalation	983.7	1039.0	592.8
	Development (RDT&E)	(0.0)	(19.3)	(36.5)
	Procurement	(983.7)	(1019.7)	(556.3)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	_ (0,0)	(0.0)	(0.0)
	Total Then Year \$	5540.8	5973.7	5378.5
b.	(U) Quantity			
	Development (RDT&E)	0	0	0
1	Procurement	1	1	1
	Total	1	1	
		-	-	L

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:

CVN-76

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		UCR	Current	
		Baseline	Estimate	Percent
	/OCT	1992 APR) (F	ec 2001 SAR)	Change
(II) Dear Bee Unit Cost (DBUC)	1001		<u></u>	<u></u>
(U) Prog. Acq. Unit Cost (FAUC)		4506 7	4646 5	
(1) Cost (FY 1995 BY\$)		4536./	4646.3	
(2) Quantity		1	1	
(3) Unit Cost		4536.700	4646.300	+2.42
(U) Avg Proc Unit Cost (APUC)				
(U) Avg. FICE. OHIC CODE (HECC)		4488 6	4608 1	
(1) COSC (EI 1995 BIQ)		1100.0	1000.1	
(2) Quantity		1 100 500	1 6 0 0 1 0 0	
(3) Unit Cost		4488.000	4608.100	+2.00
		UCR	Current	
		Baseline	Estimate	Percent
	1007	1992 APR1 /	lec 2001 SAR)	Change
	1001		ACC 2001 OFfice	
(U) Prog. Acq. Unit Cost (PAUC)		4034 7	4305 3	
(1) Cost (FY 1995 BY\$)		4934.7	4/85./	
(2) Quantity		1	1	
(3) Unit Cost		4934.700	4785.700	-3.02
(-)				
(U) And Proc Unit Cost (APUC)				
(U) AVG. FICE. UNIC COSC (112007		4719 2	4439.8	
(1) COST (FI 1995 B14)		1/1//2	1,000.0	
(2) Quantity		1	1430 000	E 02
(3) Unit Cost		4/19.200	4439.800	-5.92
	 (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost 	(U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost	UCR Baseline (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1995 BY\$) 4536.7 (1) Cost (FY 1995 BY\$) 4536.700 (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) 4488.6 (2) Quantity 1 (3) Unit Cost 4488.6 (2) Quantity 1 (3) Unit Cost 4488.600 (U) Prog. Acq. Unit Cost (PAUC) 4488.600 (1) Cost (FY 1995 BY\$) 4488.600 (U) Prog. Acq. Unit Cost (PAUC) UCR Baseline (1) Cost (FY 1995 BY\$) 4934.7 (2) Quantity 1 (3) Unit Cost 4934.700 (U) Avg. Proc. Unit Cost (APUC) 4934.700 (U) Avg. Proc. Unit Cost (APUC) 1 (1) Cost (FY 1995 BY\$) 4719.2 (1) Cost (FY 1995 BY\$) 4719.200	UCR Current Baseline Estimate (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1995 BY\$) 4536.7 4646.3 (2) Quantity 1 1 1 (3) Unit Cost (APUC) 4536.7 4646.300 (U) Avg. Proc. Unit Cost (APUC) 4536.700 4646.300 (U) Avg. Proc. Unit Cost (APUC) 4488.6 4608.1 (2) Quantity 1 1 (3) Unit Cost 4488.600 4608.100 (U) Prog. Acq. Unit Cost (PAUC) 4488.600 4608.100 (U) Prog. Acq. Unit Cost (PAUC) UCR Current (1) Cost (FY 1995 BY\$) 4934.7 4785.7 (2) Quantity 1 1 (3) Unit Cost (APUC) 4934.7 4785.7 (1) Cost (FY 1995 BY\$) 4719.2 4439.8 (2) Quantity 1 1 1 (1) Cost (FY 1995 BY\$) 4719.2 4439.800

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13. (U) Cost Variance Analysis: CVN-76

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	47.0	4250.2	-	4297.2
Previous Changes:				
Economic	+0.8	-307.7	- 1	-306.9
Quantity	-	-	-	
Schedule	-	~	-	-
Engineering		+35.6	-	+35.6
Estimating	-10.4	+488.0	-	+477.6
Other	-	+87.1	-	+87.1
Support	-	-	-	-
Subtotal	-9.6	+303.0	-	+293.4
Current Changes:				
Economic	-	+23.9	~	+23.9
Quantity	-	-	-	_ '
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+120.0	-	+120.0
Other	-	+52.0	-	+52.0
Support				-
Subtotal		+195.9		+195.9
Total Changes	-9.6	+498.9	-	+489.3
Current Estimate	37.4	4749.1	-	4786.5

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	48.1	3862.7	-	3910.8
Previous Changes:				
Quantity	-	-	-	-
Schedule		-	-	~
Engineering	-	+34.5	_	+34.5
Estimating	-9.9	+470.1	-	+460.2
Other	-	+84.9	-	+84.9
Support	-	-	-	
Subtotal	-9.9	+589.5	-	+579.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-		-	- 1
Estimating	-	+115.6	- 1	+115.6
Other	-	+40.3		+40.3
Support	-	-	-	-
Subtotal	***	+155.9	-	+155.9
Total Changes	-9.9	+745.4	-	+735.5
Current Estimate	38.2	4608.1	-	4646.3

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

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	b. (U) Current Change Explanations ~~	(Dollars in <u>Base-Year</u> Th	Millions) en-Year
(1)	Procurement		
	Revised escalation indices (Economic)	N/A	+23.9
	Adjustment for current and prior inflation (Estimating)	-21.0	-23.0
	Revised estimate for shipbuilder overhead cost on CVN 76 due to re-scheduling of CVN 69 overhaul. (Estimating)	+17.8	+21.0
	Contractual government share of shipbuilder strike costs. (Other)	+40.3	+52.0
	Revised estimate for contract escalation. (Estimating)	+118.8	+122.0
	Procurement Subtotal	+155.9	+195.9

13. (U) Cost_Variance Analysis (Cont'd):

CVN-77

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate		5540.8	- 1	5540.8
Previous Changes:				
Economic	-7.8	-496.8	-	~504.6
Quantity	-	-	-	-
Schedule		-141.4	en	-141.4
Engineering	+157.3	-223.0	-	-65.7
Estimating	+45.8	+298.0	· -	+343.8
Other	-	+127.0	-	+127.0
Support	-	-	-	-
Subtotal	+195.3	-436.2	-	-240.9
Current Changes:				
Economic	+1.0	+81.7	-	+82.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	_
Estimating	+186.1	-190.2	-	-4.1
Other	-	-	-	_
Support	-	-	-	-
Subtotal	+187.1	-108.5	-	+78.6
Total Changes	+382.4	-544.7	-	-162.3
Current Estimate	382.4	4996.1	-	5378.5

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

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(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	-	-130.9	-	-138.9
Engineering	+141.2	-146.5	-	-5.3
Estimating	+38.4	+226.1	-	+264.5
Other	-	+114.7	-	+114.7
Support			-	
Subtotal	+179.6	+55.4	-	+235.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+166.3	-172.7	-	-6.4
Other	-	-	-	-
Support	-	-	-	
Subtotal	+166.3	-172.7	-	-6.4
Total Changes	+345.9	-117.3		+228.6
Current Estimate	345.9	4439.8	-	4785.7

b. (U) Current Change Explanations --

	D. (b) ourrent change apprenditions	(Dollars in <u>Base-Year</u> T	Millions) hen-Year
(1)	RDT&E Revised escalation indices. (Economic)	N/A	+1.0
	Revised program estimate for Integrated Warfare Systems (Estimating)	+167.1	+186.9
	Adjustment for Current and Prior Inflation. (Estimating)	-0.8	O.B
	RDT&E Subtotal	+166.3	+187.1
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+81.7
	Adjustment for Current and Prior Inflation. (Estimating)	-77.5	-84.3
	Budget reduction to revise outfitting costs (Estimating)	-40.1	-49.3
	Revised estimate due to Congressional recissions (Estimating)	-55.1	-56,6
	Procurement Subtotal	-172.7	-108.5

CVN-68 Class, December 31, 2001

14. (U) <u>Unit Cost and Other History</u> (Then-Year Dollars in Millions): CVN-76

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

Current SAR Baseline to Current Estimate

PAUC	Changes								
Prod Est		c c							
	Econ	Econ Qty Sch Eng Est Oth Spt Total							
4297.20	-283.00			+35.60	+597.60	+139.10		+489.30	4786.50

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

Current SAR Baseline to Current Estimate

PUC		Changes							
Prod Est									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4250.20	-283.80			+35.60	+608.00	+139.10		+498.90	4749.10

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	DEC 2002	MAR 2003
Total Cost	N/A	N/A	4297.2	4786.5
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	4297.2	4786.5

CVN-77

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

PAUC	Changes								PAUC
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5540.80	-421.90		-141.40	-65.70	+339.70	+127.00		-162.30	5378.50

Current SAR Baseline to Current Estimate

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

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

Current SAR Baseline to Current Estimate

PUC		Changes							
Prod Est									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5540.80	-415.10		-141.40	-223.00	+107.80	+127.00		-544.70	4996.10

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate (DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	DEC 2008	JAN 2008
Total Cost	N/A	N/A	5540.8	5378.5
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	5540.8	5378.5

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

a. RDT6E		Initial	Contract Pr	ice
(U) <u>Warfare Sys Developmer</u>	<u>nt:</u>	<u>Target</u>	<u>Ceiling</u>	Oty
NGNN, Newport News, VA				
, CPAF		\$102.0	N/A	C
Award: N/A				
Definitized: N/A				
Current Contract Price		Estimated P	rice At Comp	letion
<u>Target</u> <u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Program	Manager
\$102.0 N/A	0	\$		\$

Explanation of Change:

None.

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

CVN-68 Class, December 31, 2001

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

(U) <u>Warfar</u>	e Sys Develop	<u>nent:</u>	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
NGNN, Newport News, VA N000-24-98C-2104, CPAF Award: January 26, 2001 Definitized: N/A			\$102.0	0	
Current <u>Target</u> \$102.0	Contract Pric Ceiling N/A	ce <u>Otv</u> 0	Estimated Pr <u>Contractor</u> \$102.0	ice At Comp <u>Program</u> \$1	eletion Manager 02.0

Explanation of Change:

None.

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

b. Procurement ---

(U) <u>CVN-76</u>	Construction		- 178	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Oty</u>
Newport News S NOOO24-95-C-21 Award: Decembe Definitized: I	December 8, 19	Newport New 394	s va	\$2517.3	\$2884.0	1
Current <u>Target</u> \$2742.6	Contract Pric Ceiling \$2976.8	ce <u>Oty</u> 1		Estimated P <u>Contractor</u> \$2819.9	rice At Con <u>Progr</u> \$3	mpletion am <u>Manager</u> 2824.3
Previous Cumul Cumulative Vas Net Change	lative Varian ciances To Dat	ces ce (10/22/01)	<u>Cost Varianc</u> \$-79.0 <u>\$-186.5</u> \$-107.5	<u>e Schedule</u> \$- \$-4 \$-3	<u>Variance</u> 7.4 2.2 4.8

Explanation of Change:

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

The cumulative and net schedule variance increased because scheduled construction events were not completed due to manpower shortages in specific trades.

CVN-68 Class, December 31, 2001

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

(U) Nuclear Components; DEPARTMENT OF ENERGY, WASHINGTON DC N00024-67-F-5110, FFP/CPFF Award: February 1, 1988		IGTON DC	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
		\$865.2	N/A	0	
Derinitized:	February 1, 198	8			
Current <u>Target</u> \$859.2	Contract Price <u>Ceiling</u> N/A	Oty 0	Estimated P <u>Contractor</u> \$859.2	rice At Comp <u>Program</u> \$8	letion <u>Manager</u> 59.2

Explanation of Change:

None.

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

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

(U) <u>CVN 77 Construction:</u>			Initial	Contract E	rice
NGNN, Newport News, VA			<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
NGNN, Newport News, VA N00024-98C-2104, FPIF Award: January 26, 2001 Definitized: N/A		\$3152.0	\$3693.0	1	
Current	Contract Pric	e	Estimated P	rice At Com	pletion
<u>Target</u>	Ceiling	<u>Oty</u>	<u>Contractor</u>	<u>Progra</u>	<u>Manager</u>
\$3152.0	\$3693.0	1	\$3619.0	\$3	3706.0

Explanation of Change:

None.

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

CVN-68 Class, December 31, 2001

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

(U) <u>Warfare Sys Design</u>		Proc:	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
NGNN, Newpor , CPAF Award: N/A Definitized:	N/A		\$514.0	N/A	0
Curren <u>Target</u> \$514.0	t Contract Prin <u>Ceiling</u> N/A	ce <u>Otv</u> 0	Estimated P <u>Contractor</u> \$	rice At Comp <u>Program</u>	oletion <u>Manager</u> Ş

Explanation of Change:

None.

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

(U) <u>CVN 77</u>	Construction:		Initia <u>Target</u>	l Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
NGNN, Newport N0002498C2104 Award: Januar Definitized:	News, VA , FPIF y 26, 2001 N/A		\$3152.0	\$3692.0	1
Current <u>Target</u> \$3152.0	Contract Pric <u>Ceiling</u> \$3692.0	e <u>Otv</u> 1	Estimated 1 <u>Contractor</u> \$3619.0	Price At Comp <u>Program</u> \$37	pletion <u>Manager</u> 706.0

Explanation of Change:

None.

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

(U) <u>Warfar</u> NGNN, Newport	e Sys Design/F	roc:	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
N00024-98C-21 Award: Januar Definitized:	04, CPAF y 26, 2001 N/A		\$514.0	N/A	0
Current <u>Target</u> \$514.0	Contract Pric <u>Ceiling</u> N/A	e <u>Oty</u> O	Estimated Pr <u>Contractor</u> \$514.0	rice At Comp <u>Program</u> Ş5	letion Manager 14.0

Explanation of Change:

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

None.

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

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

Total Program

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

Appropriation	Prior <u>Years</u> (FY82-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-06)	<u>Total</u>
RDT&E	213.5	65.8	91.7	48.0	419.8
Procurement	9745.2	-	-	-	9745.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	9958.7	65.8	91.7	48.8	10165.0

CVN-76

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

Appropriation	Prior <u>Years</u> (FY91-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u>	<u>Total</u>
RDT&E	37.4		-	_	37.4
Procurement	4749.1	-	-	-	4749.1
MILCON	e-				-
OGM	-			-	-
Total	4786.5	-	-	-	4786.5

CVN-77

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

Appropriation	Prior <u>Years</u> (FY98-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-06)	<u>Total</u>
RDT&E	176.1	65.8	91.7	48.8	382.4
Procurement	4996.1	-	-	-	4996.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	5172.2	65.8	91.7	48.8	5378.5

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

b. Annual Summary -- CVN-76

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

		Sailaway	Sailaway	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1991				1.9	1.8
1992				8.6	8.2
1993				12.3	12.0
1994				10.6	10.5
1995				4.8	4.9
Subtotal				38.2	37.4

Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995	1		4608.1	4608.1	4749.1
Subtotal	11		4608.1	4608.1	4749.1

		Sailaway	Sailaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1		4608.1	4646.3	4786.5

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				46.1	49.1
2000				49.6	53.6
2001				36.9	40.5
2002				59.0	65.8
2003				80.9	91.7
2004				30.9	35.6
2005				8.0	9.4
2006				3.2	3.8
Subtotal			[345.9	382.4

CVN-68 Class, December 31, 2001

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

Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
		FY 1995	FY 1995	Total (Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
2001	1		4439.8	4439.8	4996.1
Subtotal	1		4439.8	4439.8	4996.1

		Sailaway	Sailaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1		4439.8	4785.7	5378.5

17. (U) Delivery/Expenditure Information:

CVN-76

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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): \$ 3846.2

(U) Percent Total Program Expended: 80.4%

CVN-77

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT 5 E	C	0
	Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 186.4
 - (U) Percent Total Program Expended: 3.5%

18. (U) Operating and Support Costs: CVN-76

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

Date of cost estimate: Feb 2002.

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

	CVN-76	N/A
	Avg Annual Cost Per	
Cost Element		
Mission Pay & Allowances	134.5	N/A
Unit Level Consumption	30.1	N/A
Intermediate Maintenance	1.2	N/A
Depot Maintenance	106.7	N/A
Contractor Support	0.0	N/A
Sustaining Support	14.1	N/A
Indirect Costs	111.9	N/A
Total	398.5	N/A

Total O&S Cost	CVN-76	N/A
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	398.5	N/A

CVN-77

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

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

	CVN-77	N/A
	Avg Annual Cost Per	
Cost Element		
Mission Pay & Allowances	132.7	N/A
Unit Level Consumption	29.1	N/A
Intermediate Maintenance	1.1	N/A
Depot Maintenance	101.5	N/A
Contractor Support	0.0	N/A
Sustaining Support	13.6	N/A

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CVN-68 Class, December 31, 2001

18b. (U) Operating and Support Costs (Cont'd): CVN-77

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

	CVN-77	N/A
	Avg Annual Cost Per	
Cost Element		
Indirect Costs	110.5	N/A
Total	388.5	N/A

Total O&S Cost	CVN-77	N/A
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	388.5	N/A

Report Creation Date: 03/25/2002 2:10:36 PM



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

AS OF DATE: December 31, 2001

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- 1. (U) Designation and Nomenclature (Popular Name): Navstar Global Positioning System (GPS)
- 2. (U) DoD Component: USAF

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

3. (U) Responsible Office and Telephone Number:

Navstar GPS Joint Program Office COL DOUGLAS L. LOVERRO Assigned: November 1, 1999 Space and Missile Systems Center DSN 833-1526; COMM (310) 363-1526 2435 Vela Way, Suite 1613 DOUGLAS.LOVERRO@LOSANGELES.AF.MIL E1 Segundo, CA 90245-5500

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

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

Downgrade instructions.

Declassify on: Originating Agency-

SALIMAN 02--0114 COMERESSIONAL

S LAND MAR 0 5 2002 Classification Navstar GPS System Protection Source June 1997 Not Subject to Automatic Downgrade **Determination** Required DIRECTORATE FOR FREEDOM OF INFORMATION

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02. C-0467

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AND SECURITY REVIEW

DEPARTMENT OF DEFENSE

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

(U)PE 0604777N (U)PE 0604778A PE 0604778F (U)PROCUREMENT: (U) APPN 3010 ICN 000000 (Air Force) (U)APPN 3080 ICN 836730 (Air Force) (U) APPN 3080 ICN \$36790 (Air Force) (U)APPN 3080 ICN 86190A (Air Force) (U) APPN 1810 ICN BLI265700 (Navy) APPN 2035 ICN K47800 (Army) (0)(U)APPN 3020 ICN MGPS00 (Air Force) (U)APPN 1611 ICN N/A (Navy) (U) APPN 1506 ICN OSIP 17-88 (Navy) MILCON: PE 0305165F (U) O&M: (U) PE 0305164F (U) PE 0305164N

(U) PE 0305165F

5. (U) References:

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NAVSTAR GPS Satellite

SAR Baseline (Production Estimate): (U) Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

Approved Program:

(U) USecAF Approved Acquisition Program Baseline (APB) dated February 26, 2002.

NAVSTAR GPS User Equip

SAR Baseline (Production Estimate): (U) Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

Approved Program:

(U) USecAF Approved Acquisition Program Baseline (APB) dated February 26, 2002.

Modernized Space & OCS

SAR Baseline (Production Estimate): (U) USecAF Approved Acquisition Program Baseline dated February 26, 2002.

Approved Program: (U) USecAF Approved Acquisition Program Baseline (APB) dated February 26, 2002.

5. (U) References (Cont'd):

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Modernized User Equipment

SAR Baseline (Production Estimate): (U) USecAF Approved Acquisition Program Baseline dated February 26, 2002.

Approved Program: (U) USecAF Approved Acquisition Program Baseline (APB) dated February 26, 2002.

6. (U) Mission and Description:

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

7. (U) Executive Summary:

(0) Overview:

[U] This is the first SAR report that will include the revised GPS APB, which was approved by USecAF on February 26, 2002. This report is organized to cover four distinct areas: legacy Space and Control, legacy User Equipment, modernized Space and Control, and modernized User Equipment. The legacy Space and Control system consists of Block I, II, and IIA satellite control segment systems. The legacy User Equipment consists of all User Equipment prior to modernization. The modernized Space and Control consists of Block IIR and IIF satellite and control segment systems. Modernized User Equipment is all User Equipment procured to interface with the modernized Space and Control systems.

[U] Since actual satellite deliveries of the legacy Space and Control are over 90% and future User Equipment activity was transferred to User Equipment modernization, this will be the last GPS SAR that will include the legacy GPS equipment. Further, this will also be the last SAR that will include

Navstar GPS, December 31, 2001

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

modernized equipment that is not included in the revised APB such as Defense Advanced GPS Receiver (DAGR), Miniaturized Avionics GPS Receiver (MAGR 2000), and GPS III. DAGR and MAGR 2000 are included under legacy User Equipment in this SAR. DAGR and MAGR 2000 have been designated ACAT III programs while GPS III has been designated a separate ACAT ID program. Beginning with the next SAR, only GPS modernization will be included.

{U} Satellite:

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[U] Full scale development of the Navstar Global Positioning System (GPS) satellite program began in June 1979 with Block I satellites. Production of follow-on satellites included Block IIA, Block IIR, and Block IIF satellites. [U] As previously mentioned, full scale development began with approval of Milestone II in June 1979. Between this date and October 1985, the Joint Program Office (JPO) launched ten Block I satellites and developed the associated ground control system software to support system testing. Twelve developmental Block I satellites were built, one satellite was lost as a result of an Atlas-Centaur launch vehicle failure, and one satellite program.

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

[U] In June 1989, the Navstar GPS JPO awarded a production contract for a block change of twenty additional replenishment satellites (Block IIR) to the approved program with priced options for six more. Of the six satellites covered by the options, one of these was exercised in 1995 bringing the total to twenty-one IIRs. On January 17, 1997, a Delta II launch vehicle carrying the first Block IIR satellite exploded after launch from Cape Canaveral Air Station, FL. The second Block IIR satellite was successfully launched on July 22, 1997 and on-orbit testing continued through January 1998. Crosslink interference problems required upgrades to the UHF Crosslink receiver, antenna deck, and satellite software. To date, the Air Force has launched seven Block IIRs including the one launch vehicle failure. The next launch is scheduled for May 2002.

[U] In April 1996, the JPO awarded a contract for six production satellites (Block IIF), with priced options for twenty-seven additional satellites. Preliminary satellite design was completed on February 21, 1997. The satellite Final Design Complete milestone was attained on April 30, 1998. Because of planned modernization changes to GPS, the Block IIF program was essentially put on hold within eighteen months after the FDC.

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

[U] Vice President Gore announced on January 25, 1999 an initiative to modernize GPS, including the addition of two new civil signals to the next generation of GPS satellites scheduled for launch beginning in 2005. In June 1999, the Joint Requirements Oversight Council (JROC) approved the Air Force Space Command (AFSPC) and Air Combat Command (ACC) Operational Requirements Document (ORD) validating three GPS Key Performance Parameters (KPP): Jam Resistance from Space, Backward Compatibility, and System-level Time Transfer. These parameters will better support the warfighter in today's evolving threat environment and provide better support to civil GPS customers worldwide. During the 2001 President's Budget build, the Department of Defense (DoD) reviewed the implementation plan to support the National Initiative and JROC Requirements.

[U] The Defense Review Board (DRB) approved a plan to modify up to twelve Block IIRs with a second civil signal and an earth coverage military signal with the 1st launch no earlier than FY03. The DRB also approved the modernization of the first six Block IIFs with a second and third civil signal and earth coverage military signal with the first launch no earlier than FY05. Funding to support this approach was directed in FY01 President's Budget. A revised modernization strategy was developed and approved by the DEPSECDEF along with recommended FY01 President's Budget (PB) adjustments on February 9, 2000. The strategy was subsequently approved by the Acquisition Strategy Panel (ASP), chaired by SAF/AQ on February 29, 2000.

[U] In August 2000, Congress approved modernizing up to twelve Block IIRs (or Block IIR-Ms) and all Block IIFs. In addition to the legacy P(Y)(Ll & L2) and C/A (L1) signals, modernization will enhance GPS radio navigation with a new civil signal L2C (L2) and a new military signal M-Code (Ll & L2). Both the IIR-Ms and the IIFs will host these new signals, while a third civil signal (L5) will be added to the IIFs for safety-of-flight applications.

[U] The modernization strategy calls for implementing a dedicated civilian (L2C) code on L2 and a military earth coverage M-Code signal on L1 and L2 on the last twelve Block IIR satellites (now called IIR-M). In addition, the Block IIF program will add the earth coverage M-code, L2C on L2, and a new civil signal on L5 to the six Block IIF satellites already procured. Both the Block IIR-M and Block IIF modernization efforts were placed on contract in August 2000 following Congressional approval. Block IIR-M has had successful Preliminary Design and Critical Design Reviews. The first satellite delivery is anticipated for February 2003, and is scheduled to be launched in July 2003. For the Block IIFs, all major milestones were realigned to meet the modernized modification schedule. The modernized Preliminary Design Complete was completed and the next milestone, Final Design Complete, is scheduled for June 2002. First Block IIF delivery is scheduled for September 2004, and is scheduled to be launched in October 2005.

[U] Procurement of the next block of satellites, designated GPS III, will be accomplished under a full and open competition. GPS III is currently in the System Definition/Risk Reduction (SD/RR) phase. Boeing and Lockheed Martin were each awarded a \$16M study contract on November 9, 2000 for the SD/RR phase and are delivering extensive data to be used in the Pre-Acquisition Request for

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Navstar GPS, December 31, 2001

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

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Proposal (RFP). Spectrum Astro also participated in the SD/RR phase by investing company money. The SD/RR phase concluded in November 2001. The GPS III Independent Program Assessment (IPA) is still on-going and will report its assessment to the MDA in April 2002. The GPS III funding line is not in the revised APB. The program is currently on-track to meet a Defense Space Acquisition Board (DSAB) in Spring 2002 in order to produce an approved acquisition strategy and complete the cost assessment necessary to produce a GPS III baseline by the end of FY03.

[U] The FY03 PB included funds to accelerate higher power service on orbit. The Air Force and DoD are reviewing alternative strategies for this implementation by either modifying late Block II satellites or accelerating GPS III.

[U] The JPO's current analysis of constellation health indicates the predicted Mean Mission Duration (MMD) for the Block II and IIA satellites should be 9.6 and 10.2 years respectively. The JPO also concluded this year an 18-month analysis of the IIR MMD based on on-orbit and test dates. This revised analysis has allowed us to adjust the anticipated MMD to 10.6 years (from 7.8 years) for basic IIR satellites and 8.6 years for IIR-M. Future on-orbit experiences may allow an additional increase in MMD and this will be reassessed on an annual basis. Given current constellation performance and this revised analyses of satellite longevity, we are now projecting the need for the first IIF launch to be October 2005.

[U] Control Segment:

[U] The Operational Control Segment (OCS) consists of a master control station (MCS), a back-up master control station (BUMCS), and a world-wide network of ground antennas (GA) and monitor stations (MS) used to command and control GPS satellites. The original OCS mainframe computers were originally procured in the mid-1980's; and in 1995, the Joint Program Office (JPO) awarded Lockheed-Martin Mission Systems (LM-MS) a contract to replace these computers with a new distributed architecture titled Architectural Evolution Plan (AEP). In 1996, in anticipation that AEP would be completed soon, the JPO awarded a contract to the Boeing Company under the Block IIF effort that would satisfy the next generation space and control requirements. However, AEP turned out to be more complex than originally planned and this adversely impacted the IIF OCS development effort.

[U] As a result, in early 1999, the Air Force asked the two major OCS contractors to consolidate their individual efforts into a single integrated effort. Under the Single Prime Initiative (SPI), Boeing became the single prime contractor for both OCS development and sustainment, with Lockheed Martin and Computer Sciences Corporation (CSC) participating as major subcontractors. Under this plan, the first operational release of the OCS will be Version 5 (V5), scheduled for delivery in 3 software drops. The 3rd drop will be version 5.2 and this will undergo full system test prior to the first Block IIF launch. Prior to the version 5, earlier versions of the AEP (Versions 3/4) will be used for testing and evaluation as well as risk reduction. Version 6 of the OCS

Navstar GPS, December 31, 2001

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

will provide an enhanced IIF capability as well as provide operational control of modernization changes.

[U] Along with changes to the satellites, GPS Modernization also had a large impact on the control segment. In order to reduce overall risk, most OCS modernization changes were scheduled for the later Version 6 software development, with Version 5 able to support modernized capabilities in test mode.

[U] User Equipment:

[U] GPS User Equipment (UE) development began in June 1979 with receiver testing (using Block I satellites) in a variety of land, sea, and air vehicles. Since then, the JPO has awarded contracts for the research, development, and production of a multitude of airborne, shipboard, and handheld receivers, antennae, and anti-jam technologies. GPS user equipment successfully completed the Defense Acquisition Board (DAB) Milestone IIIB in January 1992 and achieved depot IOC in March 1993. The Miniaturized Airborne GPS Receiver (MAGR) depot FOC was declared by Tobyhanna Army Depot on November 22, 1996. This completed the full depot capability milestone seven months ahead of the objective date. During the last decade, GPS UE funding has been used to develop and field many new, more capable GPS receivers, aid other services in planning and engineering, their GPS solution and to develop the third generation GPS security architecture, Selective Availability Anti-Spoofing Module (SAASM).

[U] In 3QFY02, the JPO will brief the MDA on the future GPS User Equipment strategy to baseline the effort for modernized M-Code UE, as well as the cost estimate of the M-code user equipment development. In addition, the OSD (CAIG) will perform a cost assessment of the M-code development cost estimate to support the FY04 President's budget program review.

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

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8. (U) Threshold Breaches:

NAVSTAR GPS Satellite

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

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
06M	No
Program Acquisition Uni Cost (PAUC)	t No
Average Procurement Uni Cost (APUC)	t No

b. (U) Nunn-McCurdy Unit Cost:

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

NAVSTAR GPS User Equip

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

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

b. (U) Nunn-McCurdy Unit Cost:

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

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

Modernized Space & OCS

5

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

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

b. (U) Nunn-McCurdy Unit Cost:

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

Modernized User Equipment

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:

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NAVSTAR GPS Satellite

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I (DSARC)	DEC 1973	DEC 1973	DEC 1973
Milestone II (DSARC)	JUN 1979	JUN 1979	JUN 1979
First Production Satellite Launch	JAN 1987	FEB 1989	FEB 1989
Control Segment Turnover to AFSPACECO	M N/A	APR 1990	APR 1990
Last Block IIA Satellite Delivery	N/A	NOV 1992	NOV 1992
21 Satellites on-orbit	N/A	MAR 1993	MAR 1993

b. Current Change Explanations -- None

NAVSTAR GPS User Equip

a. Milestones --

d. MITESCORES			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Milestone I (DSARC)	DEC 1973	N/A	DEC 1973
Milestone II (DSARC)	JUN 1979	N/A	JUN 1979
Milestone III (DSARC)	SEP 1983	N/A	SEP 1983
Milestone IIIA (JRMB) Award	N/A	JUN 1986	JUN 1986
AF DT User Equipment (UE)			
Begin	N/A	JUL 1988	JUL 1988
Complete	N/A	MAY 1989	MAY 1989
User Equipment OT&E			
Begin	N/A	JUN 1989	JUN 1989
Complete	N/A	JUL 1991	JUL 1991
Milestone IIIB (DAB) UE	MAR 1989	SEP 1991	SEP 1991
Initial Depot Capability	N/A	SEP 1992	SEP 1992
First Full-Rate UE Production Deliver	ry N/A	NOV 1993	NOV 1993
Full Depot Capability	N/A	JUN 1997	JUN 1997

b. Current Change Explanations --(U) None

Modernized Space & OCS

a. Milestones --

a. Milestones			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Space Segment IIR			
Block IIR Contract Award	JUN 1989	N/A	JUN 1989
1st IIR SV Contract Delivery	AUG 1996	N/A	SEP 1996
2nd IIR SV Contract Delivery	NOV 1996	N/A	JUN 1997
1st IIR SV Available for Launch	JAN 1997	N/A	JAN 1997
Space Segment IIR-M			
Start Production	MAR 2001	N/A	MAR 2001
lst IIR-M SV available for launch	MAY 2003	N/A	MAY 2003

9a. (U) <u>Schedule (Cont'd)</u>: Modernized Space & OCS

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	Production		Approved	Curz	ent
	Estimat	<u>:e (SAR)</u>	Program (APB)	Esti	mate
Space Segment IIF					
Start Production	JUN	2002	N/A	JUN	2002
1st IIF SV available for launch	JUN	2005	N/A	JUN	2005
Operational Control System					
Legacy Upgrade for IIR-M	DEC	2002	N/A	DEC	2002
Version 5.2 upgrade with test	DEC	2004	N/A	DEC	2004
capability					
Version 6 upgrade with operational	SEP	2007	N/A	SEP	2007
capability					
System Schedules					
L5 Version 1 ICD	APR	2001	N/A	APR	2001
L5 Version 2 ICD	JAN	2003	N/A	JAN	2003
DT&E Complete, L5	APR	2006	N/A	APR	2006
SAASM OA complete	FEB	2007	N/A	FEB	2007
Final M-code space-to-user ICD	MAR	2008	N/A	MAR	2008
IOT&E Complete, M-code	SEP	2008	N/A	SEP	2008
Military and Civil Codes IOC	DEC	2008	N/A	DEC	2008

(U) Note: These milestones are new due to the breakout of the legacy and modernized end items.

b. Current Change Explanations -- None

Modernized User Equipment

a. Milestoncs --

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

(U) Note: These milcstones are new due to the breakout of the legacy and modernized end items.

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Navstar GPS, December 31, 2001

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9b. (U) <u>Schedule (Cont'd)</u>: Modernized User Equipment

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

NAVSTAR GPS Satellite

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a. Performance --

			Approved	Demon-		
	Production	Pro	gram (APB)	strated	Current	
	Estimate (SAR)	Obi	/Threshold	Perf	Estimate	
2 D Sustem Positioning	16	16	/ 16	10	16	
3-D System Positioning	10	10	/ 10	10		
Accuracy (meters)						
(Spherical Error						
Probable (SEP))						
3-D System Positioning						
Accuracy for 180 days						
after last Nav Update			(10	mp 0	10	
Block II SEP (km)	N/A	10	/ 10	TBD	10	
Block IIR SEP (m)	N/A	16	/ 16	TBD	10	
Block II Satellite	6	6	/ 6	7.5/A	8.45	
Mean Mission Duration						
(MMD) (yrs)						
System Availability %	98	98	/ 98	99.49	98	
(minimum of 21				/B		
satellites are						
operational at any						
time)						
Satellite: (Block II)						
13-49 - Survivability	,	(b)(1)	Contraction Provident			
SI Camma Dose Rate	N/A	(-)(-)				
(rad (Silicon))						
	N/D					
X-ray ridence						
(Cal/cm2)	N / A					
Neutron (n/cm2)	N/A					
		And States				
Satellite: (Block IIR)	_					
41-50 - Survivability						
Gamma Dose Rate	N/A	A Street Area				
(rad (Silicon))						
🔪 X-ray Fluence	N/A					
(cal/cm2)						
Neutron (n/cm2)	N/A					
-						
🔁 Total Dose (mega	N/A					
rad (Silicon))						
Spaced Based Laser	N/A					
Threat (w/cm2)						

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

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Satellite Maximum	Production Estimate (SAR) N/A	Appro Program <u>Obj/Thro</u> 4480 /	oved (APB) eshold 4480	Demon- strated <u>Perf</u> 4480	Current <u>Estimate</u> 4480
Weight (lbs)					
(End of Life) (dbw)				*	
L1 (C/A)	-160	-160 /	-160	~157.7	-157.7
Ll (Precision Code)	-163	-163 /	-163	-159.5	-159.5
L2 (Precision Code)	-166	-166 /	-166	-160.5	-160.5
Cesium Clock Stability	/ 2×10^	2x10^-13/	2x10^-13	1x10^-13	1x10^-13
(f/f)	-13				
Time Transfer (Universal Coordinated Time)	+/-100	+/- 100 /	+/- 100	+/-25	+/-100
(nsec)					
Block I Satellite					
Expected Ground					
Power (End of Life					
(dbw)					
L1 (C/A)	-160	N/A /	N/A	-160	-160
Ll (Precision Code)	-163	N/A /	N/A	-163	-163
L2 (Precision Code)	-166	N/A /	N/A	-166	-166
Cesium Clock Stability	y 2x10^	N/A /	N/A	2x10^-13	2x10^-13
£/£ 2/	-13				

(U) Note: The Navstar GPS program does not have any Performance exit criteria.

[U] Note: Certain Demonstrated Performance objectives will remain TBD until an adverse situation occurs which tests the maximum design limits of the satellite (e.g. prolonged shutdown of the ground/control segment or exposure of the satellites to extreme radiation levels). 1/ Factory and United States Naval Observatory (USNO) test data of prototype units verify increased performance. 2/ Reliability model projections incorporating actual on-orbit experience averaged over the constellation, as of April 2001 indicate an expected Mean Mission Duration (MMD) of 9.6 years versus 8.9 years for Block II as stated in the last report. The required MMD for Block II is 6.0 years. Demonstrated performance for Block IIA is 10.2. The official approved MMD is still this value, compared to 10.3 years in the last report. Demonstrated performance will continue to change based on experience with on-orbit satellites.

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

b. Current Change Explanations -- None

NAVSTAR GPS User Equip

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a. Performance --

		A	oproved	Demon-	
	Production	Prog	ram (APB)	strated	Current
	Estimate (SAR)	Obj/1	Threshold	Perf	Estimate
Reliability Mean Time	Contraction of the second s				
Between Operational					
Mission Failures					
(hours)					
Airborne					
5-Channel	550	590	/ 500	2130.2	7970.0
2-Channel	550	929	/ 500	722.8	722.8
Ground (hrs)	850	2000	/ 500	1653.2	1653.2
Sea (hrs)	900	680	/ 680	2880.8	3560.0
Maintainability					
Mean Time to Repair					
(hours)					
Airborne					
5-Channel	1.3	1	/ 1	.75	.75
2-Channel	1.3	.75	/ .75	.27	.27
Ground (hrs)	1.2	.75	1.75	.18	. 18
Sea (hrs)	1.3	1.5	/ 1.5	.77	. / /

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

Note: Reflects results of Navy Mean Time Between Failure (MTBF) study. This study considered MTBF units in for repair, plus MTBF units which have never failed.

b. Current Change Explanations -- None

Modernized Space & OCS

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated <u>Perf</u>	Current Estimate
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Navstar GPS, December 31, 2001

10a. (U) <u>Performance Characteristics (Cont'd)</u>: Modernized Space & OCS

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(b)(1)

b. Current Change Explanations -- None

Modernized User Equipment

a. Performance --

a. Periormance	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated <u>Perf</u>	Current Estimate
Time-To-First-Fix Pos Accuracy	1 min 2.1m H 4.0m V	1 min / 2 min 2.1m H / 16m SEP 4.0m V /	TBD TBD	.8 Min 2.1m H
Velocity Time Transfer	0.01m/s 10nsec	0.01m/s / 0.1m/s 10nsec / 100nsec	TBD TBD	.01 m/s 10 nsec

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

b. Current Change Explanations -- None

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

		Production	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	967.6	822.1	825.6
	Procurement	623.4	784.2	786.4
	Flyaway	(583.6)		(786.4)
	Other Weapon Systems	(39.8)		(0.0)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	8.4	4.7	4.7
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1979 Base-Year \$	1599.4	1611.0	1616.7
	Escalation	707.3	842.8	840.5
	Development (RDT&E)	(204.9)	(193.5)	(192.0)
	Procurement	(496.1)	(646.7)	(645.9)
	Construction (MILCON)	(6.3)	(2.6)	(2.6)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2306.7	2453.8	2457.2
ь.	(U) Quantity			

Development (RDT&E)	12	12	12
Procurement	28	28	28
Total	40	40	40

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

Note: No Low Rate Initial Production (LRIP) is approved for the satellite portion of the program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

NAVSTAR GPS User Equip

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		Production	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	941.8	1018.5	1041.5
	Procurement	1613.1	1554.9	1013.0
	Flyaway	(1115.9)		(1249.5)
	Other Weapon Systems	(497.2)		(490.1)
	Peculiar Support	(0.0)		(32.0)
	Initial Spares	(0.0)		(42.2)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	56.8
	Total FY 1979 Base-Year \$	2554.9	2573.4	2912.1
	Escalation	2320.9	4068.1	2963.1
	Development (RDT&E)	(441.9)	(580.5)	(602.9)
	Procurement	(1879.0)	(3487.6)	(2296.6)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(63.6)
	Total Then Year \$	4875.8	6641.5	5875.2
b.	(U) Quantity			
!	Development (RDT&E)	. 129	248	159
	Procurement	27210	119695	253433
	Total	27339	119943	253592

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

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

[U] The difference in quantity is due to the fact that MAGR and DAGR are included in the current estimate but not in the approved APB. In the next SAR, DAGR and MAGR will not be reported.

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

c. (U) Foreign Military Sales --Device Type Country Quantity Obligated Amount Obligated Ancillary Dollars M Australia 0 \$0.000 Belgium 88 \$0.684 Canada 1798 \$0.103 Denmark 10 \$0.195 Finland 90 \$0.005 France 21 \$0.281 Greece 97 \$1.861 Germany 59 \$1.672 Israel 184 \$1.090 Italy 440 \$0.095 Japan 37 \$0.392 Korea 170 \$2.705 Kuwait 0 \$0.000 Luxembourg 149 \$0.008 Mid-Life Upgrade*(2) 322 \$5.245 NATO 47 \$1.044 Netherlands 8 \$0.118 Norway 15 \$0.093 Portugal 43 \$0.383 \$0.708 Singapore 64 Spain 1315 \$0.093 Saudi Arabia 280 \$0.001 Switzerland \$0.009 0 Turkey 9991 \$2.386 245 \$0.225 Taiwan Device Type Quantity Obligated Amount Obligated Country Dollars M Receivers 61 \$1.280 Australia Belgium 47 \$1.253 Canada 374 \$0.835 7 \$0.191 Denmark 10 \$0.017 Finland 3 \$0.115 France 45 \$0.982 Greece \$7.728 100 Germany \$0.095 53 Israel 1402 \$2.887 Italy 141 \$9.116 Japan 186 \$4.528 Korea \$0.032 37 Kuwait \$0.045 37 Luxembourg

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\$0.272

\$0.484

\$0.031

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

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Mid-Life Upgrade*(2)

Netherlands

New Zealand

Norway

Portugal 25 \$0.681 56 \$1.583 Singapore Spain 332 \$2.647 Saudi Arabia 212 \$0.755 Turkey 1299 \$4.660 Taiwan 215 \$7.631 United Kingdom 0 \$0.054 Country Device Type Quantity Obligated Amount Obligated Security Dollars M Australia 5835 \$1.714 Belgium 1857 \$0.465 Canada 9635 \$2.251 Denmark 3900 \$0.935 Finland 350 \$0.063 France 27963 \$8.171 Greece 1007 \$0.227 Germany 10679 \$2.679 Israel 7602 \$1.697 Italy 3581 \$1.216 Japan 1016 \$0.341 NATO 23 \$0.005 Korea 1862 \$0.756 Mid-Life Upgrade*(2) 1625 \$0.278 Netherlands 4431 \$1.085 Norway 3208 \$0.557 New Zealand 359 \$0.106 Portugal 178 \$0.048 Singapore 170 \$0.029 Spain 394 \$0.199 Saudi Arabia 0 \$0.000 Switzerland 768 \$0.448 Turkey 1452 \$0.439 United Kingdom 22941 \$6.614

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

d. Nuclear Costs -- None.

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

Modernized Space & OCS

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		Production	Approved	Current
a,	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	1776.2	1776.2	1781.3
	Procurement	3239.4	3239.4	3181.5
	Flyaway	(3205.8)		(3147.6)
	Other Weapon System	(33.6)		(33.9)
	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	\$ 5015.6	5015.6	4962.8
	Escalation	105.3	105.3	156.0
	Development (RDT&E)	(53.1)	(53.1)	(46.1)
	Procurement	(52.2)	(52.2)	(109.9)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	5120.9	5120.9	5118.8
ь.	(U) Quantity			
I	Development (RDT&E)	N/A	N/A	0
]	Procurement	33	33	33
	Total	33	33	33

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

Modernized User Equipment

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	Production	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
Development (RDT&E)	543.5	543.5	593.5
Procurement	254.3	254.3	202.2
Total Flyaway			(0.0)
Other Weapon System	(6.5)		(6.2)
Peculiar Support	(247.8)		(196.0)
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	\$ 797.8	797.8	795.7
Escalation	76.6	76.6	48.1
Development (RDT&E)	(57.4)	(57.4)	(38.4)
Procurement	(19.2)	(19.2)	(9.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	874.4	874.4	843.8
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	0	0	0
Total	0	0	0

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

NAVSTAR GPS Satellite

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	Devel	UCR	Current	
	Basel (FEB 2002)	1De APR) (Dec	Estimate	Percent
a. (U) Prog. Acq. Unit Cost (PAUC)	1100 2002 1	ALD/ (Dec	2001 SAR	Change
(1) Cost (FY 1979 BY\$)	161	1.0	1616.7	
(2) Quantity (3) Unit Cost	10	40	40	
(5) OHIC COAC	40.	275	40.418	+0.36
b. (U) Avg. Proc. Unit Cost (APUC)				
(1) Cost (FY 1979 BY\$)	78	4.2	786.4	
(2) Quantity (3) Upit Cost	20	28	28	
(3) UNIC COSC	20.0	007	28.086	+0.28
NAVSTAR GPS User Equip				
		JCR	Current	
	Basel:		Estimate	Percent
a. (U) Prog. Acg. Unit Cost (PAUC)	(FEB 2002 1	APD) (Dec	2001 SAR)	Change
(1) Cost (FY 1979 BY\$)	2573	3.4	2912.1	
(2) Quantity	1199	943	253592	
(3) Unit Cost	0.0	. 021	0.011	-47.62
b. (U) Avg. Proc. Unit Cost (APUC)				
(1) Cost (FY 1979 BY\$)	155	4.9	1813.0	
(2) Quantity	1190	695	253433	
(3) Unit Cost	0.0	013	0.007	-46.15
Modernized Space & OCS				
	τ	JCR	Current	
	Basel:	ine	Estimate	Percent
a (II) Prog Acg Bait Cost (PAUC)	(FEB 2002 /	APB) (Dec	2001 SAR)	Change
(1) Cost (FY 2000 BY\$)	501	5.6	4962.0	
(2) Quantity		33	33	
(3) Unit Cost	151.9	988	150.388	-1.05
b. (U) Avg. Proc. Unit Cost (APUC)				
(1) Cost (FY 2000 BY\$)	323	9.4	3181.5	
(2) Quantity		33	33	
(3) Unit Cost	98.	164	96.409	-1.79

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

Modernized User Equipment

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			UCR		Curi	tent	
		Bas	eline		Estin	nate	Percent
		(FEB 200	2 APB)	(Dec	2001	SAR)	Change
a.	(U) Prog. Acq. Unit Cost (PAUC)						
	(1) Cost (FY 2000 BY\$)		797.8		79	95.7	
	(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\$)		254.3		20	02.2	-
	(2) Quantity		0			0	
	(3) Unit Cost		N/A			N/A	N/A

13. (U) Cost Variance Analysis: NAVSTAR GPS Satellite

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1172.5	1119.5	14.7	2306.7
Previous Changes:				
Economic	-263.2	-1013.5	-1.4	-1278.1
Quantity	-	+2141.1	-	+2141.1
Schedule	-	-	-	-
Engineering	+49.8	-472.6	-	-422.8
Estimating	+58.5	-342.2	+0.5	-283.2
Other	-	-	_	-
Support	-	-	-6.5	-6.5
Subtotal	-154.9	+312.8	-7.4	+150.5
Current Changes:				
Economic	-	-	-	-
Quantity	-		-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-		-	-
Other	-	_		-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-154.9	+312.8	-7.4	+150.5
Current Estimate	1017.6	1432.3	7.3	2457.2

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	967.6	623.4	8.4	1599.4
Previous Changes:				
Quantity	-	+546.1	-	+546.1
Schedule	-	-	-	
Engineering	-70.0	-222.2	-	-292.2
Estimating	-72.0	-160.9	+0.4	-232.5
Other	-	-	-	-
Support	-	_	-4.1	-4.1
Subtotal	-142.0	+163.0	-3.7	+17.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-		-	-
Engineering	-	-	-	-
Estimating	-	-		-
Other	-		-	
Support	-	-	-	
Subtotal	-	-		-
Total Changes	-142.0	+163.0	-3.7	+17.3
Current Estimate	825.6	786.4	4.7	1616.7

b. Current Change Explanations -- None

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

NAVSTAR GPS User Equip

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

	RDT&E	PROC	MILCON	0&M	TOTAL
Production Estimate	1383.7	3492.1			4875.8
Previous Changes:					
Economic	-60.5	-345.9	-	-11.3	-417.7
Quantity		+1492.0	-	-20.0	+1472.0
Schedule	+20.7	+913.3	-	-	+934.0
Engineering	+111.5	-46.8	_	-	+64.7
Estimating	+156.8	-1295.0	-	+107.1	-1031.1
Other		-	-	-	_
Support	-17.8	+62.5		+42.8	+87.5
Subtotal	+210.7	+780.1	-	+118.6	+1109.4
Current Changes:					
Economic	+3.5	+15.2	-	+0.2	+18.9
Quantity	-	-695.3	-	-	-695.3
Schedule	-	-175.9	_	-	-175.9
Engineering	+46.0	-	-	-	+46.0
Estimating	+0.5	+569.1	-	-	+569.6
Other	-	-		-	-
Support		+125.1	-	+1.6	+126.7
Subtotal	+50.0	-161.8	-	+1.8	-110.0
Total Changes	+260.7	+618.3	-	+120.4	+999.4
Current Estimate	1644.4	4110.4	_	120.4	5875.2

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

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(1) RDT&E

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

	RDT&E	PROC	MILCON	0&M	TOTAL
Production Estimate	941.8	1613.1	-	-	2554.9
Previous Changes:					
Quantity	-	+568.6	-	-10.0	+558.6
Schedule	+10.6	+240.9	-	-	+251.5
Engineering	+33.4	-21.3	-	-	+12.1
Estimating	+39.3	-558.3	-	+49.1	-469.9
Other	-	-	-	-	-
Support	-5.1	+18.8	-	+17.1	+30.8
Subtotal	+78.2	+248.7	-	+56.2	+383.1
Current Changes:					
Quantity	-	-295.5	~	-	-295.5
Schedule	-	~63.9		-	-63.9
Engineering	+21.9	-		-	+21.9
Estimating	-0.4	+263.1	-	-	+262.7
Other		-	-		-
Support	-	+48.3	-	+0.6	+48.9
Subtotal	+21.5	-48.0		+0.6	-25.9
Total Changes	+99.7	+200.7	-	+56.8	+357.2
Current Estimate	1041.5	1813.8	-	56.8	2912.1

b. (U) Current Change Explanations --

Revised escalation indices. (Economic)

(Dollars in Millions) Base-Year Then-Year N/A +3.5 -0.4 +0.5

	Adjustment for current and prior year escalation - Army (Estimating)	-0.4	+0.5
	Adjustment to reflect funds added to support User Equipment (UE) modernization - Air Force (Engineering)	+21.9	+46.0
	RDT&E Subtotal	+21.5	+50.0
(2)	Procurement		
、 _,	Revised escalation indices. (Economic)	N/A	+15.2
	Increase to recurring unit cost of handheld sets due to a shift in schedule to later years - Army (Schedule)	+9.3	+26.2
	Decrease to recurring unit cost of aircraft sets due to earlier years (FY08-FY07) - Navy (Schedule)	-2.0	-5.2
	(Schedule; Revised estimates for Line Replacement Units (LRUs) average unit cost - Air Force	+295.3	+647.2

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

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b. (0) Current Change Explanations --

		(Dollars in Base-Year T	Millions) hen-Year
	Revised estimates for LRUs average unit cost (FY02 - FY12) - Army (Estimating)	-37.5	-91.9
	Revised estimate for Program Support of ground handheld sets (FY00 - FY12) - Army (Support)	+21.9	+55.4
	Revised estimate for Program Support of aircraft sets - Navy (Support)	+32.5	+85.3
	Quantity decrease of 2,678 aircraft sets from B,759 to 6,081 (FY97-FY08) - Air Force (Quantity)	-300.8	-709.9
	Decrease to recurring unit cost of aircraft sets due to shift in schedule to earlier years - Air Force (Schedule)	-71.2	-196.9
	Revised estimates for LRUs average unit cost (FY98 - FY07) - Navy (Estimating)	+5.3	+13.8
	Revised estimate for Program Support for handheld and aircraft sets - Air Force (Support)	-6.1	-15.6
	Revised Army UE requirements increasing handheld sets by 6,814 from 213,610 to 220,424 (FY02-FY12) - Army (Quantity)	+9.0	+21.0
	Quantity increase of 282 Navy aircraft sets from 4,703 to 4,985 (FY98 - FY07) - Navy (Quantity)	+5.4	+12.4
	Quantity decrease of 4,449 handheld sets from 18,697 to 14,228 (FY02-FY08) - Air Force (Quantity)	-9.1	-18.8
	Procurement Subtotal	-48.0	-161.8
(3)	<u>O&M</u> Revised escalation indices (Economic) Increase estimate for UE support (FY01 -	N/A +2.5	+0.2 +5.7
	Decrease estimate for UE support (FY00-FY08) - Air Force (Support)	-1.9	-4.1
	O&M Subtotal	+0.6	+1.8

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

Modernized Space & OCS

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1829.3	3291.6		5120.9
Previous Changes:				
Economic	-	_	-	-)
Quantity	-	-	-	-
Schedule	-	-	_	~
Engineering	-	· -	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal		-	-	-
Current Changes:				
Economic		-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-1.9	-	-	-1.9
Estimating		-0.2	-	-0.2
Other		-		-
Support	-	-		-
Subtotal	-1.9	-0.2	_	-2.1
Total Changes	-1.9	-0.2		-2.1
Current Estimate	1827.4	3291.4		5118.8

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13a. (U) Cost Variance Analysis (Cont'd): Modernized Space & OCS

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1776.2	3239.4	-	5015.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	- 1	
Engineering	-	-	-	-
Estimating	-	-		- ,
Other	-		-	
Support	-	-	-	
Subtotal	-	-	-	
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+5.1	-	-	+5.1
Estimating	-	-58.2	-	58.2
Other	-	-	-	-
Support	-	+0.3	-	+0.3
Subtotal	+5.1	-57.9	~	-52.8
Total Changes	+5.1	-57.9	-	-52.8
Current Estimate	1781.3	3181.5	-	4962.8

b. (U) Current Change Explanations --

	~ (c, cellene change inplaneters)	(Dollars in I	Millions)
(1)	RDT&E Devised estimate since Production Estimate	+5 1	-1 9
	baseline (Engineering)	, 5.1	-1.5
	RDT&E Subtotal	+5.1	-1.9
(2)	<u>Procurement</u> Error in converting then-year to base-year in Production Estimate baseline		
	(Estimating) (Support)	-58.2 +0.3	-0.2 0.0
	Procurement Subtotal	-57.9	-0.2

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

Modernized User Equipment

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	600.9	273.5	-	874.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-		-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-		-	
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-		-	-
Schedule	-	-	-	-
Engineering) –) –	-	-
Estimating	+31.0	-	-	+31.0
Other	-	-	. –	-
Support	-	-61.6	-	-61.6
Subtotal	+31.0	-61.6	-	-30.6
Total Changes	+31.0	-61.6	-	-30.6
Current Estimate	631.9	211.9	-	843.8

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	543.5	254.3	-	797.8
Previous Changes:				
Quantity	-	-	-]	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-		-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity				-
Schedule	-	-		-
Engineering	-		-	-
Estimating	+50.0	-		+50.0
Other	-	-	-	-
Support	-	-52.1	-	-52.1
Subtotal	+50.0	-52.1	. –	-2.1
Total Changes	+50.0	-52.1		-2.1
Current Estimate	593.5	202.2	_	795.7

b. (U) Current Change Explanations --

(1)		(Dollars in <u>Base-Year</u> 1	n Millions) Then-Year
(1)	Adjustment to reflect increase for User Equipment (UE) modernization (M-Code) development - Air Force (Estimating)	+50.0	+31.0
	RDT&E Subtotal	+50.0	+31.0
(2)	Procurement Adjustment reflects decrease of program support for aircraft sets due to reduced quantity requirements - Air Force (Support)	-52.1	-61.6
	Procurement Subtotal	-52.1	-61.6

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Navstar GPS, December 31, 2001

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

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

Current SAR Baseline to Current Estimate

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PAUC		Changes							
Prod Est	··								Cur Est ;
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
57.67	-31.95	+53.53		-10.57	-7.08		-0.163	+3.76	61.43

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

Current SAR Baseline to Current Estimate

PUC				Chan	ges				PUC
Prod Est									Cur Est ,
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	1
39.98	-36.20	+76.47		-16.88	-12.22			+11.17	51.15

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	DEC 1973	DEC 1973	DEC 1973
Milestone II	N/A	JUN 1979	JUN 1979	JUN 1979
Milestone III	N/A	N/A	N/A	N/A
FUE	N/A	N/A	N/A	APR 1990
Total Cost	N/A	2306.7	2306.7	2457.2
Total Quantity	N/A	40	40	40
Prog Acg Unit Cost	N/A	57.7	57.7	61.4

NAVSTAR GPS User Equip

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

Current	SAR Base	line to	Current	Estimate						
PAUC	[Chan	ges				PAU	C
Prod Est									Cur E	st
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.178	-0.002	-0.155	+0.003		-0.002		+0.001	-0.155	0.0	23

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Navstar GPS, December 31, 2001

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

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

Current SAR Baseline to Current E	Estimate
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PUC Changes								PUC	
Prod Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.128	-0.001	-0.112	+0.003		-0.003		+0.001	-0.112	0.016

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate (PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	DEC 1973	DEC 1973	DEC 1973
Milestone II	N/A	JUN 1979	JUN 1979	<u>JUN 1979</u>
Milestone III	N/A	N/A ·	- N/A	JUN 1986
FUE	N/A	N/A	N/A	MAR 1993
Total Cost	N/A	4875.8	4875.8	5875.2
Total Quantity	N/A	27339	27339	253592
Prog Acq Unit Cost	N/A	0.2	0.2	0.0

Modernized Space & OCS

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

Current SAR Baseline to Current Estimate

PAUC				Chan	ges		· · · · ·		PAUC
Prod Est					-				Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
155.18]			-0.058	-0.006			-0.064	155.12

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

Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
99.75					-0.006			-0.006	99.74

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Navstar GPS, December 31, 2001

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14c. (U) Unit Cost and Other History (Cont'd): Modernized Space & OCS

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	MAR 2001	MAR 2001
IOC	N/A	N/A	DEC 2008	DEC 2008
Total Cost	N/A	0.0	5120.9	5118.8
Total Quantity	N/A	N/A	33	33
Prog Acg Unit Cost	N/A	N/A	155.2	155.1

Modernized User Equipment

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

Current SAR Baseline to Current Estimate

PAUC	Changes						PA	10C		
Prod Est									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	Changes						PUC			
Prod Est		k						Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
N/A									N/A	i. j

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	N/A	874.4	843.8
Total Quantity	N/A	N/A	0	0
Prog Acg Unit Cost	N/A	N/A	0.0	0.0

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

a. RDT&E	Initial C	Contract P:	rice
(U) GPS IIF OCS/MOSC DEV:	<u>Target</u> C	eiling	Qty
BOEING NORTH AMERICAN, SEAL BEACH CA	<u> </u>	<u></u>	0
F04/01-96-C-0025, FFP/AF/EPA/CPAF	\$13.3	\$0.0	0
Award: April 22, 1996			
Definitized: April 22, 1996			
Current Contract Price	Estimated Pri	.ce At Com	pletion
Target Ceiling Oty	Contractor	Progra	m Manager
\$430.4 N/A 0	\$435.5	\$	436.3
	Cost Variance	Schedule	Variance
Previous Cumulative Variances	\$0.4	\$-0	. 4

Previous Cumulative Variances\$0.4Cumulative Variances To Date (12/31/01)\$-6.4Net Change\$-6.8

Explanation of Change:

4.1

(U) NOTE: The Contract Identification/Schedule/Performance Data only pertains to the OCS/MOSC DEV 3600 Cost Plus Award Fee (CPAF) development efforts. There were no cost reporting requirements for the FFP portion of the original IIF contract and the target price for the IIF modernization space vehicle has not been established.

Cost and Schedule Variances:

As part of the SAF/AQ approved IIF Launch Restoral decision, the V5 Incremental Delivery effort was added to the scope of the Control Segment Modernization UCA. This effort re-time phased the existing OCS Version 5 software development to deliver the IIF launch critical release 5 months ahead of the original schedule. This additional effort invalidated the existing V5 performance measurement baseline (PMB). Therefore, cost and schedule variances are incorrect. The JPO directed Boeing to rebaseline OCS development efforts by April 2002.

Significant changes of the current contract price compared to the initial price:

The original IIF OCS contract was based on the assumption that the new OCS upgrade would be completed under the GPS OCS Support Contract (GOSC). Since completion of this upgrade was taking longer than anticipated, SAF/AQ approved an initiative that placed both OCS development and sustainment under a single prime contractor - Boeing. The resulting Single Prime Initiative (SPI), definitized in September 2000, increased development costs to \$410M. Via the FY00 PB, Congress approved additional funding for SPI. Subsequently on January 2001, an additional \$20.3M was added for Control Segment Modernization under an undefinitized contract action.
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15. (U) Contract Information (Cont'd):

(U) <u>BLKIIR SAT DEV/P:</u>	20	Initial <u>Target</u>	Contract P Ceiling	rice <u>Qty</u>
F04701-00-C-0006, FFP/CPIF Award: August 18, 2000 Definitized: September 25, 200)1	\$51.6	N/A	0
Current Contract Price Target <u>Cciling</u> \$50.8 N/A	Qty 0	Estimated P <u>Contractor</u> \$57.6	rice At Comp <u>Program</u>	pletion <u>m Manager</u> \$58.8

Previous Cumulative Variances Cumulative Variances To Date (12/31/01) Net Change $\begin{array}{c|c} \hline Cost Variance Schedule Variance \\ \hline N/A & N/A \\ \hline $-0.4 & $-0.7 \\ \hline $-0.4 & $$-0.7 \\ \hline $-0.7 \\ \hline \end{array}$

Explanation of Change:

(U) [U] Note: The Contract Identification/Schedule/Performance Data only pertains to the IIR Modernization 3600 Cost Plus Incentive Fee (CPIF) development efforts.

Schedule Variance (SV):

[U] Lockheed Martin's (LM) has a negative cumulative SV. This was mainly due to the Waveform Generator development requirements, which included design, development, manufacture and testing of the Engineering Development Model (EDM). As of 31 December 2001, the GPS Block IIR Modernization contract has a negative cumulative SV of -\$0.7M (-1.6%).

Cost Variance (CV):

[U] As of 31 December 2001, the GPS Block IIR Modernization contract has a negative cumulative CV of -0.4M (-0.8%). The negative CV was mainly due to additional Waveform Generator development effort to complete the IIR Modernization Critical Design Review requirements, and was associated with payload subcontractor activities relative to drawings, specification reviews, approvals and placement of material orders.

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

Total Program

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

Appropriation	Prior <u>Years</u> (FY74-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-13)	<u>Total</u>
RDT&E	3612.7	242.3	384.7	881.6	5121.3
Procurement	6432.4	253.5	280.9	2079.2	9046.0
MILCON	7.3	-	-	-	7.3
O&M	70.1	3.8	4.2	42.3	120.4
Total	10122.5	499.6	669.8	3003.1	14295.0

NAVSTAR GPS Satellite

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

Appropriation	Prior <u>Years</u> (FY74-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u>	Total
RDT&E	1017.6	_	-	-	1017.6
Procurement	1429.8	2.2	. 0.3	-	1432.3
MILCON	7.3	-	***	-	7.3
O&M	-	-	-	-	
Total	2454.7	2.2	0.3	-100	2457.2

(U) Note: Tables do not include Department of Transportation (DOT) funding.

NAVSTAR GPS User Equip

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

Appropriation	Prior <u>Years</u> (FY74-01)	Budget <u>Year</u> (FY02)	Budget Year (FY03)	Balance To Complete (FY04-12)	Total
RDT&E	1540.4	19.5	33.8	50.7	1644.4
Procurement	3210.8	66.5	54.0	779.1	4110.4
MILCON	-	-	÷		-
O&M Total	70.1 4821.3	3.8 89.8	4.2 92.0	42.3 872.1	120.4
		• • • •	2610		491914

(U) Note: Tables do not include DOT funding.

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

Modernized Space & OCS

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

Appropriation	Prior <u>Years</u> (FY86-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-13)	Total
RDT&E	861.9	177.6	274.1	513.8	1827.4
Procurement	1672.8	169.0	211.6	1238.0	3291.4 •
MILCON	-	-	-	-	-
O&M	_	-		_	-
Total	2534.7	346.6	485.7	1751.8	5118.8

Modernized User Equipment

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

Appropriation	Prior <u>Years</u> (FY93-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Tôtal</u>
RDT&E	192.8	45.2	/6.8	317.1	631.9
Procurement	119.0	15.8	15.0	62.1	211.9
MILCON	-	-	-	-	-
0&M	-	-	-	-	-
Total	311.8	61.0	91.8	379.2	843.8

b. Annual Summary -- NAVSTAR GPS Satellite

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

		Flyaway	Flyaway	Total	Total
		FI 19/9	EI 1979	Total	Decembra
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$_	Then-Year \$
1974				9.4	6.4
1975				26.3	19.7
1976				74.0	60.4
197T			_	12.0	10.6
1977				56.3	50.2
1978	· · · · · · · · · · · · · · · · · · ·			56.7	53.9
1979				53.9	55.9
1980				88.2	101.8
1981		1		78.7	100.6
1982		1		100.5	137.3
1983				67.2	96.1
1984				67.7	100.6
1985				48.9	75.1
1986				27.9	43.8
1987				13.4	22.1
1988				7.2	12.1

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Navstar GPS, December 31, 2001

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

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

Fiscal Year	Qty	Flyaway FY 1979 Dollars Nonrec	Flyaway FY 1979 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				6.4	11.3
1990				5.9	10.7
1991				6.2	11.7
1992				7.8	15.1
1993				4.8	9.6
1994				6.2	12.6
Subtotal	12	·····		825.6	1017.6

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1979	FY 1979 -	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1982		0.7	12.5	13.2	20.1
1983			69.4	69.4	111.6
1984	1	0.6	152.2	152.B	256.2
1985	6	0.1	192.2	192.3	331.7
1986	9	2.0	110.7	112.7	203.6
1987	8		37.8	37.8	71.3
1988	-4	2.4	51.2	53.6	104.6
1989		2.5	30.7	33.2	67.6
1990		5.5	14.8	20.3	42.1
1991		The second secon	32.7	32.7	69.8
1992			15.1	15.1	32.6
1993		· · · · · · · · · · · · · · · · · · ·	13.9	13.9	30.7
1994			12.5	12.5	28.2
1995			9.1	9.1	20.6
1996			8.3	8.3	19.1
1997			3.6	3.6	8.3
1998			1.7	1.7	3.9
1999			1.7	1.7	4.1
2000			0.6	0.6	1.5
2001			0.9	0.9	2.2
2002			0.9	0.9	2.2
2003			0.1	0.1	0.3
Subtotal	28	13.8	772.6	786.4	1432.3

(U) Note: Recurring dollars that are reflected in FYs 89, 90, 91, 99, 00, and 01 are due to Launch and On-Orbit support that cannot be identified to specific satellites.

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Navstar GPS, December 31, 2001

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

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Appropriation: 3300 - Military Construction, Air Force

		Flyaway	1-	Flyaway		
		FY 1979		FY 1979	Total	Total
Fiscal		Dollars		Dollars	Program	Program
Year	Qty	Nonrec		Rec	Base-Year \$	Then-Year \$
1984					4.7	7.3
Subtotal					4.7	7.3

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	40	13.8	772.6	1616.7	2457.2

b. Annual Summary -- NAVSTAR GPS User Equip

Appropriation: 0400 - RDT&E, Defense Agencies

Fiecal		Flyaway FY 1979 Dollars	Flyaway FY 1979 Dollars	Total	Total Program
LIGCUI	0	Dorrect	Dee	Dana Vara A	Mhan Maan C
Year	QEY	Nonrec	Rec	Base-lear \$	Inen-fear \$
1989				0.1	0.2
1990				1.2	2.1
1991				0.2	0.4
1992				0.1	0.1
1993				0.2	0.3
1994				0.2	0.4
1995					
Subtotal				2.0	3.5

(U) Note: Appropriation 0400 Research Development Test and Evaluation (RDT&E), Defense Agencies is Marine Corps RDT&E - Program Element (PE) 0206626M-1319 Appropriation for fiscal years FY89-FY94 and Department of Defense 0400 Research Development and Test for FY96-FY99.

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

Fiscal Year	Qty	Flyaway FY 1979 Dollars Nonrec	Flyaway FY 1979 Dollars Rec	Total Program Base-Year_\$	Total Program Then-Year \$
1974				6.0	4.1
1975				8.7	6.5

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

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

,		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1976				13.5	11.0
197T				1.8	1.6
1977				7.4	6.6
1978				3.8	3.6
1979				9.5	9.9
1980				8.8	10.1
1981			•	13.4	17.1
1982				22.0	30.0
1983				19.7	28.1
1984				39.9	59.3
1985		· · · ·		38.3	58.8
1986				35.8	56.2
1987				39.1	64.3
1988				29.3	49.4
1989				22.4	39.6
1990				23.1	42.2
1991				25.8	48.8
1992			ļ	25.3	49.2
1993				24.7	49.2
1994				24.3	49.2
1995				15.7	32.4
1996				14.1	29.5
1997				13.4	28.4
1998				10.5	22.5
1999				12.3	26.7
2000				4.6	10.2
2001				6.1	13.7
2002				5.4	12.2
2003				10.3	23.8
2004				11.4	26.7
2005				10.1	24.0
Subtotal				556.5	944.9

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

		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1974				1.8	1.2
1975				4.4	3.3
1976				7.8	6.4
197T				1.8	1.6

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

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

		Flyaway	Flyaway	Total	Total
		E1 19/9	pellere	Ducar	Destaur
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Кес	Base-rear \$	Then-Year \$
1977				8.4	/.5
1978				7.4	7.0
1979				9.3	9.7
1980		•		11.7	13.5
1981			<u> </u>	13.8	17.7
1982				5.1	7.0
1983				7.5	10.7
1984				3.9	5.8
1985				7.6	11.6
1986				6.7	10.5
1987				2.7	4.5
1988				5.9	10.0
1989				5.0	8.9
1990				2.7	5.0
1991				3.3	6.3
1992					
1993					
1994				0.2	0.5
1995				0.2	0.5
1996				0.2	0.4
1997				0.2	0.4
1998				0.2	0.4
1999				0.2	0.4
2000	<u> </u> †		+	0.2	0.4
2001	<u>├───</u>			1.1	2.4
Subtotal	13		1	119.3	153.6

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

Fiscal Year	Qty	Flyaway FY 1979 Dollars Nonrec	Flyaway FY 1979 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1974				1.5	1.0
1975				6.4	4.8
1976			1	19.5	15.9
1977				3.1	2.7
1077				15.5	13.8
1979				14.4	13.7
1970				18.9	19.6
1979			1	29.8	34.4
1980			<u> </u>	19.2	24.5
1981				20 5	28.0
1982					20.0

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

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

	· · · · · · · · · · · · · · · · · · ·	Flvawav	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1983				18.1	25.9
1984				13.3	19.8
1985				13.5	20.7
1986				16.4	25.8
1987				17.2	28.3
1988				22.4	37.8
1989				21.7	38.3
1990				18.0	32.8
1991				6.7	12.6
1992				7.6	14.7
1993				10.2	20.3
1994				9.2	18.7
1995				6.5	13.4
1996				4.6	9.7
1997				4.8	10.2
1998				4.2	8.9
1999				0.4	0.8
2000				4.3	9.4
2001				8.3	18.6
2002				3.2	7.3
2003				4.3	10.0
2004					
2005					
2006					
2007					
2008					
Subtotal	146			363.7	542.4

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 1979 Dollars Nonrec	Flyaway FY 1979 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989	456		1.0	2.2	4.1
1990	504		0.7	0.8	1.6
1991					
1992					
1993	3304	0.1	2.7	2.9	5.8
1994	557		0.4	0.4	0.8
Subtotal	4821	0.1	4.8	6.3	12.3

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

Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		·····
		FI 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1988	42		2.0	2.2	4.3
1989	108		4.4	5.0	10.0
1990	121		3.9	4.6	9.6
1991	24		0.7	1.9	4.0
1992	215		10.8	17.3	38.0
1993	200		11.3	7.0	15.5
1994	537	0.5	10.7	17.5	39.5
1995	352	0.3	6.1	19.0	43.5
1996	522	0.3	8.8	18.9	43.8
1997	495	0.3	_7.5	16.0	37.6
1998	450	0.3	6.6	24.8	58.5
1999	281	0.3	1.8	12.8	30.5
2000	234	0.3	1.8	5.6	13.5
2001	330	0.3	1.1	7.9	19.5
2002	50	0.4	0.6	2.8	7.0
2003		0.3	1.6	1.8	4.5
2004	408	2.3	3.0	9.4	24.3
2005	180	0.1	2.0	6.9	18.2
2006	138			7.0	18.7
2007	298			8.4	23.0
Subtotal	4985	5.7	84.7	196.8	463.5

Appropriation: 1611 - Shipbuilding and Conversion, Navy

[Flvawav	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1987	11		0.8	0.8	1.4
1988	6		0.5	0.5	1.0
1989	11		0.7	0.7	1.5
1990	17		0.8	1.1	2.3
1991	11		0.4	0.4	0.8
1992	11		0.5	0.8	1.8
1993	9		0.2	0.2	0.4
1994				0.1	0.3
1995				0.5	1.2
1996				1.3	3.1
1997				1.3	3.1
1998				1.5	3.5
1999				1.9	4.5
2000				3.1	7.5
2001				2.7	6.6

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Navstar GPS, December 31, 2001

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

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Appropriation: 1611 - Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY 1979 Dollars Nonrec	Flyaway FY 1979 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				1.9	4.8
2003				1.5	3.7
2004				1.7	4.4
2005				0.7	1.8
2006				0.2	0.6
2007				0.2	0.5
Subtotal	76		3.9	23.1	54.8

Appropriation: 1810 - Other Procurement, Navy

		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1986	62	5.7	5.8	12.1	20.0
1987	148	8.1	5.4	13.8	23.6
1988	188	1.3	5.8	7.4	13.2
1989	133	0.4	5.2	6.1	11.2
1990	79	0.6	2.8	3.8	7.2
1991	38	0.1	2.0	3.8	7.3
1992	130	0.1	6.6	8.5	16.9
1993	1840	0.1	4.1	4.4	8.9
1994				2.3	4.8
1995				7.2	15.1
1996		-		0.6	1.3
1997				1.9	4.1
1998				2.2	4.8
1999				4.2	9.4
2000				3.8	8.6
2001				5.2	12.0
2002				6.0	13.9
2003				4.8	11.4
2004				7.0	16.8
2005				5.3	13.0
2006			·····	5.7	14.3
2007				5.3	13.6
Subtotal	2618	16.4	37.7	121.4	251.4

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

Appropriation: 2031 - Aircraft Procurement, Army

		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1986	67	3,6	4.0	7.7	13.7
1987	133	1.3	3.8	6.3	11.6
Subtotal	200	4.9	7.8	14.0	25.3

Appropriation: 2035 - Other Procurement, Army

		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1986	70	3.8	1.6	5.6	9.2
1987	60	1.3	1.2	3.1	5.3
1988	147	7.6	4.0	11.9	21.1
1989	175	4.3	3.1	7.6	13.9
1990	1092	5.0	5.2	10.6	20.0
1991	74	3.1	3.0	6.1	11.8
1992	37	9.3	1.3	14.2	28.3
1993	11014	4.3	8.2	13.5	27.4
1994	14318	0.3	12.5	15.6	32.3
1995	15317	0.1	9.7	15.2	32.0
1996	21777	1.3	15.3	22.8	48.5
1997	15074		6.1	12.1	26.1
1998				2.7	5.8
1999				3.6	8.0
2000				2.9	6.5
2001	8049			9.5	21.7
2002	4190	1.7	4.8	9.0	20.9
2003	1832	0.6	2.1	11.6	27.5
2004	13367	0.3	15.2	19.2	46.2
2005	13286	0.3	15.1	17.4	42.7
2006	14200	0.5	16.1	18.3	45.7
2007	11345	0.8	12.9	15.2	38.8
2008	15000	0.8	17.0	15.9	41.3
2009	15000		17.0		44.6
2010	15000		17.0	18.5	49.9
2011	15000		17.0	18.5	50.9
2012	15000		17.0	18.6	52.0
Subtotal	220424	45.4	222.4	336.1	778.4

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

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1985		3.2		4.7	8.0
1986	70	5.5	7.7	23.8	42.4
1987	299	4.5	20.6	40.3	74.8
1988	351	6.9	19.3	53.8	104.8
1989	327	23.3	15.8	58.6	117.8
1990	207	5.1	9.0	28.3	58.6
1991	36	4.1	8.0	12.8	27.6
1992	65	20.5	9.1	47.4	103.9
1993	207	16.3	4.6	41.4	91.9
1994	194	36.8	15.2	70.0	158.0
1995	262	33.3	28.9	77.5	177.7
1996	571	52.8	64.1	112.2	260.5
1997	696	22.0	87.4	116.1	272.3
1998	896	16.0	82.3	107.6	254.0
1999	433	17.3	47.4	73.5	175.6
2000	503	10.0	61.2	77.7	189.0
2001	266	1.3	21.5	30.5	75.2
2002	301	0.5		6.5	16.2
2003	27			2.2	5.5
2004	26	0.9		13.0	33.6
2005	164			18.3	48.2
2006	148			21.9	58.7
2007	32			15.6	42.6
2008				7.9	21.9
Subtotal	6081	280.3	502.1	1061.6	2418.8

(U) Note: Air Force aircraft procurement funding and quantities reflect requirements for aircraft installs (funds controlled within the Global Positioning System (GPS) program element, 0305164F), as well as planned GPS modifications to existing aircraft (funds controlled within each aircraft system program director's program element).

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1979 Dollars Nonrec	Flyaway FY 1979 Dollars Rec	Total Program Base-Year Ş	Total Program Then-Year \$
1986	87	1.1	2.3	6.2	10.3
1987	121	0.6	2.2	6.4	11.0
1988	757	0.1	3.8	8.3	14.7
1989	445	0.1	5.7	7.1	13.1
1990	179	0.1	4.3	5.7	10.7

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

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Appropriation: 3080 - Other Procurement, Air Force

		Flyaway FY 1979	Flyaway FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1991					
1992	101		0.1	2.2	4.3
1993	2512		2.2	2.7	5.5
1994	1702		1.4	2.2	4.6
1995	795		0.7	1.8	3.7
1996	812		2.0	2.0	4.2
1997	800		0.4	0.6	1.2
1998	650		0.3	0.6	1.3
1999				0.4	0.8
2000				0.7	1.6
2001				0.4	1.0
2002				1.6	3.7
2003	300		0.3	0.6	1.4
2004	1034		1.2	0.7	1.8
2005	980		1.1	1.3	3.3
2006	1412		1.6	1.5	3.7
2007	101		0.1		0.1
2008	1440		1.6	1.5	3.9
Subtotal	14228	2.0	31.3	54.5	105.9

Appropriation: 1804 - Operation and Maintenance, Navy

		Flyaway	Flyaway	Tetal	Tatal
		EI 1979	E1 1979	Decen	Deserves
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1988				1.7	2.8
1989				2.6	4.6
1990	· · · · · ·			6.9	12.5
1991				3.3	6.2
1992		1	1	3.4	6.7
1993				2.3	4.6
1994				1.6	3.3
1995		1		1.4	2.8
1996				1.7	3.5
1997		Î		1.2	2.6
1998				1.3	2.8
1999				0.9	1.9
2000				1.0	2.2
2001				0.3	0.6
2002				1.1	2.5
2003				1.0	2.4
2004				1.2	2.7

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

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Appropriation: 1804 - Operation and Maintenance, Navy

		Flyaway	Flyaway		
		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2005				1.1	2.6
2006				1.1	2.6
2007		·		1.1	2.7
Subtotal				36.2	72.6

Appropriation: 3400 - Operation & Maintenance, Air Force

		Flyaway	Flyaway		
1		FY 1979	FY 1979	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992				0.3	0.5
1993				1.2	2.3
1994				0.6	1.3
1995		•		0.5	1.0
1996				0.5	1.0
1997				0.4	0.9
1998				0.4	0.8
1999				1.0	2.1
2000				0.6	1.4
2001				0.8	1.7
2002				0.6	1.3
2003				0.8	1.8
2004				2.6	6.2
2005				2.6	6.2
2006				2.6	6.4
2007				2.6	6.5
2008				2.5	6.4
Subtotal				20.6	47.8

(U) Note: Tables do not include DOT funding.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD				2.0	3.5
Navy	12500	22.2	131.1	940.3	1799.5
Army	220637	50.3	230.2	469.4	957.3
USAF	20455	282.3	533.4	1500.4	3114.9
Grand Total	253592	354.8	894.7	2912.1	5875.2

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

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b. Annual Summary -- Modernized Space & OCS

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

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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				45.2	43.6
1997				85.1	83.1
1998				98.4	96.7
1999				102.3	101.7
2000				94.2	95.0
2001				175.9	180.6
2002				170.3	177.6
2003				259.1	274.1
2004				87.5	94.2
2005				67.9	74.4
2006				77.2	86.2
2007				57.1	65.0
2008				46.4	53.8
2009				27.4	32.4
2010				23.6	28.4
2011				36.8	45.1
2012				21.3	26.7
2013				6.0	7.6
Subtotal				1781.3	1827.4

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Otv	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991		8.8	88.4	97.2	87.7
1992	4	8.4	170.1	178.5	163.0
1993	4	9.3	163.1	172.3	160.6
1994	4	8.4	168.7	177.2	168.3
1995	5	9.2	207.2	216.5	207.6
1996	4	8.5	140.6	149.2	145.0

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

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Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway	Total	Total
		EI 2000	E1 2000	10041	Ducent
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997	3	7.4	184.8	192.2	189.5
1998	3	9.0	169.3	178.4	177.7
1999		10.7	68.8	79.5	80.3
2000		11.8	94.3	106.1	108.5
2001		11.9	137.9	149.8	155.2
2002		11.4	149.2	160.6	169.0
2003	3	11.4	184.3	195.7	209.2
2004	3	11.8	193.9	205.7	223.8
2005		11.5	317.2	328.8	364.3
2006		11.4	. 225.4	236.8	267.4
2007		11.3	80.7	92.0	105.9
2008		11.2	67.7	78.9	92.5
2009		11.0	66.3	77.3	92.4
2010		11.0	64.3	75.3	91.7
Subtotal	33	205.4	2942.2	3148.0	3259.6

Appropriation: 3080 - Other Procurement, Air Force

		Flyaway FY 2000	Flyaway FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Otv	Nonrec	Rec	Base-Year \$	Then-Year \$
1987				3.3	2.6
1988	· • • • •			10.2	8.3
1989					
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000				11.7	12.1
2001				6.1	6.4
2002					
2003				2.2	2.4
Subtotal				33.5	31.8

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

Modernized Space & OCS

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		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	33	205.4	2942.2	4962.8	5118.8

b. Annual Summary -- Modernized User Equipment

Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Otv	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base~Year S	Total Program Then-Year S
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

		Flyaway	Flyaway	Teta)	
		EY 2000	FI 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1994				1.1	1.0
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				29.3	29.6
2001				40.6	41.7
2002				43.3	45.2
2003				72.6	76.8
2004				56.6	61.0
2005				56.2	61.6
2006				57.7	64.4
2007				61.6	70.1
2008				51.7	60.0
Subtotal				577.9	616.8

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

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Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
1		FY 2000	EY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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				22.7	22.6
1999				15.6	. 15.7
2000				17.1	17.6
2001				18.6	19.3
2002				14.3	15.1
2003				11.3	-12.1
2004				7.9	8.6
2005				7.1	7.9
2006				7.7	8.7
2007				13.3	15.4
2008		1		12.6	14.8
Subtotal				190.6	199.4

Appropriation: 3080 - Other Procurement, Air Force

	anna an	Flyaway FY 2000	Flyaway FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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				2.7	2.9
2004				2.6	2.9
2005				0.9	1.0
2006				0.9	1.0
2007				0.8	0.9
2008				0.8	0.9
Subtotal				11.6	12.5

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

		Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD				15.6	15.1
USAF				780.1	828.7
Grand Total				795.7	843.8

17. (U) Delivery/Expenditure Information:

NAVSTAR GPS Satellite

a. (U) Deliveries To Date

(U) Deliveries To Date	Plan	Actual	
		-	
RDT&E	12	· 12	-
Procurement	28	28	
-			- 1

- (U) Percent Total Program Quantities Delivered: 100.0%
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2231.9
 - (U) Percent Total Program Expended: 90.8%

NAVSTAR GPS User Equip

- a. (U) Deliveries To Date None.
 - (U) Percent Total Program Quantities Delivered: N/A
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0.0
 - (U) Percent Total Program Expended: 0.0%

Modernized Space & OCS

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. (U) Deliveries To Dat	e <u>Plan</u>	<u>Actual</u>
RDT&E Procurem	0 ant 33	0

- (U) Percent Total Program Quantities Delivered: 63.6%
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2024
 - (U) Percent Total Program Expended: 39.5%

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

Modernized User Equipment

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

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 292.6

(U) Percent Total Program Expended: 34.7%

18. (U) Operating and Support Costs: NAVSTAR GPS Satellite

a. (U) Assumptions and Ground Rules --Operations and support costs include all costs of operating, maintaining, and supporting the NAVSTAR Global Positioning System (GPS) spacecraft from the dedicated Master Control Station (MCS) located at Schriever Air Force Base (AFB) CO. Also included are the costs for operating, maintaining, and supporting four dedicated GPS Ground Antennas (GAs) (located at Cape Canaveral Air Force Station (AFS) FL, Kwajalein Atoll, the Ascension Islands, and Diego Garcia); and five monitor stations (located at Schriever AFB, Mau1, HI, Kwajalein Atoll, the Ascension Islands, and Diego Garcia). Satellite operations at the MCS include mission planning, mission payload operations, and monitoring of satellite state of health. GAs transmit navigation data uploads and commands to the GPS spacecraft and receive telemetry data from the spacecraft. Monitor stations receive mission payload data and transfer this data to the MCS to ensure spacecraft are operating as desired. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements. The Sustaining Support cost includes the Material Support Division (MSD) Direct Costs. Costs reflect updates for the fiscal year FY00 President's Budget.

There is no applicable antecedent program.

	NAVSTAR GPS Satellite Avg Annual Cost Per	Avg Annual Cost Per Antecedent
Cost Element	NAVSTAR GPS Sat	
Mission Pay & Allowances	0.8	0.0
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A

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

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SELECTED ACOUISITION REPORT (RCS: DD-AGT(O&A)823) PROGRAM: EELV

AS OF DATE: December 31, 2001

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INDEX

DELTAIN ATLASIV

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

2. DoD Component: USAF

AF-9 EELV

• •

3. <u>Responsible Office and Telephone Number</u>: SMC/MV Col Robert K. Saxer 2420 Vela Way, Suite 1467 Assigned: May 7, 1999 El Segundo, CA 90245-4659

4. Program Elements/Procurement Line Items: RDT&E: PE 0603011F PE 0603226E PE 0603853F PE 0604853F **PROCUREMENT:** APPN 3020 ICN 23EELV (Air Force)

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02-C-0\$33

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EELV, December 31, 2001

5. <u>References</u>:

<u>SAR Baseline (Development Estimate)</u>: DAE Approved Acquisition Program Baseline (APB) dated October 15, 1998.

Approved Program: CAE Approved Acquisition Program Baseline (APB) dated March 13, 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 will be a family of launch vehicles evolved from current expendable launch systems or components thereof. EELV will support military, intelligence, and civil mission requirements in the NMM through 2020 (currently serviced by Titan II, Delta II, Atlas II, and Titan IV).

7. Executive Summary:

The EELV program made significant progress during calendar years 2000 and 2001. Both Atlas V and Delta IV are on track for their inaugural commercial launches in mid-2002, and both systems are wrapping up their nonrecurring development efforts. Overall, EELV program remains on-cost and on-schedule, meeting all system key performance parameters defined in the October 1998 Milestone II acquisition program baseline. It is anticipated both EELV systems will transition to recurring operations late in CY2002.

Boeing is nearing completion of its Cape Canaveral launch site, Space Launch Complex (SLC)-37. Boeing held the dedication of the facility in October 2001, with SECAF Roche in attendance. Boeing has completed its final development milestones. All 41 planned development test objectives were demonstrated for the Boeing/Rocketdyne Mainstage engine. The RS-68 Engine Certification Review was conducted December 7, 2001, marking the official completion of the RS-68 Mainstage Engine development & certification program. Also, the first mating of the upper stage and common booster core was accomplished December 13, 2001 at the Horizontal Integration Facility (HIF). Construction of SLC-6 at VAFB continues on target for November 2002 completion.

Boeing has signed a commercial customer for its inaugural launch. However, increased Cape Canaveral Air Force Station (CCAFS) security as a result of the September 11, 2001 terrorist attacks and site activation issues, coupled with launch customer needs for additional satellite testing have delayed first launch to July 15, 2002. Because the schedule to complete post-flight analyses and be ready to support the first Government launch (Defense Satellite Communications System (DSCS)) is 75 days, the first Government launch date slipped to October 2002. Risk mitigation plans are in place to protect this

7. Executive Summary (Cont'd):

launch date. Launch vehicle ground software formal qualification test completion (necessary for first flight) is anticipated in April 2002. A comprehensive EELV/Delta IV Design Certification Review was held from November 5, 2001 to December 3, 2001 to verify satisfaction of all first flight requirements. Boeing continues to consolidate most Delta II, III & IV manufacturing from Huntington Beach CA and Pueblo CO to Decatur AL, an activity that began in the fall of 2000.

Lockheed Martin Astronautics (LMA) continues to make good progress on Launch Complex (LC)-41 at CCAFS. LMA's Vertical Integration Facility (VIF) and Mobile Launch Platform (MLP) were completed and are now being used for Pathfinder activities. LMA's first flight booster, upper stage and payload fairing were delivered and stacked at CCAFS in October 2001 and have undergone complete check-out at the Atlas V Spaceflight Operations Center (ASOC) and VIF. LMA continues Atlas V component qualification in Denver. A significant accomplishment of 2001 was the successful test firing of the Aerojet Solid Rocket Motor (SRM). The first production representative SRM hot fire test is scheduled for mid-February 2002.

RD-180 certification testing was completed on December 6, 2001. Transfer of RD-180 data is still contingent on Russian Government approval of the co-production contract. The Atlas V System Performance Verification Status Review (SPVSR) took place from October 2001 through December 2001. This milestone was successfully completed on December 11, 2001.

LMA has a signed commercial customer for the first Atlas V launch in May 2002, but there is schedule pressure due to delays in site construction resulting from added security in light of the events on September 11, 2001 and also due to the possibility of Range Standardization Automation (RSA)/range upgrades not being in place and fully certified in time for first flight. The overall schedule for the ground support equipment and facilities remains on the critical path for May 2002 initial launch capability.

At the request of Secretary of the Air Force (SECAF), a Joint Assessment Team (JAT) was established in October 1999 to review EELV's acquisition and business strategy, evaluate the development status of the EELV program, and complement the ongoing Space Launch Broad Area Review (BAR) of heritage launch systems. Results were briefed to the SECAF on January 14, 2000. Close-out of BAR/JAT actions will continue throughout 2002. Initial and follow-up briefings were presented to the BAR members outlining the strategy for building confidence in the new launch system and ensuring seamless transition from heritage launch systems. A formal EELV Transition Plan was approved by the Air Force Service Acquisition Executive, the Vice Commander of Air Force Space Command (AFSPC), and the Commander of Space and Missile Systems Center (SMC) on November 6, 2000.

As a result of the BAR/JAT findings and changes in formal discussions with the Lockheed Martin Corporation, the SECAF (Mr. Peters) and OSD (Dr. Hamre) directed the EELV program to restructure the current Other Transactions Agreements (OTA) and Initial Launch Services(ILS) contract requirements. A

7. Executive Summary (Cont'd):

revised EBLV acquisition strategy was reviewed by Mr. De Leon (DEPSECDEF) and signed on September 18, 2000 by Mr. Oliver (OSD/AT&L). Under the revised strategy, only The Boeing Company will develop a Vandenberg AFB (VAFB) launch facility. LMA transferred two west coast Defense Meteorological Satellite Program (DMSP) missions to Boeing and provided the government additional program consideration. Additionally, the program restructure included the procurement of a SECAF- requested heavy lift demonstration launch to increase confidence in the Delta IV Heavy Lift Vehicle (HLV) prior to the FY03 Delta IV HLV launch of Defense Support Program Mission 23 (DSP-23).

As a result of the program restructure and congressional approval of the HLV demonstration launch new start package in the FY00 Omnibus, a total of \$141M of Air Force RDTsE funding was added for the HLV demonstration launch (FY00 \$12M; FY01 \$48M; FY02 \$53M; FY03 \$28M). The value of the Boeing OTA increased from \$500M to \$641.5M and the total number of missions for Boeing changed from 19 to 22. The value of their ILS contract increased from \$1378.0M to \$1525.3M. The value of the LMA OTA remains unchanged; however, the number of missions for LMA has changed from 9 to 7, decreasing the value of their ILS contract from \$649.0M to \$505.8M. In March 2002, OSD approved an APB revision increasing the cost baseline to reflect the HLV demonstration launch funding, as well as funding for BAR/JAT recommendations (FY02 \$8.5M, FY03 \$17.7M, FY04 \$1.0M, FY05 \$1.0M).

Per the EELV Transition Plan, a Launch IPT was initiated to define the functions, skills, and manpower required for the Consolidated Task Force (CTF) located at both launch bases. The CTF is an extension of the EELV System Program Office (SPO) that serves as the single focal point for EELV activities at the launch bases. The Launch Integrated Product Team (IPT) consisted of representation from Boeing, LMA, AFSPC, National Reconnaissance Office (NRO), and Defense Contract Management Agency (DCMA). To define the CTF functions, the Launch IPT reviewed the proposed surveillance activities to be accomplished by Boeing and LMA at the launch bases. Many of the heritage launch vehicle assembly and checkout activities that occur at the launch bases today are done at contractor factories for EELV. Both Boeing and LMA send complete, fully tested boosters to the launch base. EELV launch campaigns range from 18 to 26 days, depending on the vehicle configuration, from receipt of the vehicle at the launch base to launch.

The Launch IPT completed its deliberations and out briefed the results to the SMC Commander and the other stakeholders. The functions, skills, and manpower will be refined based on insight gained through pathfinder operations. The IPT proposed maximum manpower loading for the Cape Consolidated Task Force (CCTF) at 85. Following the IPT out brief, the decision was made to beddown the CCTF in the NRO Cape Operating Location at the Technical Support Facility (TSF). By FY03, EELV and the NRO will modify an existing facility in order to accommodate both the CCTF and NRO requirements. In the interim, CCTF personnel will use existing facilities in the TSF. As of December 2001, the CCTF had completed transition to the NRO TSF, except for those individuals awaiting security clearance approval. Also, facility design activities were initiated. Construction activities are expected to begin in February 2002.

7. Executive Summary (Cont'd):

With the decision to locate CCTF in the NRO'S TSF, 2001 saw much activity related to standing up the EELV Engineering Launch Support System (ELSS). ELSS consists of three major components: STARS (Spacelift Operations Telemetry and Reporting System); Boeing remote data viewing capability; and LMA remote data viewing capability. These three data sources will support vehicle processing, anomaly resolution, post-flight data analysis, and long-term trend analysis. Construction activities to expand the STARS capability at El Segundo, currently used for flight data collection and analysis on heritage systems, are underway with expected completion in March 2002. Both Boeing and LMA are under contract to provide remote data viewing capability in the NRO Technical Support Facility for both government and commercial missions. This capability will be in place by first launch.

The program office completed an Environmental Mitigation Plan and Environmental Assessment (EA) necessary to complete fiber optics installation and harbor dredging activities at VAFB. Harbor dredging was completed in time for the October 2001 launch table delivery to SLC-6; and trenching and fiber optic installation is on schedule.

The first five government launch services have been ordered from Boeing; the EELV program office is actively engaged in mission integration activities for seven government missions: DSCS A3, DSP-23, HLV demonstration, Defense Meteorological Satellite Program (DMSP)-17, NRO Launch (NROL)-22 (Mission A/B-1), NROL-26 (Mission C), and DSCS B6. DSCS B6 initial check out work is in progress in anticipation of the first government Delta IV launch, which has moved to October 2002 to preserve 75 days between it, and the first commercial Delta IV launch, now scheduled in July 2002.

Additionally, early integration studies have been initiated with Boeing and LMA for the Global Positioning Satellite (GPS) program office to support launch vehicle upper stage disposal options in conjunction with satellite system trade analysis.

Wideband Gapfiller System (WGS) spacecraft weight growth has driven a need to upgrade from Medium to Intermediate for both Delta IV and Atlas V launch vehicle configurations for the first three WGS missions. Spacecraft weight growth on the Advanced Extremely High Frequency (AEHF) satellite has also resulted in additional funding being added to the budget in order to upgrade to an Intermediate class vehicle.

The EELV program sustained a \$5M cut to RDT&E funding in the Appropriations Conference. As a result, the GPS metric tracking non-recurring effort will be reduced.

Acronym List:

AEHF (Advanced Extremely High Frequency) AFSPC (Air Force Space Command) BAR (Broad Area Review)

EELV, December 31, 2001

7. Executive Summary (Cont'd):

BT (Burst Test) CCTF (Cape Consolidated Task Force) DAE (Defense Acquisition Executive) DCMA (Defense Contract Management Agency) DMSP (Defense Meteorological Satellite Program) DSCS (Defense Satellite Communications System) DSP (Defense Support Program) EA (Environmental Assessment) ELSS (Engineering Launch Support System) GPS (Global Positioning Satellite) HIF (Horizontal Integration Facility) HLV (Heavy Lift Vehicle) ILS (Initial Launch Services) IPT (Integrated Product Team) JAT (Joint Assessment Team) LMA (Lockheed Martin Astronautics) MLP (Mobile Launch Platform) MLV (Medium Launch Vehicle) NRO (National Reconnaissance Office) NROL (NRO Launch) OTA (Other Transactions Agreements) RSA (Range Standardization Automation) SECAF (Secretary of the Air Force) SMC (Space and Missile Systems Center) STARS (Spacelift Operations Telemetry and Reporting System) SPO (System Program Office) SLC (Space Launch Complex) SPAWAR (Space and Naval Warfare Systems Command) SPVSR (System Performance Verification Status Review) SRM (Solid Rocket Motor) TSF (Technical Support Facility) UHF (Ultra High Frequency) VAFB (Vandenberg Air Force Base) VIF (Vertical Integration Facility) WGS (Wideband Gapfiller System)

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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
OSM	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 Approved		Current	
	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>	
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	JUL 2002(Ch-1)	
Milestone III	JUN 2003	JUN 2003	JUN 2003	
Initial Operational Capability	TBD	TBD	TBD	
HLV First Operational Flight	JUL 2003	JUL 2003	JUL 2003	
HLV OLSD Flight/2	N/A	JAN 2003	JAN 2003	

Notes:

MLV First Operational Flight - MLV and HLV Operational Flight dates are based on operational satellite need dates. If satellite need dates are postponed - MLV and HLV objective and threshold dates will also move.

Milestone III - The DAE approved OIPT reviews for FY00 and FY02 as briefed at the DAB Readiness Meeting.

Initial Operational Capability - IOC dates are event-driven based on ORD definitions. The DAE approved APB reflects an IOC objective date sometime in FY03 and a IOC threshold date sometime in FY04.

HLV First Operational Flight - MLV and HLV Operational Flight dates are based on operational satellite need dates. If satellite need dates are

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9a. <u>Schedule (Cont'd)</u>:

postponed - MLV and HLV objective and threshold dates will also move.

Acronym List:

APB Acquisition Program Baseline Critical Design Review CDR DAB Defense Acquisition Board DAE Defense Acquisition Executive HLV Heavy Launch Vehicle IOC Initial Operational Capability Medium Launch Vehicle MLV OIPT Overarching Integrated Product Team ORD Operational Requirements Document

b. Current Change Explanations --(Ch-1) MLV First Operational Flight moved to July 2002 to accommodate the launch vehicle development and satellite availability.

10. Performance Characteristics:

a. Performance --

		Ar	proved	Demon-	
	Development	Progr	am (APB)	strated	Current
	Estimate (SAR)	Obj/1	hreshold	Perf	Estimate
Performance Mass to					
Orbit					
LEO: 100nm X 100nm	19,550	19,550	/ 17,000	TBD	17,000
63.4 deg (lbs)	(15%)	(15%)	1 .		
POLAR 1: 450nm x	5,060-	5,060-	/ 4,400-	TBD	4,400-
450nm, 98.2 deg	8,050	8,050	/ 7,000		7,000
(lbs)					
POLAR 2: 100nm x	43,050	43,050	/ 41,000	TBD	41,000
100nm, 90 deg	(5%)	(5%)	/		
(lbs)					
SEMI-SYNC: 10,998nm	2,875-	2,875-	/ 2,500-	TBD	2,500-
x 100nm, 38.8 deg	5,152	5,152	/ 4,725		4,725
(lbs)					
GTO: 19,324pm x	7,015-	7,015-	/ 6,100-	TBD	6,100-
90nm, 27 deg (1bs)	9,775	9,775	/ 8,500		8,500
MOLNIYA: 21,150nm x	8,050	8,050	/ 7,000	TBD	7,000
650nm, 63.4 deg	(15%)	(15%)	1		
(lbs)					
GEO: 19,323nm x	14,175	14,175	/ 13,500	TBD	13,500
19,323nm, 0 deg	(5%)	(5%)	/		
(lbs)					
Vehicle Design	>98	>98	/ 98	TBD	98
Reliability (%)					
Standardization					

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10a. Performance Characteristics (Cont'd):

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

Acronym List:

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

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

		Development	Approved	Current
а.	Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	1344.0	1495.9	1496.5
	Procurement	11772.6	11772.6	12738.4
	Flyaway Cost	(11772.6)		(12738.4)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition OsM	0.0	0.0	0.0
	Total FY 1995 Base-Year \$	13116.6	13268.5	14234.9
	Escalation	4231.2	4248.5	4150.2
	Development (RDT&E)	(107.1)	(124.4)	(125.5)
	Procurement	(4124.1)	(4124.1)	(4024.7)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	17347.8	17517.0	18385.1

Notes:

The current estimate is based on an AFSPC EELV National Mission Model (dated May 24, 1998) covering the period FY02-FY20 and including 181 USAF and non-USAF (NRO, Navy, etc.) missions. 117 of the 181 missions are USAF and 64 are non-USAF. AFSPC EELV National Mission Model updates will require annual revisions to the total EELV procurement cost estimate.

On October 15, 1998, the MDA authorized the Air Force to award Initial Launch Services (ILS) through FY06. On October 16, 1998, the Air Force awarded ILS contracts for 24 of the 34 USAF missions then in the FYDP, and for four NRO missions. Since the December 1998 SAR submission, five of the awarded USAF launch services were funded prior to the current FYDP (FY00-FY02), 17 are currently funded in the FYDP (FY03-FY07), and two have been rescheduled such that they will be funded outside the FYDP. The remaining USAF FYDP missions currently in the President's Budget include 14 unawarded missions; one in FY06, two in FY07, four in FY08, and seven in FY09 (funded in FY04-FY07). These missions will be awarded in a Follow On Launch Services (FOLS) contract(s).

As a result of the program restructure and congressional approval of the HLV demonstration launch new start package in the FY00 Omnibus, a total of \$141M of Air Force RDT&E funding was added for the HLV demonstration launch (FY00 \$12M; FY01 \$48M; FY02 \$53M; FY03 \$28M). In March 2002, OSD approved an APB revision increasing the cost baseline to reflect the HLV demonstration launch funding, as well as funding for BAR/JAT recommendations (FY02 \$8.5M, FY03 \$17.7M, FY04 \$1.0M, FY05 \$1.0M).

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

b. Quantity	Development Estimate (SAR)	Approved Brogram (APB)	Current
Development (RDT&E)	0	1	1
Procurement	<u>_181</u>	<u>_181</u>	<u>_181</u>
Total	181	182	182

Notes:

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

- c. Foreign Military Sales -- None.
- d. Nuclear Costs -- None.
- 12. Unit Cost Summary:

	UCR Baseline	Current Estimate	Percent
	<u>(MAR 2002 APB)(De</u>	<u>c 2001 SAR)</u>	<u>Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1995 BY\$)	13268.5	14234.9	
(2) Quantity	182	182	
(3) Unit Cost	72.904	78.214	+7.28
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1995 BY\$)	11772.6	12738.4	
(2) Quantity	181	181	
(3) Unit Cost	65.042	70.378	+8.20

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.

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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	-6.3	-271.3	-	-277.6
Quantity		-	-	-
Schedule	-	+105.8	-	+105.8
Engineering	-	-	-	**
Estimating	+10.3	+58.3	-	+68.6
Other	-	~	-	-
Support	-	-	-	-
Subtotal	+4.0	-107.2	-	-103.2
Current Changes:				
Economic	+6.3	-204.5	-	-198.2
Quantity	+141.1	-	-	+141.1
Schedule	-	+20.3		+20.3
Engineering	+28.2	-	-	+28.2
Estimating	-8.7	+1157.8	-	+1149.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+166.9	+973.6	-	+1140.5
Total Changes	+170.9	+866.4	-	+1037.3
Current Estimate	1622.0	16763.1	-	18385.1

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	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+8.8	+102.0	-	+110.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8.8	+102.0	-	+110.8
Current Changes:				
Quantity	+126.9	-	-	+126.9
Schedule	-	-	-	-
Engineering	+25.0	-	-	+25.0
Estimating	-8.3	+863.8	-	+855.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+143.6	+863.8	-	+1007.4
Total Changes	+152.4	+965.8	-	+1118.2
Current Estimate	1496.4	12738.4	-	14234.8

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

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b. Current Change Explanations -	-
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		(Dollars i Base-Year	n Millions) Then-Year
(1)	RDT&E		AAAAAA AAAAAA
,	Revised escalation indices. (Economic)	N/A	+6.3
	Addition of one HLV Demonstration Launch from zero to one (Quantity)	+126.9	+141.1
	Addition of BAR/JAT-recommended capability (Engineering)	+25.0	+28.2
	Adjustment for Current and Prior Inflation. (Estimating)	-5.7	-6.2
	Congressional Assessments & Adjustments (Estimating)	-14.9	-16.3
	Revised estimate due to inflation adjustment (Estimating)	+1.4	+1.7
	FFRDC/A&AS changes (Estimating)	+11.2	+12.5
	Across-the-board reduction for fuel adjustment (Estimating)	-0.3	~0.4
	RDT&E Subtotal	+143.6	+166.9
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-204.5
	Stretchout of annual procurement buy profile. (Schedule)	0.0	+20.3
	Adjustment for Current and Prior Inflation. (Estimating)	<u></u> +0,6	+0.7
	Launch Service Adjustments, incl. commercial market price variations and payload weight growth (Estimating)	+572.2	+957.0
	Congressional Assessments & Adjustments (Estimating)	+8.7	+9.9
	Programmatic Adjustments to fully fund future launch services (Estimating)	+103.7	+121.7
	Inflation Adjustment (Estimating)	+2.9	+3.5
	FFRDC/A&AS Changes (Estimating)	+175.7	+65.0
	Procurement Subtotal	+863.8	+973.6

Acronym List:

ASAS	Advisory and Assistance Services
BAR	Broad Area Review
FFRDC	Federally Funded Research and Development Corporation
JAT	Joint Assessment Team
HLV	Heavy Lift Vehicle

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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								Cur Est	
	Econ	Qty	Sch	Eng	Est	Óth	Spt	Total	
95.84	-2.61	+0.245	+0.693	+0.155	+6.69			+5.17	101.02

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
87.83	-2.63		+0.697		+6.72			+4.79	92.61

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	JUN 2003
IOC	TBD	TBD	N/A	TBD
Total Cost	2000.0	17347.8	N/A	18385.1
Total Quantity	N/A	181	N/A	182
Prog Acq Unit Cost	N/A	95.8	N/A	101.0

15. <u>Contract Information</u> (Then-Year Dollars in Millions):

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

a. RDT&E		_	Initial	Contract Pr	ice
Prototype	Dev. Agreement		Target	Celling	OLY
Lockneed Mart	in Corp., Denv	/er, CO	6500 0		0
F04/01-98-9-0	JUU4, OTA		\$500.0	N/A	U
Award: Octobe	er 16, 1998				
Definitized:	October 16, 19	998			
Current	Contract Prie	e	Estimated Pr	ice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	Contractor	Program	Manager
\$500.0	N/A	0	\$500.0	\$5	00.0

EELV, December 31, 2001

15a. Contract Information (Cont'd):

Explanation of Change:

None.

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

Prototype Dev. Agreement:Initial Contract PricePrototype Dev. Agreement:TargetCeilingOtyMcDonnel1 Douglas Corp., Huntington Beach CA600F04701-98-9-0005, OTA\$500.0N/A0Award: October 16, 1998000Definitized: October 16, 199800

Current	Contract Price		Estimated Price	At Completion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program Manager
\$641.5	N/A	1	\$641.5	\$641.5

Explanation of Change:

As a result of the program restructure and congressional approval of the HLV demonstration launch new start package in the FY00 Omnibus, the value of the Boeing OTA increased from \$500M to \$641.5M. The one unit added since the 1999 SAR is the HLV Demonstration and related tasks, for \$141.5M.

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

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

	Initial	Contract	Price
Initial Launch Services:	<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
McDonnell Douglas Comm., Huntington Beach	CA		_
F04701-98-D-0002, Firm Fixed Price	\$1378.0	N/A	19
Award: October 16, 1998			
Definitized: October 16, 1998			

Current	Contract Pric	ce	Estimated Pri	ce At Completion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	Contractor	<u>Program Manager</u>
\$1525.3	N/A	21	\$1525.3	\$1525.3

Explanation of Change:

As a result of the program restructure, in fall 2000, the total number of

EELV, December 31, 2001

15. Contract Information (Cont'd):

missions for Boeing changed from 19 to 22. The value of their ILS contract increased from \$1378.0M to \$1525.3M.

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Contract Comments: "McDonnell Douglas Corporation is a wholly-owned subsidiary of the Boeing Company.

b. Procurement	Initial	Contract	Price
Initial Launch Services:	<u>Target</u>	Ceiling	Oty
Lockheed Martin Corp., Denver, CO			
F04701-98-D-0001, Firm Fixed Price	\$649.0	N/A	9
Award: October 16, 1998			
Definitized: October 16, 1998			
Current Contract Price	Estimated F	rice At Co	mpletion
Target Ceiling Otv	Contractor	Progr	am Manager

TargetCeilingOtyContractorProgram Manage\$505.8N/A7\$505.8\$505.8

Explanation of Change:

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

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.
EELV, December 31, 2001

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

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

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-20)	<u>Total</u>
RDTSE	1247.1	315.3	57.6	2.0	1622.0
Procurement	449.7	237.3	234.8	15841.3	16763.1
MILCON	-	-	-	-	-
OGM	-	-	-	-	-
Total	1696.8	552.6	292.4	15843.3	18385.1

b. Annual Summary -- EELV

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

Figcal		Flyaway FY 1995 Dollars	Flyaway FY 1995 Dollars	Total	Total
Year	Oty	Nonrec	Rec	Base-Year \$	Then-Year \$
1994				9.8	9.8
1995				29.6	30.0
1996				107.1	110.7
1997	Î			60.1	62.9
1998	<u> </u>			87.6	92.3
1999				227.1	242.0
2000		11.1		297.4	321.8
2001		43.6		343.1	377.6
2002		47.4		282.1	315.3
2003	1	24.7		50.8	57.6
2004				0.9	1.0
2005				0.9	1.0
Subtotal		1 126.8		1496.5	1622.0

The one unit reported above is the HLV Demonstration (discussed in the Executive Summary). The launch is scheduled for FY03. Funds for this launch are reflected in the "Flyaway FY 1995 Dollars Nonrec" column.

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

FY96: 72.3 FY97: 18.6 FY98: 5.1

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

FY94: 9.8

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

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2000	1		62.1	62.1	68.1
2001	4	_	343.6	343.6	381.6
2002	2		210.4	210.4	237.3
2003	2		204.9	204.9	234.8
2004	12		921.3	921.3	1074.6
2005	10		737.7	737.7	876.5
2006	9		586.7	586.7	710.3
2007	16		1017.9	1017.9	1255.8
2008	15		977.3	977.3	1228.7
2009	10		677.5	677.5	867.9
2010	12		1002.9	1002.9	1309.2
2011	12		865.7	865.7	1151.6
2012	11		707.7	707.7	959.3
2013	12		754.1	754.1	1041.6
2014	10		732.8	732.8	1031.4
2015	11		782.0	782.0	1121.6
2016	11	· · · · · · · · · · · · · · · · · · ·	711.5	711.5	1039.9
2017	10		625.8	625.8	931.9
2018	11		770.0	770.0	1168.4
2019			23.4	23.4	36.2
2020			23.1	23.1	36.4
Subtotal	181	· · ·	12738.4	12738.4	16763.1

Notes:

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

The current estimate is based on an AFSPC EELV National Mission Model (dated May 24, 1998) covering the period FY02-FY20 and including 181 USAF and non-USAF (NRO, Navy, etc.) missions. 117 of the 181 missions are USAF and 64 are non-USAF. AFSPC EELV National Mission Model updates will require annual revisions to the total EELV procurement cost estimate. Funding in the table above includes both USAF and non-USAF missions.

On October 15, 1998, the MDA authorized the Air Force to award Initial Launch Services (ILS) through FY06. On October 16, 1998, the Air Force awarded ILS contracts for 24 of the 34 USAF missions then in the FYDP, and for four NRO missions. Since the December 1998 SAR submission, five of the awarded USAF launch services were funded prior to the current FYDP (FY00-FY02), 17 are currently funded in the FYDP (FY03-FY07), and two have been rescheduled such that they will be funded outside the FYDP. The remaining USAF FYDP missions currently in the President's Budget include 14 unawarded missions; one in FY06, two in FY07, four in FY08, and seven in

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EELV, December 31, 2001

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

FY09 (funded in FY04-FY07). These missions will be awarded in a Follow On Launch Services (FOLS) contract(s).

As a result of the program restructure and congressional approval of the HLV demonstration launch new start package in the FY00 Omnibus, a total of \$141M of Air Force RDT&E funding was added for the HLV demonstration launch (FY00 \$12M; FY01 \$48M; FY02 \$53M; FY03 \$28M). In March 2002, OSD approved an APB revision increasing the cost baseline to reflect the HLV demonstration launch funding, as well as funding for BAR/JAT recommendations (FY02 \$8.5M, FY03 \$17.7M, FY04 \$1.0M, FY05 \$1.0M).

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	182	126.8	12738.4	14234.9	18385.1

17. Delivery/Expenditure Information:

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

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1618.7

Percent Total Program Expended: 8.8%

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 OSD CAIG approved baseline.

Notes:

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

No comparable O&S data for the antecedent systems is available.

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

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

	EELV	Delta/Atlas/Titan
	0&S Cost per Launch	
Cost Element		
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 OSS Cost	EELV	Delta/Atlas/Titan
BY\$ (In Millions)	1128.4	N/A
TYS (In Millions)	1566.3	N/A

Report Creation Date: 03/29/2002 8:44:36 AM

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N-24 TRIDENT I MSL

CODMEDIA DEATDIATED ~ WILLET RESTRICTED DATA

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

AS OF DATE: December 31, 2001

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1. (U) Designation and Momenclature (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 DENNIS M. DWYER NEBRASKA AVENUE COMPLEX Assigned: April 28, 2000 DSN 764-1609; COMM (202) 764-1609 287 SOMERS COURT NW SUITE 10041 WASHINGTON, DC 20393-5446 SP00@SSP.NAVY.MIL

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0603371N Project J0951 PE 0604363N Project J0951 (U)

PROCUREMENT: APPN 1507 ICN 1150 (Navy) (U)



5. (U) References:

SAR Baseline (Production Estimate):
(U) UNSECDEF Memorandum for SECNAV of June 4, 1987, subject TRIDENT II (D-5)
Missile Program.
UNSECNAV Memorandum for DIRSSP of December 1, 1987, subject TRIDENT (D-5) Navy
Program Review.

Approved Program: (U) NAE Approved Acquisition Program Baseline (APB) dated May 25, 1995.

6. (U) Mission and Description:

(U) The TRIDENT II (D-5) Strategic Weapons System (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) <u>Recutive Summary</u>:

(U) In March 1980 the Secretary of Defense described a Sea Launched Ballistic Missile Modernization Advanced Development Program to Congress. Subsequently, a FY 1983 Defense System Acquisition Review Council Milestone II decision selected a weapon system option with an Initial Operational Capability (IOC) of CY 1989. In October 1983, the Deputy Secretary of Defense authorized the Navy to proceed to full scale Engineering Development of the TRIDENT II (D-5) SWS and initial production, as necessary, to meet a December 1989 IOC. Flight testing from the flat pad at Cape Canaveral was completed in January 1989 with fifteen flight tests fully successful, one flight partially successful, two flights failing to meet test objectives, and one flight terminated by the range safety officer as a "no test." Performance Evaluation Missile (PEM) tests began on March 21, 1989. Two of the first three PEM flights experienced loss of control in early first stage flight. After corrective actions were completed, PEM flights resumed with six successful flights. The PEM program was completed in February 1990. The system achieved IOC in March of 1990 with the outload and deployment of the SSBN 734 (USS TENNESSEE).

Beginning in FY 1994, both the production capacity and annual procurement rate of missiles were reduced over time. The Navy reduced production infrastructure to lower the maximum facilitized 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 production continuity quantities as required to

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

ensure quality, reliability and safety. This approach minimizes both annual funding requirements and program risk associated with supplier base instability.

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

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

In FY 2001, the Department of Defense directed and funded a service life extension of the D-5 missile to match the extended SSBN service life. The TRIDENT SSBNs service life was extended by 12 years from 30 to 42 years in FY 1998 and subsequently has been extended to 44 years. The D-5 missile service life extension increases the service life by almost 50% and will provide the nation a credible and affordable nuclear deterrent well into the 21st century. This extension delays the need for funds to replace these platforms, effectively delaying the expenditure of up to \$25 billion in new construction costs.

All TRIDENT II (D-5) submarines have completed strategic loadout and deployed. The dates submarines completed strategic loadout and deployed are: the SSBN 734 in March 1990, the SSBN 735 in October 1990, the SSBN 736 in September 1991, the SSBN 737 in June 1992, the SSBN 738 in May 1993, the SSBN 739 in May 1994, the SSBN 740 in June 1995, the SSBN 741 in July 1996, the SSBN 742 in August 1997 and the SSBN 743 in October 1998. SSBNs 732 and 733 are undergoing backfit to be capable of carrying the D-5 weapon system. SSBN 732 will deploy in FY 2002 as a D-5 capable SSBN. SSBNs 730 and 731 are scheduled for D-5 backfit in FY 2005 and FY 2006, respectively, which will complete the 14 D-5 SSBN force structure.

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8. (U) Threshold Breaches:

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

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

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

The new procurement Current Estimate (BY\$) exceeds the threshold in the NAE approved Acquisition Program Baseline (APB) of May 25, 1995. The current APB is based on the D-5 missile quantity necessary to support the previous 30-year TRIDENT submarine service life. The FY 2003 President's budget includes additional funds to extend the service life of the missile to support the extended 44-year life of the TRIDENT submarine. An additional 115 missiles are required to support the extended service life. A Program Deviation Report has been forwarded to the NAE and a revised APB will be forwarded to reflect this restructuring of the TRIDENT II (D-5) missile program.

9. (U) <u>Schedule</u>:

a. Milestones --

	Produ	lction	Appi	roved	Curi	rent
	Estimat	te (SAR)	Progra	am (APB)	Esti	mate
Milestone I (Initiate Concept	OCT	1977	OCT	1977	OCT	1977
Definition)						
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)/	APR	1987	APR	1987	APR	1987
Award Initial Missile Production						
IOC (may be less than full msl outloa	d) DEC	1989	DEC	1989	MAR	1990

	1	TRIDENT II MISSI	LE, Decembe	er 31, 2001
9b. (U) Schedule (Cont'd):				
b. Current Change Explanations	None			
10. (U) <u>Performance Characteristic</u> a. Performance	28 :			
Product	(SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current
(Max Range Full Payload (b)(1)				
System Circular Error				Ch
System Reliability Max Payload - Yield				Ch
b. Current Change Explanations (Ch-1) System Circular Err	ror Proba	able (CEP) change	ed from (b)(1) pase

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..... TRIDENT II MISSILE, December 31, 2001

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

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	Production	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	8434.9	8420.5	8414.8
Procurement	17588.5	12098.9	17155.2
Flyaway	(14471.2)		(13264.3)
Other weapon systems	(3082.9)		(3867.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(23.7)
Construction (MILCON)	532.9	363.2	373.7
Acquisition O&M	0.0	0.0	0.0
Total FY 1983 Base-Year S	\$ 26556.3	20882.6	25943.7
Escalation	8962.2	7286.9	11600.2
Development (RDT&E)	(1018.3)	(998.9)	(996.5)
Procurement	(7808.4)	(6221.4)	(10528.5)
Construction (MILCON)	(135.5)	(66.6)	(75.2)
Acquisition O&M	(0_0)	(0.0)	(0,0)
Total Then Year \$	35510.5	28169.5	37543.9
b. (U) Quantity			
Development (RDT&E)	30	28	28
Procurement	815	434	_540
Total	845	462	568

c. Foreign Military Sales -- None.

d. Nuclear Costs -- (b)(1) (Million (Then-Year \$).



12. (U) Unit Cost Summary:

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		UCR	Current	
		Baseline	Estimate	Percent
		(MAY 1995 APB) (Dec	2001 SAR)	Change
a.	(U) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 1983 BY\$)	20882.6	25943.7	
	(2) Quantity	462	568	
	(3) Unit Cost	45.200	45.676	+1.05
b.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1983 BY\$)	12098.9	17155.2	
	(2) Quantity	434	540	
	(3) Unit Cost	27.878	31.769	+13.96

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	-388.9	-11.3	-421.7
Quantity	-48.0	-10049.3	-	-10097.3
Schedule	-	+1555.3	+25.6	+1580.9
Engineering	-	-	~	-
Estimating	+27.6	+69.3	-238.5	-141.6
Other	-		-	-
Support	-	+745.0	-	+745.0
Subtotal	-41.9	-8068.6	-224.2	-8334.7
Current Changes:				
Economic	-	+8.4	+0.2	+8.6
Quantity	-	+3604.6	-	+3604.6
Schedule		+256.8	-	+256.8
Engineering	-	-	-	-
Estimating	- 1	+5375.4	+4.5	+5379.9
Other	-		-	-
Support	-	+1110.2	-	+1110.2
Subtotal	-	+10355.4	+4.7	+10360.1
Total Changes	-41.9	+2286.8	-219.5	+2025.4
Current Estimate	9411.3	27683.7	448.9	37543.9

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

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-5630.9	-	-5670.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.9	-313.9	-161.7	-455.7
Other	-	-	-	-
Support	-	+287.9	-	+287.9
Subtotal	-20.1	-5656.9	-161.7	-5838.7
Current Changes:				
Quantity	-	+1807.7	-	+1807.7
Schedule		-	~	-
Engineering	-	-	-	-
Estimating	-	+2930.2	+2.5	+2932.7
Other		-	-	-
Support	-	+485.7	-	+485.7
Subtotal	-	+5223.6	+2.5	+5226.1
Total Changes	-20.1	-433.3	-159.2	-612.6
Current Estimate	8414.8	17155.2	373.7	25943.7

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

		and the second secon	
(1)	Procurement		
	Revised escalation indices. (Economic)	N/A	+8.4
	Total Quantity Variance associated with	+1942.1	+3872.8
	increase of 115 units (D-5 life extension).		
	Quantity increase of 115 units. (Quantity)	+1807.7	+3604.6
	Allocation to Schedule variance resulting from	0.0	+256.8
	Quantity Change. (QR) (Schedule)		
	Allocation to Estimating variance resulting	+134.4	+11.4
	from Quantity Change. (QR) (Estimating)		
	Adjustment for Current and Prior Inflation.	-3.9	-6.5
	(Bstimating)		
	Revised estimates based on D-5 missile contract	E -7.3	-13.0
	experience. (Estimating)		
	Revised estimate for warhead components.	~16.9	-29.1
	(Estimating)		
	Revised estimate for the required number of MK	5 -16.4	-28.0
	guidance systems. (Estimating)		
	Estimate for additional missile costs above	+191.4	+383.2
	SAR cost quantity calculation (D-5 life		
	extension). (Estimating)		
	Replacement of Mk-6 guidance systems and	+2032.3	+3999.1
	missile electronics (D-5 life extension).		
	(Estimating)		

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

b. (U) Current Change Explanations --(Dollars in Millions) Base-Year Then-Year Revised estimate for age-driven replacement +226.6 +361.1 of the Mk-4 reentry body, Fuzing and Firing systems. (Estimating) Recategorization of supportability +390.0 +697.2 modifications from support costs to flyaway costs. (Estimating) Adjustment for Current and Prior Inflation. -2.0 -3.2 (Support) Revised estimates associated with +359.5 +748.4 production support due to extension of production to 2013 (D-5 life extension). (Support) Revised estimate for test flight +518.2 +1062.2instrumentation hardware (D-5 life extension). (Support) Recategorization of supportability -390.0 -697.2 modifications from support costs to flyaway costs. (Support) Procurement Subtotal +5223.6 +10355.4 (2) MILCON Revised escalation indices. (Economic) N/A +0.2 Adjustment for Current and Prior Inflation. -0.1 -0.1 (Estimating) Addition of one project for Bangor Washington +1.7 +3.1 TRIDENT II backfit support. (Estimating) Revised estimates for Bangor Washington TRIDENT +0.9 +1.5 II backfit projects. (Estimating) +2.5+4.7 MILCON Subtotal

QR = Quantity related changes.

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

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

Current SAR Baseline to Current Estimate

PAUC Prod Est				Chan	ges				PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.03	-0.727	+9.06	+3.24		+9.22		+3.27	+24.06	66.10

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

Current SAR Baseline to Current Estimate

PUC Prod Est				Chan	ges		name and construction of the state of the		PUC Cur Est
	Econ	QEY	Sch	Eng	Est	Oth	Spt	Total	
31.16	-0.705	+3.93	+3.36		+10.08	1	+3.44	+20.10	51.27

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

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	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
100	N/A	DEC 1989	DEC 1989	MAR 1990
Total Cost	N/A	37645.1	35518.5	37543.9
Total Quantity	N/A	740	845	568
Prog Acq Unit Cost	N/A	50.9	42.0	66.1

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

a. Procurement (U) <u>MISSILE FOLLOW- ON PROD:</u>	Initial (<u>Target</u> 9	Contract F Ceiling	rice <u>Oty</u>
DOCKHEED MARTIN, SUNNIVALE, CA N00030-96-C-0097, CPIF/FF Award: October 1, 1996 Definitized: November 1, 1996	\$588.1	N/A	14
Current Contract Price <u>Target Ceiling Oty</u> \$594.0 N/A 14	Estimated Pr <u>Contractor</u> \$587.9	ice At Com <u>Progra</u>	pletion <u>In Manager</u> 5587.9

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

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$1.5	\$-1.3
Cumulative Variances To Date (04/30/00)	<u>\$0.4</u>	\$-0.4
Net Change	\$-1.1	\$0.9

Explanation of Change:

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(U) The unfavorable cost variance change is a result of the motor supplier support remaining on this contract longer than planned due to second stage nozzle problems.

The favorable schedule variance change is the result of subcontract billings returning to schedule.

(U) Contract Comments: This contract is complete and will no longer be reported.

(U) MISSILE FOLLOW-ON-PROD::			Initial Contract Price				
LOCKHEED MARTIN SUNNYVALE CA			Target Ceiling Oty				
N00030-97-C-0100, CPIF/FF Award: October 1, 1997 Definitized: May 29, 1998			\$536.0	N/A	12		
Current	Contract Pric	ce	Estimated B	rice At Com	pletion		
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	<u>Progra</u>	<u>Manager</u>		
\$550.7	N/A	12	\$544.6	\$	544.6		

Previous Cumulative Variances Cumulative Variances To Date (02/25/01) Net Change

Cost	Variance	Schedule Variance
	\$-2.9	\$1.1
	\$-1.3	\$0.7
	\$1.6	\$-0.4

Explanation of Change:

(U) The favorable cost variance change is primarily due to performance efficiencies at the motor supplier.

The unfavorable schedule variance change is a result of the late deliveries of the subcontractor's (Moog) servo actuators.

(U) Contract Comments: This contract is complete and will no longer be reported.

15. (U) <u>Contract Information (Cont'd)</u>:

Initia <u>Target</u>	al Contract Price <u>Ceiling</u> <u>Oty</u>
\$530.0	N/A 5
Estimated	Price At Completion
<u>Contractor</u>	Program Manager
\$546.2	\$546.2
<u>Cost Varia</u>	nce Schedule Variance
\$0.5	\$0.3
25/01) <u>\$-2.5</u>	<u>\$-0.6</u>
\$-3.0	\$-0.9
	Initia <u>Target</u> \$530.0 <u>Estimated</u> <u>Contractor</u> \$546.2 <u>Cost Varian</u> \$0.5 25/01) <u>\$-2.5</u> \$-3.0

Explanation of Change:

(U) The unfavorable cost variance is primarily due to the actual overhead and G&A rates being greater than originally negotiated.

The unfavorable schedule variance is primarily due to the motor producer being behind schedule on first, second and third stage motors.

			Initial	Contract Pr	rice
(U) MISSI	E FOLLOW-ON PL	ROD::	Target	Ceiling	Oty
N00030-99-C-(Award: Octobe Definitized:	N, SUNNYVALE, 100, CPIF/FF r 1, 1999 November 23, 1	. CA 1999	\$605.7	N/A	12
Current <u>Target</u> \$646.3	: Contract Pric <u>Ceiling</u> N/A	ce <u>Oty</u> 12	Estimated Pr <u>Contractor</u> \$644.4	ice At Comp <u>Program</u> \$(oletion <u>Manager</u> 544.4
Previous Cum Cumulative Va Net Chang	ilative Variand Ariances To Dat ge	ces te (11/25/01)	<u>Cost Variance</u> \$0.0 <u>\$2.4</u> \$2.4	<u>Schedule</u> \$0 \$0 \$0	Variance .0 .3 .3

Explanation of Change:

(U) The favorable cost variance is primarily due to favorable computer and management service center allocated direct costs and fringe rates.

The favorable schedule variance is insignificant.

(U) Contract Comments:

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

The increase in target contract price from the initial estimate to the current estimate is due to exercising a contract option 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.

			Initial	Contract Pr	ice
(U) <u>MISSIL</u>	E FOLLOW-ON PE	ROD::	Target	Ceiling	Oty
LOCKHEED MART	IN, SUNNYVALE,	CA			
N00030-00-C-0	100, CPIF/FF		\$541.0	N/A	12
Award: Octobe:	r 1, 2000				
Definitized:	October 31, 20	000			
Current	Contract Pric	ce	Estimated Pr	ice At Comp	letion
Target	Ceiling	OLY	Contractor	Program	Manager
\$587.5	N/A	12	\$587.3	\$5	87.3
			Cost Variance	Schedule V	<u>ariance</u>
Previous Cumu	lative Variand	сев	\$0.0	\$0.	0
Cumulative Va	riances To Dat	te (11/25/01)	\$3.0	<u>\$-0.</u>	6
Net Chang	e		\$3.0	\$-0.	6

Explanation of Change:

(U) The favorable cost variance is primarily due to labor efficiencies.

The unfavorable schedule variance is insignificant.

(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.

TRIDENT II MISSILE, December 31, 2001

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

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

Appropriation	Prior <u>Years</u> (FY78-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-15)	Total
RDT&E	9411.3	-	-		9411.3
Procurement	14975.8	538.2	585.9	11583.8	27683.7
MILCON	428.0	3.9	7.3	9.7	448.9
O&M	-	-	-	-	
Total	24815.1	542.1	593.2	11593.5	37543.9

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

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

Fiscal Year	Qty	FY 1983 Dollars Nonrec	FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1978				5.0	5.0
1979			1	5.0	5.0
1980				25.6	25.6
1981				96.7	96.7
1982				198.4	198.4
1983				343.9	351.0
1984				1368.5	1447.3
1985				1818.1	1982.6
1986		-		1731.3	1942.3
1987				1355.1	1565.3
1988			· · · · · · · · · · · · · · · · · · ·	862.5	1029.7
1989				439.3	546.5
1990		<u></u>		130.9	169.5
1991				32.1	43.0
1992				1.6	2.2
1993				0.3	0.4
1994	and a little data and a second se				
1995			1	0.3	0.5
1996				0.2	0.3
ubtotal	28			8414.8	9411.3

Appropriation: 1507 - Weapons Procurement, Navy

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

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

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Appropriation: 1507 - Weapons Procurement, Navy

		Flyaway	Flyaway		
		FY 1983	FY 1983	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1987	21		956.1	1075.6	1346.9
1988	66		1680.0	1562.7	2033.5
1989	66		1539.1	1359.8	1839.0
1990	41		1023.5	1001.1	1400.6
1991	52		1154.4	1054.4	1512.6
1992	28	-	710.9	745.8	1096.9
1993	- 21		596.8	653.1	978.1
1994	24		780.8	720.8	1100.7
1995	18	- · · · · · · · · · · · · · · · · · · ·	490.7	428.9	665.4
1996	6		152.1	325.1	510.7
1997	7		170.6	199.7	316.9
1338	5		121.6	167.0	268.3
1999	5		134.3	193.9	315.7
2000	12		268.3	293.1	484.8
2001	12		258.4	259.7	436.5
2002	12		233.2	315.1	538.2
2003	12		233.3	337.4	585.9
2004	12		233.2	392.2	693.6
2005	5		98.4	437.9	788.9
2006				522.1	958.6
2007			<u> </u>	534.8	1000.4
2008	12		243.4	573.7	1093.7
2009	24	-24144	506.8	669.6	1300.7
2010	24		506.8	569.0	1126.3
2011	24		506.8	515.0	1038.8
2012	24		506.8	455.8	936.8
2013	7		158.0	366.1	765.8
2014				180.4	385.1
2015				687.0	1494.1
Subtotal	540		13264.3	17155.2	27683.7

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

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway FY 1983 Dollars Nonrec	Flyaway FY 1983 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				72.8	79.3
1985				73.4	82.4
1986				109.3	126.3
1987				17.6	21.0

TRIDENT II MISSILE, December 31, 2001

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	7.5
1991	11			51.3	70.5
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000	<u> </u>			3.8	5.0
2001				0.9	1.4
2002				2.4	3.9
2003				4.4	7.3
2004				0.4	0.6
2005					
2006				3.4	6.0
2007				1.7	3.1
Subtotal				373.7	448.9

(U) MILCON costs in FY 2000 through FY 2005 are necessary to upgrade facilities at Bangor, Washington in order to support limited TRIDENT II missile processing capability, consistent with establishment of D-5 capability on the West Coast (FY 2002 IOC).

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	558		13264.3	25943.7	37543.9

17. (U) Delivery/Expenditure Information:

а.	(U)	Deliveries To Date	Plan	<u>Actual</u>
		RDT&E	28	28
		Procurement	363	363

(U) Percent Total Program Quantities Delivered: 68.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 23954.6

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

(U) Percent Total Program Expended: 63.8%

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 2003 President's Budget through FY 2007 and extended through FY 2042. The intermediate maintenance costs are for operating the Strategic Weapons Facilities. Depot maintenance costs are for repair of SWS equipments at contractors facilities. Sustaining support costs are for sustaining engineering and acquisition of replacement support equipment, modification kits and spare parts for shipboard systems and post production flight hardware. Indirect costs are for base operating support. Operating and Support costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

Date of estimate: December 31, 2001

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

Cost Element	Average Annual Cost	N/A
COBE HIEnene	per officen	
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	63.9	0.0
Depot Maintenance	85.7	0.0
Contractor Support	N/A	N/A
Sustaining Support	405.6	N/A
Indirect Costs	17.2	N/A
Total	572.4	0.0

Total O&S Cost	TRIDENT II (D-5) MISSIL	E N/A
BYŞ (In Millions)	24612.9	N/A
TYŞ (In Millions)	57000.2	N/A

Report Creation Date: 03/19/2002 8:05:06 AM

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: DDG 51 DESTROYER

AS OF DATE: December 31, 2001

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07.1

1. (U) Designation and Nomenclature (Popular Name): DDG 51 Guided Missile Destroyer; ARLEIGH BURKE CLASS

2. (U) DoD Component: Navy

N-9 DDG 51

3. (U) Responsible Office and Telephone Number:

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

4. (U) Program Elements/Procurement Line Items: RDT&E: PE 0604303N (U) (U) PE 0604307N CLEASE PROCUREMENT: FORCE ST. • (U) APPN 1611 ICN 24222N (Navy) MILCON: AS AMENDED AS AMENDED PE P-261 (U) (U) PE P-263

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5. (U) References:

SAR Baseline (Production Estimate):
(U) DCP #1337 Rev 1, Change 1 of August 22, 1986.

Approved Program: (U) NAE Approved Acquisition Program Baseline (APB) dated November 10, 1999.

6. (U) Mission and Description:

(U) - The DDG 51 is a multi-mission guided missile destroyer designed to operate offensively and defensively, independently, or as units of Carrier Battle Groups and Surface Action Groups in support of the Marine Amphibious Task Forces in multi-threat environments that include air, surface, and subsurface threats. These ships will respond to Low Intensity Conflict/Coastal and Littoral Offshore Warfare (LIC/CALOW) scenarios as well as open ocean conflict providing or augmenting power projection, forward presence requirements, and escort operations at sea. Flight IIA ships will bring new capabilities (CEC and Extended Range Guided Munitions) into the fleet, providing improved air and anti-missile defense and improved land attack.

- The DDG 51 Class ships provide outstanding combat capability and survivability characteristics while considering procurement and lifetime support costs. They feature extraordinary seakeeping and low observability characteristics.

- The DDG 51 features the AEGIS Weapon System (AWS), which has quick reaction time, high firepower, and improved Electronic Countermeasures (ECM) capability in Anti-Air Warfare (AAW). The ships' Anti-Submarine Warfare (ASW) System provides superior long range multi-target detection and engagement capability with two embarked LAMPS MK-III helicopters (Flight IIA, DDG 79 and follow). DDG 91 and follow ships employ the littoral variant SPY-1D(V) and Remote Minehunting System. The Advanced Tomahawk Weapon Control System (DDGs 79-95) and the Tactical Tomahawk Weapons Control System (DDG 96 and follow) allow employment of various variants of Tomahawk missiles for strike warfare. The MK-45 qun weapon system provides significant capability for surface warfare, land attack, and air defense. The Cooperative Engagement Capability (CEC) is being installed on DDG 51 Class Ships to promote Network Centric Warfare capability. The AWS is the heart of an integrated combat system that provides area coverage and command/control focus in all dimensions of Naval Warfighting and Joint Military Operations: AAW; ASW; ASU; Command, Control, Communications & Intelligence (C3I); and Strike Warfare (STW).

- Structural features are an all steel hull and deckhouse with vital spaces protected and located within the hull. The ship employs a gas turbine propulsion system with Controllable Pitch propellers similar to the CG 47 class.

- The DDG 51 Destroyer is being produced to fulfill a surface combatant requirement to provide air dominance, maritime dominance and land attack

DDG 51 DESTROYER, December 31, 2001

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

capability.

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7. (U) Executive Summary:

(U) These destroyers are designed to operate effectively with Strike, Anti-Submarine, and Amphibious Forces in the presence of increasingly sophisticated air, surface, and sub-surface threats in any operational environment. The DDG 51 Class Destroyers are equipped with the Navy's AEGIS Combat System, the world's foremost naval weapon system. State-of-the-art communications, radar and weapons technology are combined in a single warship for unlimited flexibility. These systems include the SPY-1D phased array radar; MK41 Vertical Launch System to fire a combination of Surface-to-Air missiles and Tomahawk Surface-to-Surface missiles; and the AN/SQQ-89(V)10 anti-submarine warfare system.

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) as the second source, by awarding the DDG 52 construction contract in May 1987 in a full and open competition. The FY03 President's Budget Submission reflects a 64 ship DDG 51 Program. Currently, there have been 52 ships placed under contract, with 36 delivered and in the Fleet meeting mission requirements.

The FY03 President's Budget Submission is premised upon continuing the multiyear procurement (MYP) acquisition strategy that saved the government in excess of \$1.4B (FY98-01). The Navy plans to award an eight ship MYP that will span four years (FY02-FY05), at a rate of two ships per year, that is projected to save approximately \$330M. These savings have already been removed from the Program's budget. The FY01 Authorization Act provided the DDG 51 Program approval to acquire the FY02-FY05 ships as an MYP not in excess of three ships per year. The Navy will solicit bids for option ships from the shipbuilders, that include option prices for FY06 and FY07.

The FY02 DoD Appropriations and Authorizations Acts authorized and provided funding for three DDG 51 Class ships in FY02. The Navy exercised an available option under the FY98-FY01 MYP contract with Northrop Grumman Ship Systems Ingalls Operations (NGSSIO) for one FY02 ship, DDG 102, in December 2001. The remaining two FY02 ships are planned to be awarded as part of the FY02-05 eight ship multiyear procurement.

The AEGIS Shipbuilding Program delivered eight DDG 51 Class Destroyers to the Navy since the last report (December 31, 1999), including the first Flight IIA ship, USS OSCAR AUSTIN (DDG 79). The Navy also commissioned 6 ships since the last report including USS WINSTON S. CHURCHILL (DDG 81) on March 10, 2001 in Norfolk, VA.

Selected as the Flight IIA test hull, the USS WINSTON S. CHURCHILL underwent rigorous shock trials to complete the Navy's Live Fire Test and Evaluation. The shock trials, which completed in June 2001, encompassed three 10,000-pound

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

explosive charge detonations to assess combat survivability of both the hull and weapon systems and the crew's ability to "fight the ship" in a combat environment. An extensive marine animal mitigation and monitoring effort was conducted prior to, during, and after each detonation to minimize the impact of the detonations on marine animals. No deaths or injuries of marine animals were detected after the shock trial. The shock trials were successfully conducted off Mayport, Florida during May-June 2001. CNO bestowed the "Environmental Excellence in Weapon System Acquisition Team Award" to the ARLEIGH BURKE Class Destroyer (DDG 51) Shipbuilding Program on February 02, 2002 as a result of these shock trials.

The ARLEIGH BURKE Class Destroyer (DDG 51) Shipbuilding Program received the CNO "Environmental Award for Pollution Prevention" on Apr 26, 2000. Accomplishments which led to the award include Class related corrosion control improvements, Hazardous Material reductions and advanced oily water processor implementation.

DDG 51 Class ship construction has achieved numerous production milestones since the last (December 31, 1999) report. The more significant are the following:

DDG 79 (OSCAR AUSTIN) delivered on May 11, 2000, in Bath, ME. USS OSCAR AUSTIN (DDG 79), commissioned on Aug 19, 2000 in Norfolk, VA.

DDG 80 (ROOSEVELT) delivered on Jun 12, 2000 in Pascagoula, MS. USS ROOSEVELT (DDG 80) commissioned Oct 14, 2000 in Mayport, FL. USS ROOSEVELT (DDG 80) completed OT-IIIE on Oct 15, 2001.

DDG 81 (WINSTON S. CHURCHILL) delivered on Oct 13, 2000, in Bath, ME. USS WINSTON S. CHURCHILL (DDG 81), commissioned on Mar 10, 2001, in Norfolk, VA.

DDG 82 (LASSEN) delivered on Feb 05, 2001, in Pascagoula, MS. USS LASSEN (DDG 82) commissioned Apr 21, 2001, in Tampa, FL.

DDG 83 (HOWARD) delivered on Jun 22, 2001, in Bath, ME. USS HOWARD (DDG 83) commissioned Oct 20, 2001, in Galveston, TX.

DDG 84 (BULKELEY) float-off occurred on Jun 24, 2000 in Pascagoula, MS. DDG 84 (BULKELEY) delivered on Aug 20, 2001 in Pascagoula, MS. USS BULKELEY (DDG 84) commissioned Dec 08, 2001, in New York, NY.

DDG 85 (McCAMPBELL) launched and christened on Jul 2, 2000, in Bath, ME. DDG 85 (McCAMPBELL) delivered on Mar 8, 2002, in Bath, ME.

DDG 86 (SHOUP) float-off occurred on Nov 22, 2000 in Pascagoula, MS. DDG 86 (SHOUP) christened on Feb 24, 2001 in Pascagoula, MS. DDG 86 (SHOUP) delivered on Feb 19, 2002 in Pascagoula, MS.

DDG 87 (MASON) launch and christening occurred on Jun 23, 2001, in Bath, ME.

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

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DDG 88 (PREBLE) float-off occurred on Jun 01, 2001 in Pascagoula, MS. DDG 88 (PREBLE) christened on Jun 09, 2001 in Pascagoula, MS. DDG 89 (MUSTIN) fabrication started on Jan 31, 2000 in Pascagoula, MS. DDG 89 (MUSTIN) launched on Dec 12, 2001 in Pascagoula, MS. DDG 89 (MUSTIN) christened on Dec 15, 2001 in Pascagoula, MS. DDG 91 (PINCKNEY) fabrication started May 15, 2000, in Pascagoula, MS. DDG 92 (MOMSEN) fabrication started on Mar 06, 2000 in Bath, ME. DDG 93 (CHUNG-HOON) fabrication started Mar 26, 2001, in Pascagoula, MS. DDG 94 (NITZE) fabrication started Feb 4, 2001, in Bath, ME. DDG 95 (JAMES E. WILLIAMS) fabrication started Sep 24, 2001, in Pascagoula, MS.

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	No
O&M	No
Program Acquisition Unit Cost (PAUC)	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 FY03 President's Budget Submission reflects APB breaches to ESSM IOC date and Total Procurement and Total RDT&E base year (BY87 \$) costs. Technical

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

issues discovered during the ESSM test program and delays in the AEGIS baseline 6.3 computer program that supports ESSM caused the DDG 51 Program to breach the ESSM IOC date. The Total Procurement Cost breach was caused by the addition of seven ships to the Program (since the last APB). The Total RDT&E Cost breach was caused by program extension and the addition of funding to support Open Architecture.

The APB cost breaches are attributable to directed changes to total program baselines and procurement quantities and are not the result of trends in the Program's cost or technical performance. The ESSM IOC breach will not delay deployments of ESSM equipped ships.

9. (U) <u>Schedule</u>:

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a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Complete Concept Design	N/A	DEC 1980	DEC 1980
DNSARC I	JUN 1981	JUN 1981	JUN 1981
Complete Preliminary Design	N/A	MAR 1983	MAR 1983
DSARC II	DEC 1983	DEC 1983	DEC 1983
Complete Contract Design	N/A	JUN 1984	JUN 1984
DDG 51 Contract Award	APR 1985	APR 1985	APR 1985
Milestone IIIA	OCT 1986	OCT 1986	OCT 1986
DDG 52 Contract Award	JAN 1987	MAY 1987	MAY 1987
DDG 53 Contract Award	N/A	SEP 1987	SEP 1987
Lay Keel DDG 51	N/A	DEC 1988	DEC 1988
Launch DDG 51	N/A	SEP 1989	SEP 1989
DDG 51 Delivery	N/A	APR 1991	APR 1991
Launch DDG 52	N/A	MAR 1991	MAY 1991
Organic Support Available	N/A	JUL 1991	JUL 1991
Depot Support Available	N/A	JUL 1991	JUL 1991
OPEVAL	N/A	FEB 1992	FEB 1992
DDG 52 Delivery	N/A	MAY 1992	OCT 1992
DDG 51 IOC	OCT 1990	FEB 1993	FEB 1993
DDG 53 Delivery	N/A	FEB 1993	AUG 1993
Milestone IV	N/A	APR 1993	OCT 1993
DDG 51 Flight IIA Contract Award	N/A	MAR 1994	JUL 1994
Complete ESSM COEA	N/A	NOV 1994	NOV 1994
ESSM Milestone TV	N/A	NOV 1994	NOV 1994
SH-60B Hellfire IOC	N/A	DEC 1997	DEC 1997
DDG 51 Flight IIA Delivery	N/A	MAY 2000	MAY 2000
DDG 51 Flight IIA IOC	N/A	OCT 2001	OCT 2001
ESSM IOC	N/A	AUG 2002	JAN 2004 (Ch-1)

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

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b. Current Change Explanations --

(U) (Ch-1) - The DDG 51 Class schedule adjustments are as follows:

	FROM	TO
ESSM IOC	Aug 02	Jan 04

Technical issues discovered during ESSM test program and delays in the baseline computer program that support ESSM necessitated reschedule of the ESSM IOC date. This breach will not delay deployment of ESSM equipped ships.

10. (U) Performance Characteristics:

a. Performance --

	Production	Prod	Appro	(APB)	Demon- strated	Current
	Estimate (SAR)	Obj	/Thre	shold	Perf	Estimate
SHIP:						
Length (ft)	466	N/A	1	N/A	471	471
Beam (ft)	59	N/A	1	N/A	59	59
Navigational Draft (ft)	30.6	N/A	/	N/A	31.7	31.7
Displacement (long tons)	8300	N/A	1	N/A	9300	9300
Propulsion LM (Gas Turbine)	2500	N/A	/	N/A	2500	2500
Accommodations	341	N/A	1	N/A	380	380
MOBILITY:						
Speed (knots)	30	-30	/	30 -	-30	30
ANTI-AIR WARFARE:				1 - 1		1
CONDUCT SUCCESSFUL AA	W					
ENGAGEMENT :				0.00	and a start	0.00
Probability of Successful Engage- ment-ESSM	N/A	TBD	/	0.75	TBD	0.75
ANTI-SURFACE WARFARE: CONDUCT SUCCESSFUL ASUW ENGAGEMENT:						
Probability of Suc- cessful Engagement		b)(1)		-	1. 1. 2	1000
NAVAL SURFACE FIRE	N/A		-			
Probability of Suc- cessful Engagement	(b)(1)				
HELO	N/A					
•					And and and a	

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

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		Appr	oved	Demon-	
	Production	Program	(APB)	strated	Current
	Estimate (SAR)	<u>Obi/Thr</u>	<u>eshold</u>	<u>Perf</u>	<u>Estimate</u>
ANTI-SUBMARINE					
WARFARE:					
CONDUCT SUCCESSFUL ASV	7				
ENGAGEMENT :	101-0	V1)			and the second s
Figure of Merit:	(0)	(1)			
Probability of	N/A				
Achieving Attack	31				
Criteria	1				
Number VLS Missiles	N/A				
MINE WARFARE:					
Detection Range of	N/A				
Moored/Floating					
Mine (YDS)		· ·			
SIGNATURE:	(b)	N L			
Badar Cross section	N/A				(2)
(dbsm)					1
SUBVIVABILITY/					
VIIINERABILITY					×
Nuclear	÷				
Airblact	N/A		i di 🔽		- (3)
Alibiast	11/ 43				
(nei)	* بعي	<u> </u>	· · · · · · · · · · · · · · · · · · ·		<u> </u>
Armament					
Anti-Submarine					
Warfare					
ASW System	AN/SOO-	N/A /	N/A	AN/S00~	AN/S00-
Yow placett	89	,,		89(V)10	89(V)10
ACROC	VI.A	N/A /	N/A	VLA	VLA
Helo	SEAHAWK:	2 /	2	2	2
liero	LAMPS	EMBARKED/	EMBARKED	EMBARKED	EMBARKED
		HELOS /	HELOS	HELOS	HELOS
Anti-Dir Harfare		112200			
Anti-Ali Mallate	MK 41	N/A /	N/A	MK 41	MK 41
Launchers	VIS			VLS	VLS
Winsiles	SM-2 MR	N/A /	N/A	SM-2 MR	SM-2 MR
Missiles Missile Fire	3 MK 99	N/A /	N/A	3 MK 99	3 MK 99
MISSILG FILE	5 141 55	19725 7			
Control System	2	N/A /	N/A	2	2
Guns			14/25	PHALANX	PHALANX/
	LUVTUL				ESSM
Anti Cumford (Chrike					
Anti-Surface/Strike					
Warlare	1 50/54	N/A /	N/A	1 5"54	1 5"54
Guns	T 7 / 24	N/A	N/A	MK 160	MK 160
Guntire Control	EW TOO	14613 1			
System	HARPOON	N/A /	/ N/A	N/A	N/A
Missile	man Oom	,,		-	
11793770					

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

. '

Cruise Missile Electronic Warfare	Production <u>Estimate (SAR)</u> TOMAHAWK SLQ-32 SRBOC	Aj Prog <u>Obj/'</u> N/A N/A	oproved ram (APB) <u>Threshold</u> / N/A / N/A	Demon- strated <u>Perf</u> TOMAHAWK SLQ-32 (V)3, SRBOC, COMBAT DF	Current <u>Estimate</u> TOMAHAWK SLQ-32 (V) 3, SRBOC, Combat
Radars Surface 3D	SPS-67 SPY-1D	N/A N/A	/ N/A / N/A	SPS-67 SPY-1D	SPS-67 SPY-1D



DBSM reduction from conventionally constructed ships of similar 21 displacement, e.g. CG 47 Class ship. For structure and developmental systems.

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b. Current Change Explanations -- None

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

		Production	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
	Development (RDT&E)	979.8	2242.9	2610.5
	Procurement	15948.3	39092.2	46421.9
	Basic Ship Costs	(5383.6)		(19741.8)
	HM&E and Combat System	s (9427.9)		(23856.8)
	Other Costs	(621.9)		(929.4)
	OF/PD	(514.9)		(1893.9)
	Total Sailaway	(15948.3)		(46421.9)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		
	Initial Spares	(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	41369.9	49070.1
	Escalation	3163.8	15842.0	16956.6
	Development (RDT&E)	(-63.2)	(397.1)	(586.3)
	Procurement	(3224.8)	(15438.7)	(16363.5)
	Construction (MILCON)	(2.2)	(6.2)	(6.8)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	20117.5	57211.9	66026.7
b.	(U) Quantity			
I	Development (RDT&E)	0	0	0
E	Procurement	23	57	64
1	Total	23	57	64

c. (U) Foreign Military Sales --

There are 51 Japanese AEGIS Weapon System FMS cases totaling \$2.6B. There are also two Spanish AEGIS Weapon System FMS cases totaling \$0.7B.

d. (U) Nuclear Costs --None.

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12. (U) Unit Cost Summary:

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		UCR	Current	
		Baseline	Estimate	Percent
	(NOV	1999 APB) (Dec	2001 SAR)	Change
(U) Prog. Acq. Unit Cost (PAUC)				
(1) Cost (FY 1987 BY\$)		41369.9	49070.1	
(2) Quantity		57	64	
(3) Unit Cost		725.788	766.720	+5.64
(U) Avg. Proc. Unit Cost (APUC)				
(1) Cost (FY 1987 BY\$)		39092.2	46421.9	
(2) Quantity		57	64	
(3) Unit Cost		685.828	725.342	+5.76
	 (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1987 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1987 BY\$) (2) Quantity (3) Unit Cost 	<pre>(U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1987 BY\$) (2) Quantity (3) Unit Cost (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1987 BY\$) (2) Quantity (3) Unit Cost</pre>	UCR Baseline (NOV 1999 APB)(Dec (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1987 BY\$) 41369.9 (2) Quantity 57 (3) Unit Cost T25.788 (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1987 BY\$) 39092.2 (2) Quantity 57 (3) Unit Cost 685.828	UCR Current Baseline (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1987 BY\$) 41369.9 49070.1 (2) Quantity 57 64 (3) Unit Cost 725.788 766.720 (U) Avg. Proc. Unit Cost (APUC) 39092.2 46421.9 (2) Quantity 57 64 (3) Unit Cost 685.828 725.342

13. (U) Cost Variance Analysis:

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

r	RDT&E	PROC	MILCON	TOTAL
Production Estimate	916.6	19173.1	27.8	20117.5
Previous Changes:				
Economic	-118.8	-5018.0		-5136.8
Quantity		+32718.2	-	+32718.2
Schedule	+59.7	+979.8	-	+1039.5
Engineering	+15.5	+1965.7	+16.7	+1997.9
Estimating	+1743.4	+3327.9	-	+5071.3
Other	-	-	-	-
Support	-	-	-	_
Subtotal	+1699.8	+33973.6	+16.7	+35690.1
Current Changes:				
Economic	+4.7	+428.5		+433.2
Quantity	-	+6231.7	-	+6231.7
Schedule	+85.2	-57.5		+27.7
Engineering	+197.7	+154.3		+352.0
Estimating	+292.8	+2881.7		+3174.5
Other	(<u> </u>		-	- 1
Support	-	-	-	_
Subtotal	+580.4	+9638.7	-	+10219.1
Total Changes	+2280.2	+43612.3	+16.7	+45909.2
Current Estimate	3196.8	62785.4	44.5	66026.7

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

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(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		+22035.0	-	+22035.0
Schedule	+36.4	-	-	+36.4
Engineering	+11.1	+1293.2	+11.9	+1316.2
Estimating	+1197.4	+1322.8	+0.1	+2520.3
Other		-	-	-
Support		-	-	-
Subtotal	+1244.9	+24651.0	+12.0	+25907.9
Current Changes:				
Quantity	. –	+3997.4	-	+3997.4
Schedule	+52.7	-	- 1	+52.7
Engineering	+131.3	+99.3	- 1	+230.6
Estimating	+201.8	+1725.9	+0.1	+1927.8
Other	-	-	-	-
Support		-		
Subtotal	+385.8	+5822.6	+0.1	+6208.5
Total Changes	+1630.7	+30473.6	+12.1	+32116.4
Current Estimate	2610.5	46421.9	37.7	49070.1

b. (U) Current Change Explanations --

D. (U) Current Change Explanacions		
	(Dollars i <u>Base-Year</u>	in Millions) <u>Then-Year</u>
(1) BDT&E		
Revised Escalation Rates (Economic)	N/A	+4.7
Adjustment for current and prior year	+2.1	+3.0
inflation (Estimating)		
initation (Estimating)	+52 7	195 2
Revised program funding resulting from	+ 36 . /	103.2
procurement profile change (Schedule)		. 1 . 7 . 7
Revised program funding to include AEGIS Open	+131.3	+19/./
Architecture (Engineering)		
Additional funds for requirements	+86.0	+123.0
identified in the FY01 and FY02		
Appropriations Acts (Estimating)		
Revised cost estimates to support	+64.8	+93.0
Commercial Off The Shelf (COTS)		
Commercial off the Shell (COTS)		
Technology/Integration and resolution of	- 1	
Computer Program Change Requests (Estimating	31	.72 0
Revised cost estimates for AEGIS Weapon	+40.9	T/J.0
System development necessary to improve		
combat capability (Estimating)		
-		
RDT&E Subtotal	+385.8	+580.4
(2) Procurement		
Revised Escalation Rates (Economic)	N/A	+428.5
<pre>identified in the FY01 and FY02 Appropriations Acts (Estimating) Revised cost estimates to support Commercial Off The Shelf (COTS) Technology/Integration and resolution of Computer Program Change Requests (Estimating Revised cost estimates for AEGIS Weapon System development necessary to improve combat capability (Estimating) RDT&E Subtotal (2) Procurement Revised Escalation Rates (Economic)</pre>	+64.8 3) +48.9 +385.8 N/A	+93.0 +73.8 +580.4 +428.5

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

}	o. (U) Current Change Explanations		
	(Dollars i	n Millions)
		<u>lase-Year</u>	<u>Then-Year</u>
	Quantity increase of six ships from 58 to 64 ships (QR) (Quantity)	+3766.2	+5853.5
	Adjustment for current and prior year inflation (Estimating)	+199.8	+269.2
	Post Delivery and Outfitting requirements for six additional ships (OR) (Quantity)	+231.2	+378.2
	Change in profile for the 58 ships previously submitted from 2,2,2 (FY02-FY04) to 3,2,1 (FY02-FY04) (Schedule)	0.0	-57.5
	Revised Program funding to include Remote Minehunting System (Engineering)	+99.3	+154.3
	Additional funds for prior year requirements identified in the 2000 and 2001 SCA and funded in the FY01 and FY02 Appropriations Acts and the FY01 Supplemental Bill (Fstimating)	+217.3	+286.2
	Additional funds for prior year requirements identified in the "Cost to Complete" BA-5 funding line (Estimating)	+196.4	+293.2
	Revised estimates resulting from a change in estimating assumptions in the cost quantity relationship for the six additional ships (Estimating)	+964.2	+1507.7
	Revised cost estimates for ship construction, GFE, Outfitting, and Post Delivery (Estimating	+148.2 ;}	+525.4
	Procurement Subtotal	+5822.6	+9638.7
(3)	MILCON Inflation rate impact on FY01 and prior year costs (Estimating)	+0.1	0.0
	MILCON Subtotal	+0.1	0.0

QR = Quantity related changes.

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

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

Current SAR Baseline to Current Estimate

PAUC	Changes							PAUC	
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
874.67	-73.49	+48.24	+16.68	+36.72	+128.84			+156.99	1031.67

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

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Prod Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
833.61	-71.71	+74.57	+14.41	+33.12	+97.02			+147.41	981.02

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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
TOC	N/A	N/A	OCT 1990	FEB 1993
Total Cost	10953.5	14910.6	20117.5	66026.7
Total Quantity	9	14	23	64
Prog Acq Unit Cost	1217.1	1065.0	874.7	1031.7

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

a. Procurement (U) <u>DDG 84,86,88 CONSTRUCT</u> I	<u>:0:</u>	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Oty</u>
Northrop Grumman (NGSSIO), PAS N00024-96-C-2304, FPI Award: June 20, 1996 Definitized: December 13, 1996	SCAGOULA MS	\$1034.9	\$1165.8	3
Current Contract Price Target <u>Ceiling</u> \$1080.4 \$1219.0	Oty 3	Estimated P <u>Contractor</u> \$1110.2	rice At Co <u>Prog</u>	ompletion <u>cam Manager</u> \$1136.3

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$5.8	\$0.6
Cumulative Variances To Date (11/30/01)	\$-68.7	\$-22.9
Net Change	\$-74.5	\$-23.5

Explanation of Change:

(U) Cost variance is driven by production hours. A highly competitive labor market has impacted the shipbuilder's skill mix. The current skill mix results in lowered production labor efficiency. Schedule variance is driven by material- DDG 84 delivered on 8/20/01, two weeks ahead of schedule.

(U) Contract Comments: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$40.9M). This contract is forward priced, incorporating escalation compensation in the basic contract. All ships are projected to deliver within contract schedules.

			Initial	. Contract Pr	rice
(U) <u>DDG 83</u>	1,85,87 CONSTRU	JC:	<u>Target</u>	<u>Ceilina</u>	<u>Oty</u>
General Dynamics (BIW), BATH, ME N00024-96-C-2305, FPI Award: June 20, 1996		\$1071.3	\$1219.7	Е	
Definitized:	December 13, 1	1996			
Current	: Contract Pric	ce	Estimated E	Price At Comp	pletion
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Program	n <u>Manager</u>
\$1111.4	\$1266.2	3	\$1150.4	\$1	177.0
			<u>Cost Varianc</u>	e <u>Schedule</u>	Variance
Previous Cumu	alative Variand	ces	\$-7.2	\$-1	.3
Cumulative Va	ariances To Dat	te (11/30/01)	<u>\$-98.3</u>	<u>\$-12</u>	<u>, 6</u>
Net Chanc	ie		\$-91.1	\$-11	.3

Explanation of Change:

(U) The cost variance change is due to performance in manufacturing. These FY 96/97 ships were bid prior to the realization of the full production effort required to construct Flight IIA ships. Additionally, learning on post-Flight IIA hulls has been significantly less than BIW's historical learning. The schedule variance is driven by material timephasing. DDG 83 delivered 6/22/01, approximately eight weeks ahead of schedule.

(U) Contract Comments: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$51.2M). This contract is forward priced, incorporating escalation

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\$3109.4

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

\$3433.0

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compensation in the basic contract. All ships are projected to deliver within contract schedules.

(U) <u>89,91,93,95,97,98,100/2:</u>	Initial	Contract Pri	ice
	<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
Northrop Grundan (NGSSIO), Pascagoura MS N00024-98-C-2307, FPI Award: March 6, 1998 Definitized: March 6, 1998	\$2166.5	\$3322.2	6
Current Contract Price	Estimated P:	rice At Compl	letion
Target Ceiling Oty	Contractor	Program	Manager

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$-11.7	\$-7.7
Cumulative Variances To Date (11/30/01)	<u>\$-3.4</u>	\$-45.9
Net Change	\$8.3	\$-38.2

8

Explanation of Change:

\$2998.7

(U) Cost and schedule variances are driven by material on DDGs 89 and 91. With the exception of DDG 89, contract labor activity is minimal. During the early stages of construction material variances are common and are not good indicators of performance.

\$2979.4

(U) Contract Comments:

This is a multiyear contract to procure 6 ships (FY98-FY01) with 2 exercised options for one ship each, bringing the total ships to be procured under this contract to 8. The first option was exercised at time of the 7 (6 MYP) ships contract award (03-06-98). The Current Contract Price and Estimated Price at Completion were increased in this report to reflect the funding of the FY01 MYP ship in December 2000 and the exercise of the second option ship, DDG 102 (an FY02 ship), awarded in December 2001. Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$132.7M).

			Initia	l Contract Pr	tice
(U) <u>DDG 9</u>	0,92,94,96,99,1	01 C:	<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
General Dyna	mics (BIW), Bat	h, ME			
N00024-98-C-	2306, FPI		\$1440.5	\$1633.9	4
Award: March	6, 1998				
Definitized:	March 6, 1998				
Curren	t Contract Pric	ce	Estimated 1	Price At Comp	letion
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	<u>Program</u>	<u>Manager</u>
\$2261.2	\$2580.0	6	\$2449.5	\$24	71.4

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

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$-0.3	\$1.0
Cumulative Variances To Date (11/30/01)	<u>\$-60.3</u>	\$-6.6
Net Change	\$-60.0	\$-7.6

Explanation of Change:

(U) Cost variance is driven by labor, overhead and material. BIW has recently completed (2001) an expansion (the Land Level Transfer Facility) to its shipyard which changes their entire process for building ships. In preparation for this change, BIW readied employees and equipment and altered sub-processes to integrate with the Land Level Facility. The impact of these changes to the construction process is the primary driver of the cost variance. The schedule variance is driven by material. Labor activity is minimal at this stage of production and schedule variances are commonly driven by material.

(U) Contract Comments: This is a multiyear contract with 6 MYP ships awarded and funded. Current Contract Price and Estimated Price at Completion were increased to reflect the funding of the two FYOI MYP ships in December 2000. Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$109.1M).

			Initial	. Contract P	rice
(U) <u>AWS PI</u>	RODUCTION CONTRA	ACT:	<u>Target</u>	<u>Ceiling</u>	Otv
Lockheed Mart	in, Moorestown,	NJ			
N00024-98-C-5	5178, FPI		\$833.7	\$857.1	13
Award: May 1.	1998		-		
Definitized:	January 9, 2002	2			
Current	Contract Price	2	Estimated H	rice At Com	pletion
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	Progra	<u>m Manager</u>
\$890.3	\$966.5	13	\$885.4	Ş	885.4
			<u>Cost Varianc</u>	<u>e Schedule '</u>	<u>Variance</u>
Previous Cum	lative Variance	es	\$0.0	\$0	. 0
Cumulative Va	ariances To Date	e (12/31/01)	\$0.7	\$19	.2

2

Net Change

Explanation of Change:

(U) Cost variance is insignificant. The favorable schedule variance is the result of efficiencies in production.

\$0.7

\$19.2

(U) Contract Comments: This contract includes funding for 4 FY98 AEGIS Weapon Systems (DDGs

DDG 51 DESTROYER, December 31, 2001

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

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89-92), 3 FY99 systems (DDGs 93-95), 3 FY00 systems (DDGs 96-98), and 3 FY01 systems (DDGs 99-101).

Two contracts that were identified in the previous report (12-31-99), N00024-94-C-2808 and N00024-94-C-2800, are now more than 90% complete with all of their ships delivered to the Navy. These contracts are not included in this report.

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

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

Appropriation	Prior <u>Years</u> (FY80-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-13)	<u>Total</u>
RDT&E	2196.4	236.7	209.3	554.4	3196.8
Procurement	44817.3	3420.3	2654.3	11893.5	62785.4
MILCON	44.5	-	-		44.5
O&M	-	-	-	-	-
Total	47058.2	3657.0	2863.6	12447.9	66026.7

b. Annual Summary -- DDG 51 Program

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

		Sailaway	Sailaway		
		FY 1987	FY 1987	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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
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

*** UNCLASSIFIED *** DDG 51 DESTROYER, December 31, 2001

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

•••

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

		Sailaway	Sailaway		
1		FY 1987	FY 1987	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997				61.9	82.5
1998				58.3	78.3
1999				114.3	155.4
2000				168.5	232.6
2001				102.2	143.5
2002		^		166.0	236.7
2003				144.6	209.3
2004				87.3	128.6
2005	0.00			68.3	102.4
2006				78.1	119.3
2007				57.2	89.1
2008	and the second sec			33.3	52.9
2009				19.6	31.7
2010				11.5	19.0
2011				6.8	11.4
Subtotal				2610.5	3196.8

Appropriation: 1611 - Shipbuilding and Conversion, Navy

	1	Sailaway	Sailaway		i
		FY 1987	FY 1987	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1984					78.5
1985	1	307.6	898.9	1177.8	1145.8
1986					98.1
1987	3	143.6	2187.5	2255.1	2484.9
1988				4.0	9.6
1989	4		2557.0	2463.8	2876.4
1990	5	11.2	3078.0	2987.7	3586.5
1991	4	2.9	2562.5	2522.8	
1992	5	29.7	3159.1	3118.5	4020.3
1993	4	6.1	2571.8	2634.5	3397.4
1994	3	65.1	2106.7	2179.7	2804.9
1995	3	28.5	2119.7	2140.3	2839.9
1996	2	12.3	1559.8	1632.1	2379.0
1997	4	27.5	2625.5	2587.9	3638.1
1998	4	103.9	2775.3	2776.2	3542.2
1999	3	46.2	2107.3	2100.1	2724.9
2000	3	28.9	2097.5	2065.7	2753.7
2001	3		2096.3	2095.6	3288.1
2002	3	41.4	2239.4	2295.1	3420.3
2003	2	8.9	1747.2	1729.5	2654.3
2004	2	5.7	1843.6	1833.9	2655.3

*** UNCLASSIFIED *** DDG 51 DESTROYER, December 31, 2001

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

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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 S
2005	2	16.4	1719.3	1735.9	2642.7
2006	2	14.1	1713.9	1694.3	2727.7
2007	2	11.4	1714.2	1696.8	2749.4
2008				396.4	634.7
2009				48.4	75.6
2010				76.8	122.4
2011				77.0	125.3
2012				67.4	111.9
2013				28.6	48.5
Subtotal	64	941.4	45480.5	46421.9	62785.4

(U) FY 84 and FY 86 Then Year figures are for advanced procurement for FY 85 and FY 87, respectively. The associated Base Year amounts are reflected in the year of the end item procurement.

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	100 C			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

Appropriation: 1205 - Military Construction, Navy

DDG 51 DESTROYER, December 31, 2001

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

•

		Sailaway	Sailaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	64	941.4	45480.5	49070.1	66026.7

17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	Plan	<u>Actual</u>
	RDT&E	0	0
	Procurement	36	36

(U) Percent Total Program Quantities Delivered: 56.3%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 37171.2
 - (U) Percent Total Program Expended: 56.3%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The Program baseline O&S estimate projects for a 64 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 2001 for operational hulls DDG 51 to DDG 80.

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

Average annual operating cost shown below represent a composite average of all 64 ships in the DDG 51 Class. Estimates are based on a service life of 35 years.

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

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

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

	DDG 51 Program	CG 47 Program
	Average Annual Cost	Average Annual Cost
Cost Element	Per Ship (FY87\$)	Per Ship
Mission Pay & Allowances	10.0	12.5
Unit Level Consumption	4.5	5.9
Intermediate Maintenance	0-4	0.5
Depot Maintenance	5.6	7.6
Contractor Support	0.5	0.5
Sustaining Support	3.5	3.7
Indirect Costs	9.6	10.9
Total	34.1	41.6

Total O&S Cost	DDG 51 Program	CG 47 Program
BY\$ (In Millions)	78100.0	39000.0
TY\$ (In Millions)	111400.0	56000.0

Report Creation Date: 03/26/2002 11:34:20 AM

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(0&A)823) PROGRAM: AMRAAM (AIM-120)

AS OF DATE: December 31, 2001

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1. (U) Designation and Nomenclature (Popular Name): AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM) SAH/PAS

2. (U) DoD Component: USAF

Joint Participants: USAF/USN

(U)

(U)

(U)

3. (U) Responsible Office and Telephone Number:

Air-to-Air Joint Systems Program Office (JSPO) (AAC/YA) Eglin AFB, FL 32542-6844

PE 0603316F

PE 0603370F

(U) Navy Program Director Air-to-Air Joint Systems Program Office (JSPO)(AAC/YA) EGLIN AFB, FL 32542-6844

4. (U) Program Elements/Procurement Line Items: RDT&E: PE 0207163F (U)(U) PE 0207163N Project E0981

PE 0603370N Project W0981

COL. JAMES S. KNOX, JR. Assigned: October 29, 2001 DSN 872-3531; COMM (850) 882-3531 james.knox@eglin.af.mil

GM-15 RICHARD T. CALANO Assigned: October 26, 1997 DSN 872-2412, AC(850)882-2412 Ext 508 richard.calano@eglin.af.mil

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

(U) PE 0604314F (U) PE 0604314N (U) PE 063370F PROCUREMENT: (U) APPN 1507 ICN 2206 (Navy) (U) APPN 3020 ICN MAMRAO (Air Force)

5. (U) <u>References</u>:

SAR Baseline (Production Estimate): (U) DAE Approved Acquisition Program Baseline dated January 17, 1992.

Approved Program:

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

6. (U) Mission and Description:

(U) The AMRAAM program provides for the acquisition of the most advanced all-weather, all-environment medium range air-to-air missile system in response to USAF, USN, NATO, and other allied operational requirements for the 1989-2007 time period. The system is an active radar guided intercept missile with inherent Electronic Protection (EP) capabilities for air-to-air applications against massed penetration aircraft and is designed to augment the AIM-7 Sparrow.

7. (U) Executive Summary:

(U) In January 1979 Defense Systems Acquisition Review Council (DSARC) Milestone I validated the requirement for AMRAAM. In January 1989 Full Scale Development flight testing was completed by the Hughes Aircraft Company and the Raytheon Company completed second-source qualification. AMRAAM Initial Operational Capability on the F-15 occurred in September 1991, and the first F-16 unit established Initial Operational Capability in January 1992. In April 1992 a follow-up to the Defense Acquisition Board (DAB) Milestone IIIB review authorized full-rate production for the FY93 procurement. Successful completion of the Navy Operational Evaluation occurred in March 1994. The first missile incorporating the Phase 1 Pre-Planned Product Improvement (P3I) missile design was delivered in November 1995, providing increased Electronic Protection capability and a compressed airframe for F-22 internal carriage. In December 1997 Raytheon and Hughes merged into the Raytheon Systems Company. The Lot 13 production option was awarded in March 1999 as the second year of a four year long term pricing agreement. The first missile incorporating the Phase 2 P31 missile design was delivered in August 1999 providing additional Electronic Protection capability and a more lethal warhead. This design also included an improved kinematic +5 inch rocket motor with deliveries beginning in May 2000. Twenty countries have AMRAAM operational capability: Australia, Bahrain, Belgium, Denmark, Finland, Germany, Greece, Israel, Italy, Netherlands, Norway, South Korea, Singapore, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, and the United Kingdom.

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

The Lot 14 production option was awarded in March 2000 for 535 missiles, 254 U.S. and 281 FMS. The U.S. did not achieve planned quantities of 287 missiles due to the increased unit costs resulting from low FMS sales. The U.S. planned prices are based on sales of 600 FMS missiles per year.

The Lot 15 production option was awarded in March 2001 for 426 missiles, 233 U.S. and 193 FMS. Later contract option awards increased the FMS total to 349 missiles. As in Lot 14, the U.S. did not achieve the planned quantities of 279 missiles due to low FMS sales.

The development of a Quadrant Target Detection Device (QTDD) was completed in 2000. The QTDD improves end game performance with increased detection sensitivity. The first QTDD missiles (Lot 13) were delivered in March 2001.

In 2001, AMRAAM software was upgraded to provide High Off-Boresight (HOBS) launch capability and improved guidance against certain advanced targets. Both capabilities will be fielded in early 2002.

The P3I Phase 3 contract completed its third year of a five year development. The Phase 3 program will provide an upgraded missile with substantial improvements in the guidance section hardware and software to counter advanced threats. Critical Design Review (CDR) was completed in June 2001. The hardware integration team delivered two guidance sections to the Simulation facility in December 2001. AMRAAM Captive Carry flight testing is scheduled to begin in March 2002. Future missile production costs are being managed under the Cost as an Independent Variable (CAIV) process with 30% of the contract award fee tied to the cost requirements in the missile specification. Production cut-in will be in Lot 16 with deliveries beginning in 2004.

In over 1,000 live launches, AMRAAM has demonstrated 94% in-flight hardware reliability which exceeds the operational and specification requirements. In 2000, under the warranty program, Raytheon strove to improve this reliability by embarking on exhaustive failure investigations that yielded two major improvements. Retrofits were performed on over 8500 missiles owned by U.S. and international warfighters to incorporate these improvements. The Raytheon AMRAAM team received a coveted Lightning Bolt Award from the Assistant Secretary of the Air Force (Acquisition) for this effort.

During 2001, AMRAAM achieved a 95% tactical availability rate exceeding the Air Force requirement of 91%.

The first guided launch from an F-22 was successfully completed in September 2001. The missile passed the target well within the lethal effectiveness range.

The USMC awarded a Complementary Low Altitude Weapons System (CLAWS) contract to integrate existing hardware into a surface-to-air system using AMRAAM in April 2001. CLAWS is a high mobility multi-wheeled vehicle (Humvee) based slew-able launcher.

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8. (U) Threshold Breaches:

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

[Item	Breach
Schedule		No
Perform	ince	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) <u>Schedule</u>:

a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
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 IOTsE/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)	MAR 1991	MAR 1991	SEP 1991
Air Force			
Milestone IIIB (DAB) (Lot IV Full	APR 1991	APR 1991	MAY 1991
Go-Ahead Rate Production)			
DAB Program Review Full Rate	MAR 1992	MAR 1992	APR 1992
Production Approval			
Full Operational Capability (FOC) 1st	MAR 1992	MAR 1992	JAN 1992
F-16 Unit Fully Operational W/AMRAAN	ts		
Complete FOTSE (OPEVAL) (Navy)	MAR 1992	JAN 1994	MAR 1994
Complete AF FOT&E Phase I	MAR 1992	FEB 1993	APR 1993
P3I Phase 1 CDR Complete	OCT 1992	OCT 1992	JAN 1993

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

	Estimate (SAR)	Program (APB)	Estimate
<pre>Initial Operational Capability (IOC) (Navy)</pre>	SEP 1992	SEP 1993	SEP 1993
Joint Depot Activated	SEP 1994	JUL 1999	JUL 1999
P3I Phase 1 Flight Test Completed	DEC 1994	DEC 1994	APR 1995
Last Delivery	SEP 2001	N/A	NOV 2010(Ch-1)

(U) (Ch-1)Last delivery date extended to Nov 2010 due to the addition of another production lot (Lot 22, FY08).

Acronyms:

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

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Aj Prog Obj/	ram (Thres	ed APB) hold	Demon- strated <u>Perf</u>	Current Estimate
Weight (lbs)	327	327	/ 3	50	344	345
F-Pole at 25NM Range A-Pole at 25NM Range Probability of Kill Look-Down Shoot-Down Target alt (ft) over: Land Water	(b)(1)					
Reliability Ready Storage (hrs) (mature msl – 90K operational flight hours)	60000	60000	/ 4	5000	N/A	45000
Availability (%)	86	86	/ 8	2	N/A	96
Captive-Carry (MTBM- Type I) (hrs)	600	600	14	50	1152	1270
On Alert Storage MTBM	30000	30000	12	2500	N/A	30000

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

	Production	Progra	m	(APB)	Demon- strated	Current	
Aircraft Configure/ Load - 3 Man Load	<u>Estimate (SAR)</u>	Obj/Th	ITE	eshold	Perf	<u>Estimate</u>	
Install 4 Rail	20	20	1	25	21	21	
Launchers (mins) Load 4 Missiles from trailer	15	15	1	20	18	10	
(mins) Load 4 Missiles from container	20	20	1	30	22	22	
(mins) Missile checks (mins)	1	1	1	5	1	1	
All Weather Capability	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	11/1	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	
All-Aspect Launch & Track	(b)(1)						
Aircraft Compatibility	F-15, F-16, F-14,	F-15, F-16, F-14, F(A-18	11/1/	F-15, F-16, F-14, F/A-18	F-15, F-16, F/A-18	F-15, F-16, F/A-18 F-22	
All-Up Round	Control Surfaces field in-	Control Surfaces field in-	11/1	Control Surfaces field in-	Control Surfaces field stalled	Control Surfaces field stalled	
ECCM Capability	(b)(1)	stalled	/	stalled			
						11	

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



(U) Acronyms and definitions:

MTBM - Mean Time Between Maintenance ECCM - Electronic Counter Counter Measure Pk - Probability of Kill ECM - Electronic Counter Measure

F-Pole - The distance between the shooter and the target when the missile intercepts the target.

A-Pole - The distance between the shooter and the target when the missile goes active.

b. Current Change Explanations -- None

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

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

2255 hrs MTBM on the F-16 and exceeded 1333 MTBM on the F-15. Production reliability exceeds 750 hrs MTBM for both Hughes and Raytheon.

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

		Production	Approved	Current
а.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	1725.7	2097.2	2196.5
	Procurement	10552.5	10205.7	8076.2
	Flyaway	(10038.5)		(7592.3)
	Other Weapon Cost	(378.0)		(0.0)
	Peculiar Support	(0.0)		(397.8)
	Initial Spares	(136.0)		(86.1)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition OsM	0.0	0.0	0.0
	Total FY 1992 Base-Year \$	12278.2	12302.9	10272.7
	Escalation	834.2	1025.0	111.5
	Development (RDT&E)	(-375.1)	(-275.7)	(-278.1)
	Procurement	(1209.3)	(1300.7)	(389.6)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	<u>(0.0)</u>	(0.0)	_ (0.0)
	Total Then Year \$	13112.4	13327.9	10384.2

(U) Note: Other Weapon Cost has been recategorized as Peculiar Support to track to the program office estimate.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>15450</u>	<u>13038</u>	10917
Total	15450	13038	10917

(U) Excludes 169 non-fully configured RDT&E missiles in the development estimate and 111 in the current estimate. The original plan was to procure 810 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 15,450 missiles at Milestone IIIB, and (2) Milestone IIIB authorized the program to continue LRIP through FY92, adding 3,349 missiles to the LRIP quantities.

- c. (a) Foreign Military Sales --Active and future foreign military sales (FMS) cases totaling \$1,131.7M.
- (U) NATO EF2000 and Tornado Development, Production, and Logistics Management Agency (NETMA)(M1-D-YAA) Case signed 5 November 1991

*** CONTIDENTINE *** AMRAAM (AIM-120), December 31, 2001

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

\$9.4M PURPOSE: 6 AMRAAMS (Lot VII).

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- (U) UNITED KINGDOM (UK-D-YDR) Case signed 13 March 1992 \$100.1M PURPOSE: 210 AMRAAMS (Lots VII,VIII), support, and software updates.
- (U) SWEDEN (SW-D-YCD) Case signed 1 September 1994
 \$42.0M PURPOSE: 110 AMRAAMS (Lots X,XII) and support. Missile procurement is FMS administered direct commercial sales.
- (U) FINLAND (FI-D-YAA) Case signed 4 November 1994 \$111.7M PURPOSE: 312 AMRAAMS (Lots X,XI,XII,XIII) and software updates. Missile procurement is FMS administered direct commercial sales.
- (U) NETHERLANDS (NE-D-YME) Case signed 29 September 1995 \$77.0M PURPOSE: 200 AMRAAMS (Lots X,XI) and support.
- (U) BELGIUM (BE-D-YCD) Case signed 22 December 1995 \$27.0M PURPOSE: 72 AMRAAMS (Lot XI).
- (U) NORWAY (NO-D-YDA) Case signed 1 April 1996 \$102.0M PURPOSE: 250 AMRAAMS (Lot XI) and 228 MRLs(Lots XI), and software updates.
- (U) United Kingdom (UK-D-NST) Case signed 11 April 1996 \$9.6M Purpose: Integration/testing of AMRAAM.
- (U) SPAIN (SP-D-YDH) Case signed 11 July 1996 \$12.1M PURPOSE: 32 AMRAAMS (Lot XI) and support.
- (U) GREECE (GR-D-SBD) Case amended 26 September 1996 \$50.1M PURPOSE: 140 AMRAAMS (Lot XI,XII).
- (U) ISRAEL (IS-D-YEO) Case signed 6 February 1997 \$79.0M PURPOSE: 125 AMRAAMS (Lot X,XI,XII,XIII), support, and software updates.
- (U) SOUTH KOREA (KS-D-YGQ) Case signed 13 March 1997 \$8.9M PURPOSE: 100 AMRAAMS (Lot XII), and software updates. Missile procurement is FMS administered direct commercial sales.
- (U) TURKEY (TK-D-YDV) Case signed 24 November 1997 \$45.0M PURPOSE: 138 AMRAAMS (Lot XII), support, and software updates.
- (U) ITALY (IT-D-YAC) Case signed 1 December 1997 \$36.7M PURPOSE: 93 AMRAAMS (Lot XIII), support, and software updates.

(b)(1)

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AMRAAM (AIM-120), December 31, 2001

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

1

\$73.0M PURPOSE: 130 AMRAAMs (Lot XIII & XIV), support and integration, software updates.

- (U) JAPAN (JA-D-YCJ) Case signed 19 February 1999 \$20.3M PURPOSE: 40 AMRAAMS (Lot XIII).
- (U) SPAIN (SP-D-YAF) Case signed 5 March 1999 \$41.3M PURPOSE: 100 AMRAAMS (Lot XIII) and support.
- (U) BAHRAIN (BA-D-YBI) Case signed 13 November 1999 \$25.1M PURPOSE: 26 AMRAAMS (Lot XIV), support, and integration.
- (U) KOREA (KS-D-YGY) Case signed 27 December 1999 \$66.0M PURPOSE: 159 AMRAAMS (Lot XIV), support, and software updates.
- (U) JAPAN (JA-D-YCK) Case signed 24 March 00 \$9.0M PURPOSE: 21 AMRAAMS (Lot XIV), support, and software updates.
- (U) UNITED ARAB EMIRATES (AE-D-SAA) Case signed 18 August 00 \$4.5M PURPOSE: 2 AMRAAMS (Lot XIV), support, software updates, and integration.
- (U) SWITZERLAND (SZ-D-NAV) Case signed 16 October 00 \$2.1M PURPOSE: Software updates.
- (U) TAIWAN (TW-D-SKA) Case signed 13 December 00 \$68.8M PURPOSE: 120 AMRAAMS (Lot XV), support, and software updates.
- (U) NAMSA (N4-D-GAH) Case signed 17 March 01 \$0.1M PURPOSE: To provide technical support.
- (U) JAPAN (JA-D-YCL) Case signed 21 March 01 \$9.6M PURPOSE: 21 AMRAAMS (Lot XV) and support.
- (U) SINGAPORE (SN-D-YAD) Case signed 27 March 01 \$32.8M PURPOSE: 50 AMRAAMS (Lot XV) and support.
- (U) THAILAND (TH-D-YJK) Case signed 28 June 01 \$2.5M PURPOSE: 4 AMRAAMS (Lot XV).
- (U) ISRAEL (IS-D-YES) Case signed 1 July 01
 \$25.3M PURPOSE: 48 AMRAAMS (Lot XV), support, and integration testing.
- (U) THAILAND (TH-D-YJL) Case signed 13 July 01 \$3.6M PURPOSE: 4 AMRAAMS (Lot XV) and support.
- (U) GREECE (GR-D-YDT) Case signed 5 December 01 \$37.1M PURPOSE: 100 AMRAAMS (Lot XV) and support.

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

d. (U) Nuclear Costs --None

.

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 1996 APB)(Dec	Current Estimate 2001 SAR)	Percent <u>Change</u>
a. (U) Prog. Acq. Unit Cost (PAUC)			_
(1) Cost (FY 1992 BY\$)	12302.9	10272.7	
(2) Quantity	13038	10917	
(3) Unit Cost	0.944	0.941	-0.32
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1992 BY\$)	10205.7	8076.2	
(2) Quantity	13038	10917	
(3) Unit Cost	0.783	0.740	-5.49

13. (U) Cost Variance Analysia:

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

	RDTSE	PROC	MILCON	TOTAL
Production Estimate	1350.6	11761.8	-	13112.4
Previous Changes:				
Economic	-54.9	-321.5	-	-376.4
Quantity	-	-2977.1	-	-2977.1
Schedule	-7.3	+1763.4	-	+1756.1
Engineering	+460.1	+111.8	-	+571.9
Estimating	+170.8	-1909.9	-	-1739.1
Other	-		-	-
Support	-	-10.9	-	-10.9
Subtotal	+568.7	-3344.2	-	-2775.5
Current Changes:				
Economic	+1.4	-7.8	-	-6.4
Quantity	-		-	-
Schedule	-	+14.0	-	+14.0
Engineering	-	- 1		-
Estimating	-2.3	+30.3	*	+28.0
Other	-	- '	-	-
Support	-	+11.7	-	+11.7
Subtotal	-0.9	+48.2	-	+47.3
Total Changes	+567.8	-3296.0	-	-2728.2
Current Estimate	1918.4	8465.8	-	10384.2

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

3

(U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	TOTAL
Production Estimate	1725.7	10552.5	-	12278.2
Previous Changes:				
Quantity	-	-1965.1	*	-1965.1
Schedule	-8.1	+791.9	-	+783.8
Engineering	+373.3	+78.1	-	+451.4
Estimating	+107.7	-1375.7	-	-1268.0
Other	-	-	-	
Support	-	-37.9	-	-37.9
Subtotal	+472.9	-2508.7	-	-2035.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.1	+24.6	-	+22.5
Other	-	-	-	
Support	-	+7.8	-	+7.8
Subtotal	-2.1	+32.4	-	+30.3
Total Changes	+470.8	-2476.3	-	-2005.5
Current Estimate	2196.5	8076.2	-	10272.7

b. (U) Current Change Explanations --

(Dollars	in	Millions)
<u>Base-Year</u>	TÌ	<u>len-Year</u>

(1)	RDTEE		
、 -,	Revised escalation indices. (Economic)	N/A	+1.4
	Adjustment for current and prior inflation. (Estimating)	-1.1	-1.2
	Prior year revisions to reflect actual costs. (Estimating)	-6.3	-7.4
	Reduced estimate for out year requirements. (Estimating)	-2.7	-3.3
	Increase in contractor and test wing Labor and overhead rates. (Estimating)	+8.0	+9.6
	RDT&E Subtotal	-2.1	-0.9
(2)	Procurement		
. ,	Revised escalation indices. (Economic)	N/A	-7.8
	Stretchout of annual procurement buy profile. (Schedule)	0.0	+14.0
	Unit cost increase due to low FMS quantities. (Estimating)	+36.4	+42.9
	Reduced Navy production/test requirements. (Estimating)	-10.2	-10.9
	Adjustment for current and prior inflation. (Estimating)	+0.1	+0.1

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

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b. (U) Current Change Explanations		
	(Dollars in <u>Base-Year</u> T)	Millions) Men-Year
Change in Initial Spares cost due to stretch out of the procurement program (FY07 to FY08). (Support)	+0.7	+1.0
Reduced Telemetry Unit (TM) requirements. (Estimating)	-1.7	-1.0
Added year of support due to the stretch out of the procurement program (FY07 to FY08). (Support)	+7.1	+10.7
Procurement Subtotal	+32.4	+48.2

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

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

Current SAR Baseline to Current Estimate

PAUC	JC Changes							PAUC	
Prod Est	Est							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.849	-0.035	+0.080	+0.162	+0.052	-0.157			+0.102	0.951

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

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Prod Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.761	-0.030	+0.043	+0.163	+0.010	-0.172			+0.014	0.775

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

c. (U) Schedule, Cost, and Quantity History								
	SAR	SAR	SAR					
Item/Event	Planning	Development	Production	Current				
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate				
Milestone I	N/A	NOV 1978	NOV 1978	NOV 1978				
Milestone 11	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	10384.2				
Total Quantity	N/A	24335	15450	10917				
Proy Acq Unit Cost	N/A	0.5	0.9	1.0				

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

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

include Navy data.

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

a. RDT&E		Initia	l Contract Pr	ice
(U) <u>Raytheon P3I Phase 3:</u>		Target	<u>Ceiling</u>	Oty
Raytheon Systems Company, Tuc.	son AZ			
F08626-98-C-0027, CPAF		\$150.5	N/A	0
Award: October 29, 1998			-	
Definitized: October 29, 1998				
Current Contract Price		Estimated	Price At Comp	letion
<u>Target</u> <u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	Manager
\$212.6 N/A	0	\$212.6	\$2	17.5

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$0.7	\$-0.4
Cumulative Variances To Date (12/21/01)	\$-3.1	<u> </u>
Net Change	\$-3.8	\$-0.6

Explanation of Change:

(U) The net change in the current target price from the initial contract price is due to the award of the "Return to Baseline" effort and award fee. The cost and schedule variance data is from the cost performance report (CPR) as of 21 Dec 01.

The negative cost variance is primarily due to increased effort required to produce the system test equipment and develop the new Phase 3 antenna.

The negative schedule variance is attributed to the redesign of one of the signal processing application specific integrated circuits (ASICs). Redesign was necessary to increase the production yield of the ASIC.

b. Procurement	Initial	Contract	Price
(U) <u>Raytheon Lot XII - XIV;</u>	<u>Target</u>	<u>Ceiling</u>	Oty
Raytheon Systems Company, Tucson AZ			
F08626-98-C-0018, FFP	\$187.5	N/A	618
Award: April 13, 1998			
Definitized: April 13, 1998			

Current	Contract Pr:	içe	Estimated Pri	ce At Completion
Target	<u>Ceiling</u>	Otv	Contractor	<u>Program Manager</u>
\$622.0	N/A	1510	\$622.0	\$622.0

Explanation of Change:

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

. . . .

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

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

			Initial	Contract Pi	rice
(U) <u>Raythec</u>	on Lot XV:		Target	<u>Ceiling</u>	<u>Otv</u>
Raytheon Compa	iny, Tucson, A	Z			
F08635-01-C-00)16, FFP		\$177.3	N/A	424
Award: April 2	26, 2001				
Definitized: 9	September 26,	2001			
Current	Contract Pric	e	Estimated P	rice At Com	oletion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	<u>Manager</u>
\$204.B	N/A	580	\$204.8	\$2	204.8

Explanation of Change:

(U) The net change in current target price from initial target price is due to the addition of contract modifications and exercising additional Lot XV options.

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

(U) Contract Comments: Contracts F08626-97-C-001, Hughes Lot XI, and F08626-97-C-0002, Raytheon Lot XI, are more then 90% complete and have been dropped from this report. All production units have been delivered.

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

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

Appropriation	Prior <u>Years</u> (FY77-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	Total
RDT&E	1647.6	67.8	45.1	157.9	1918.4
Procurement	7280.1	140.9	141.0	903.8	8465.8
MILCON	-	•	-	-	-
MaO	-	-	-	-	-
Total	8927.7	208.7	186.1	1061.7	10384.2

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

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

Flyaway Fy 1992 Flyaway FY 1992 Total Program Program Total Program Year Qty Nonrec Rec Base-Year \$ Then-Year \$ 1978						
Fiscal FY 1992 FY 1992 Total Total Year Qty Nonrec Base-Year \$ 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 7.4 1986 9.7 7.7 1986 5.1 4.2 1987 25.1 22.3 1988 25.1 22.3 1989 3.5 3.5 1990 7.2 6.5 1991 3.5 3.5 1992 3.5 3.5 1992 3.0 3.5 1993 3.0 3.5 1994 3.9 4.2 1995 7.2 7.6 1998 4.9 5.5 <tr< td=""><td></td><td></td><td>Flyaway</td><td>Flyaway</td><td></td><td></td></tr<>			Flyaway	Flyaway		
Fiscal Year Dollars Nonrec Dollars Rec Program Base-Year \$ Program Then Year \$ 1978 11.9 6.0 11.9 6.0 27.3 1980 33.5 18.3 18.3 18.3 1980 33.5 18.3 18.3 1981 36.0 24.2 36.0 24.2 1983 5.7 4.3 37.3 37.3 1984 9.3 7.3 37.3 37.3 1985 9.7 7.4 3 4.2 1986 9.7 7.2 6.5 1.4 4.2 1987 25.1 22.3 1.22.3 1.22.3 1.22.3 1.22.3 1.22.3 1.3 1.2.4 2.5 1.22.3 1.3 1.2.4 2.5 1.2.4 2.5 1.2.4 2.5 1.2.4 2.5 1.2.4 2.5 1.2.4 2.5 1.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5			FY 1992	FY 1992	Total	Total
Year Qty Nonrec Rec Base-Year \$ Then-Year \$ 1978 11.9 6.0 33.5 18.3 1980 33.5 18.3 18.3 1980 36.0 24.2 1982 4.6 3.3 1983 9.3 7.3 1984 9.3 7.3 1985 9.3 7.3 1986 9.7 7.6 1986 9.7 7.2 1987 25.1 42.2 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.5 1993 7.2 7.6 1994 7.2 7.5 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 4.0 4.5 1999 4.0	Fiscal		Dollars	Dollars	Program	Program
1978 11.9 6.0 1979 33.5 18.3 1980 36.0 24.2 1982 4.6 3.3 1981 36.0 24.2 1982 4.6 3.3 1983 5.7 4.3 1984 9.3 7.3 1985 9.7 7.8 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.9 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 3.9 4.3 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.4 1996 3.9 4.3 1997 1.9 3.9 1998 4.0 4.9 2000 11.1 12.6 2001 9.0 10.7 <td< td=""><td>Year</td><td>Qty</td><td>Nonrec</td><td>Rec</td><td>Base-Year \$</td><td>Then-Year \$</td></td<>	Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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 7.4 1986 9.7 7.4 1985 9.7 7.3 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.4 1993 3.0 3.0 1994 7.2 7.8 1995 7.2 7.8 1996 3.9 4.0 1997 1.9 2.3 1998 4.0 4.9 2000 11.1 12.4 2001 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5	1978				11.9	6.0
1980 45.0 27.3 1981 36.0 24.2 1982 4.6 3.3 1983 5.7 4.3 1983 9.3 7.3 1984 9.3 7.3 1985 9.7 7.8 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1996 3.9 4.3 1996 3.9 4.9 1998 4.0 4.9 1998 4.0 4.9 10997 1.9 1.9 1998 9.6 11.1 2000 9.0 10.7 2001 9.6 11.2 2	1979				33,5	18.3
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 9.7 7.8 1987 5.8 5.0 1988 25.1 22.3 1989 3.5 3.5 1990 7.2 6.9 1991 3.0 3.1 1992 2.4 2.5 1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 9.0 3.9 1997 1.9 2.5 1998 9.6 1.2 1998 9.6 1.2 1997 9.6 1.2 1998 9.6 1.2 1999 9.6 1.2 2000 9.0 10.7 2001 9.0 10.7 2003 <td>1980</td> <td></td> <td></td> <td></td> <td>45.0</td> <td>27.3</td>	1980				45.0	27.3
1982 4.6 3.3 1983 5.7 4.3 1984 9.3 7.3 1985 9.3 7.3 1986 9.7 7.8 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.5 1993 7.2 6.5 1994 3.0 3.1 1995 7.2 7.6 1996 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.3 1998 4.0 4.9 2000 11.1 12.2 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 2005 6.5 8.2 Subto	1981				36.0	24.2
1983 5.7 4.3 1984 9.3 7.3 1985 9.7 7.8 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.0 1994 7.2 7.8 1995 7.2 7.8 1994 7.2 7.8 1995 7.2 7.8 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.9 1998 4.0 4.9 1097 9.0 10.7 2000 11.1 12.6 2001 9.0 10.7 2002 9.0 10.7 2003 6.7 8.7 2004 7.7 9.5 2005	1982				4.6	3.3
1984 9.3 7.3 1985 9.7 7.8 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.9 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.0 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 9.9 4.3 1998 9.5 5.5 1999 4.0 4.9 1998 4.9 5.5 1999 4.0 4.9 1998 9.6 11.1 2000 11.1 12.6 2001 9.0 10.7 2002 9.0 10.7 2003 6.5 8.2 Subtotal 293.6 243.5	1983				5.7	4.3
1985 9.7 7.8 1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 9.7 7.2 1998 4.0 4.9 1997 4.0 4.5 1998 9.6 11.1 2000 9.6 11.3 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 Subtotal 293.6 243.5	1984				9.3	7.3
1986 5.1 4.2 1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.9 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 3.0 3.1 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.4 1996 3.9 4.5 1997 1.9 2.3 1998 4.9 5.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.7 2004 7.7 9.5 2005 6.5 8.7 Subtotal 293.6 243.5	1985				9.7	7.8
1987 5.8 5.0 1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.9 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.0 1994 3.0 3.1 1995 7.2 7.6 1996 7.2 7.6 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.9 1998 9.6 11.1 2000 9.0 10.7 2001 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 Subtotal 293.6 243.5	1986				5.1	4.2
1988 25.1 22.3 1989 13.3 12.4 1990 7.2 6.5 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 3.0 3.1 1995 7.2 7.6 1996 7.2 7.6 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.9 1999 4.0 4.5 2000 11.1 12.6 2001 9.0 10.7 2002 9.0 10.7 2003 6.7 8.2 2005 6.5 8.2 Subtotal 293.6 243.5	1987				5.8	5.0
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 3.0 3.1 1995 7.2 7.6 1996 7.2 7.6 1997 7.2 7.6 1998 3.9 4.3 1997 1.9 2.1 1998 4.0 4.5 2000 11.1 12.6 2000 9.0 10.7 2001 9.0 10.7 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.7 Subtotal 293.6 243.7	1988				25.1	22.3
1990 7.2 6.9 1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1989				13.3	12.4
1991 3.5 3.5 1992 2.4 2.5 1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1990			1	7.2	6.9
1992 2.4 2.5 1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1991				3.5	3.5
1993 3.0 3.1 1994 7.2 7.6 1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1992				2.4	2.5
1994 7.2 7.6 1995 3.9 4.3 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 Subtotal 293.6 243.2	1993				3.0	3.1
1995 7.2 7.6 1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1994					
1996 3.9 4.3 1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1995				7.2	7.8
1997 1.9 2.1 1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2005 6.5 8.2 Subtotal 293.6 243.2	1996				3,9	4.3
1998 4.9 5.5 1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 Subtotal 293.6 243.2	1997				1.9	2.1
1999 4.0 4.5 2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 2005 6.5 8.2 Subtotal 293.6 243.2	1998				4.9	5.5
2000 11.1 12.6 2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 2005 6.5 8.2 Subtotal 293.6 243.2	1999				4.0	4.5
2001 9.6 11.3 2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 2005 6.5 8.2 Subtotal 293.6 243.2	2000				11.1	12.8
2002 9.0 10.7 2003 6.7 8.1 2004 7.7 9.5 2005 6.5 8.2 Subtotal 293.6 243.2	2001				9.6	11.3
2003 6.7 8.1 2004 7.7 9.5 2005 6.5 8.2 Subtotal 293.6 243.2	2002				9.0	10.7
2004 7.7 9.5 2005 6.5 8.2 Subtotal 293.6 243.2	2003				6.7	8.1
2005 6.5 8.2 Subtotal 293.6 243.2	2004				7.7	9.5
Subtotal 293.6 243.2	2005				6.5	8.2
	Subtotal				293.6	243.2

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16b. (U) <u>Program Funding Summary (Cont'd)</u>:

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

		Flyaway	Flyaway		
		FY 1992	FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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
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				47.9	57.1
2003				30.6	37.0
2004				26.8	33.0
2005				27.0	33.9
2006				28.2	36.1
2007				28.5	37.2
Subtotal				1902.9	1675.2

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	196.1	194.5

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

Appropriation: 1507 - Weapons Procurement, Navy

		Flyaway	Flyaway		
		FY 1992	FY 1992	Total	Total
Fiscal	1	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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	57	10.1	16.9	30.8	37.1
2003	100	9.6	28.2	41.9	51.3
2004	55	10.1	15.5	29.2	36.3
2005	48	8.9	13.4	27.4	34.7
2006	48	8.8	13.3	27.6	35.7
2007	48	8.9	13.2	27.8	36.6
2008	526	23.3	129.6	165.6	222.3
Subtotal	2419	322.9	916.7	1402.0	1579.3

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
(FY 1992	FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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	5.7	67.4	86.2	103.8
2003	161	3.3	58.6	73.3	89.7

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

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway FY 1992	Flyaway FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2004	212		74.0	87.8	109.3
2005	216		72.0	88.6	112.4
2006	214		71.6	84.4	109.0
2007	213		69.7	80.2	105.6
2008	230		65.4	75.9	101.9
Subtotal	8498	1536.3	4816.4	6674.2	6886.5

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

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Navy	2419	322.9	916.7	1695.6	1822.5
USAF	8498	1536.3	4816.4	8577.1	8561.7
Grand Total	10917	1859.2	5733.1	10272.7	10384.2

17. (U) Delivery/Expenditure Information:

a.

(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	8254	8254

(U) Percent Total Program Quantities Delivered: 75.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 8823.6

(U) Percent Total Program Expended: 85.0%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The AMRAAM will augment the AIM-7 and be integrated and maintained using existing support resources with no additional manpower requirements. The All-Up-Round (AUR) maintenance concept calls for aircraft loading/unloading, removal/replacement of wings and fins and Built-In-Test (BIT) within the missiles. A missile failing BIT will be sent to the Intermediate-Level Shop for test verification on the Missile Bit Test Set (MBTS). For the Navy, the missile will be downloaded/uploaded on a different station or aircraft to verify missile failure. Failed missiles will be returned to the contractor AMRAAM depot for repair.

The O&S costs are the direct costs for the tactical missile and the Load Trainer/Captive Carry Missile (LT/CCM) associated with operating, supporting, and maintaining the AMRAAM missile over a 20 year deployment phase starting in FY91 for the AF and FY92 for the Navy. The AF estimate covers base operations including Load Trainer/Captive Carry Missile (LT/CCM), AUR fault verification, operational firings, depot repairs (seven year ICS), supply/item management, transportation, repienishment spares, and field software updates. The Navy estimate includes AMRAAM fleet operations and support, depot rework (five years ICS), technical support (fleet support, engineering services, quality surveillance, program management), supply support, replenishment spares, and contractor augmented support.

The O&S cost estimate was updated December 1997.

There are no antecedent systems; the AMRAAM is designed to augment the AIM-7 Sparrow.

	AMRAAM (AIM-120)	Antecedent
	Average Annual Cost	Average Annual Cost
Cost Element	for 20 years	for 20 years
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

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

Total O6S Cost	AMRAAM (AIM-120)	Antecedent
BY\$ (In Millions)	696.0	N/A
TY\$ (In Millions)	819.3	N/A

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

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Report Creation Date: 03/26/2002 9:30:16 AM

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: MH-60R

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AS OF DATE: December 31, 2001



1. (U) Designation and Nomenclature (Popular Name): MH-60R Multi-Mission Helicopter

2. (U) DoD Component: Navy

N-15 MH-60R

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3. (U) Responsible Office and Telephone Number:

Air ASW, Assault and Special Mission CAPT William ShannonProgram (PMA-299) 47123 Buse RdAssigned: September 22, 2000Unit IPT, Suite 156DSN 757-5409; COMM 301-757-5409Patuxent River, MD 20670-1547Shannonwe@navair.navy.mil

4. (U) Program Elements/Procurement Line Items: RDT4E: (U) PE 0604212N Project H2412 . (U) PE 0604216N Project H1707

- PROCUREMENT:
- (U) APPN 1506 ICN 018200 (Navy)





Derived OPNAVINST C5513.2B 20 Cory 2000 Downgrade instruction Const C5513.213 Declassify

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5. (U) <u>References</u>:

SAR Baseline (Development Estimate): (U) FY 1996/1997 President's Budget ASN(RD&A) Acquisition Decision Memorandum dated August 1993.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated March 14, 2002.

6. (U) Mission and Description:

(U) The MH-60R primary mission areas are Under Sea Warfare (USW), Anti-Surface Warfare (SUW), 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 Aperature 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) Overall maturity of the Common Cockpit has improved significantly. MH-60S Instrument Meteorological Conditions (IMC) certification on the cockpit was completed on August 2001. NAVAIR 4.0 with the support of PMA-299, conducted a thorough technical baseline assessment of Sikorsky and Lockheed Martin's performance. The Program Office also compared overall cost impacts of new production aircraft to remanufactured airframes. Based on the Program Office's analysis, ASN(RDA) revised the acquisition strategy to new production. The program changes included cost increases associated with the decision to build newly manufactured aircraft, incorporation of ALFS into the MH-60R program, an increase in spares funding, program schedule extension, and an increase in production aircraft quantities. A Program Deviation Report and revised Acquisition Program Baseline (APB), which incorporate the additional aircraft, funding increases and schedule delays was approved on March 14, 2002. In addition, the revised Operational Requirements Document (ORD), which includes a revised Initial Operating Capability (IOC) definition and Key Performance Parameters (KPPs), is in the approval cycle.

HQ USAF/XP (DOD Executive Agent for MDS designator program) approved the

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

re-designation of the SH-60R to the MH-60R effective May 25, 2001.

0. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
06M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (AFUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

Pursuant to Title 10 USC, Section 2433, Nunn-McCurdy unit costs are computed on the total Major Defense Acquisition Program (MDAP) --in this case, Multi-Mission Helicopter-60 Romeo (MH-60R). Per DoD policy, programmatic increases (e.g. aircraft quantity increases, program schedule extension, addition of Airborne Low Frequency Sonar (ALFS) and Spares associated with program restructure from Remanufacture to New Build Production) are excluded from the unit cost calculations. For MH-60R, the program restructure from Remanufacture to New Build Production is a programmatic impact for unit cost calculations. Excluding the impact of the increase in aircraft quantity from 188 to 243, procurement and integration of Airborne Low Frequency Sonar (ALFS) systems, increase in spares funding, and the change in acquisition strategy from Remanufacture to New Build Production, the MH-60R Program Acquisition Unit Cost (PAUC) increased approximately 19%.

Excluding the impact of the increase in aircraft quantity from 184 to 241, procurement of ALFS, increase in spares funding, and procurement of New Build Production vice Remanufactured aircraft, the Average Procurement Unit Cost (APUC) increased approximately 17%. A Nunn-McCurdy unit cost breach determination was made by SECNAV and Congress was notified on March 21, 2002. The details of the unit cost increase, including and excluding the programmatic

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

impacts, are provided in Section 12 of this SAR.

A new APB to reflect an MH-60R program restructure from Remanufacture to New Build Production was approved on March 14, 2002.

9. (U) <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	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 2003
Complete	JUN 2000	APR 2004	APR 2004
OPEVAL			
Start	SEP 2000	MAY 2004	MAY 2004
Complete	MAR 2001	NOV 2004	NOV 2004
Milestone III	OCT 2001	MAR 2005	MAR 2005
Airborne Low Frequency Sona	r		
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 (Ch-1)
Complete	JUN 1998	N/A	N/A (Ch-1)
OPEVAL			
Start	JUL 1998	N/A	N/A (Ch-1)
Complete	SEP 1998	N/A	N/A (Ch-1)
Milestone III	JAN 1999	N/A	N/A (Ch-1)
Production Contract Award	MAR 1999	N/A	N/A (Ch-1)
Initial Operating Capabilit	y MAR 2001	SEP 2005	SEP 2005

b. Current Change Explanations - (U) Current Estimates are based on a revised APB that was approved on March 14, 2002.

Milestones	From	
Airborne Low Frequency Sonar:		
TECHEVAL Start	Sep 2002	N/A
TECHEVAL Complete	Jan 2003	N/A
OPEVAL Start	Mar 2003	N/A
OPEVAL Complete	Sep 2003	N/A
Milestone III	Jan 2004	N/A
Production Contract Award	Feb 2004	N/A

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

(Ch-1)- The Airborne Low Frequency Sonar (ALFS) milestones have been integrated into the MH-60R approved APB program milestones and have been deleted as individual milestones from the Current Estimate Milestone schedule.

10. (U) Performance Characteristics:

a. Performance --

Maximum Operating	Development Estimate (SAR) 5	A Prog <u>Obi/</u> 5	pproved ram (APB) <u>Threshold</u> / 5	Demon- strated <u>Perf</u> TBD	Current <u>Estimat</u> 5	e
Mission Duration (ASW)	3.3	2.0	/ 1.25	TBD	1.83	(Ch-1)
(hrs) Mission Duration (ASUW) (hrs)	3.5	125	/ 80	TBD	125	(Ch-2)
Multi-Mode Radar Range to Detect a 10000 Sq Meter	(b)(1)	1		TBD	b)(1)	
Range to Detect a	(b)(1)	N/A	/ N/A	TBD		
0.5 Sq Meter Target Using ISAR Classify a Surface Combatant at a percentage of the Target's Maximum Detectable Range		(b)(1)		TBD		
Measures				TRD		1Ch-31
Bandwidth (GHz)				TBD		ICh-37
Ability to Detect a Threat Emitter X times Detection Range of the Threat Radar		N/A	/ N/A -	TBD		
Reliability and						
Maintainability MFHBCF (ASW) (hrs) MFHBCF (ASUW)(hrs) Acoustic System	35.7 43.9	35.7 43.9	/ 14.8 / 21.8	TBD TBD	14.8 21.8	

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

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Sonobuoys: Maximum AOU with a 75% Probability of	Development <u>Estimate (SAR)</u> 1000	A Prog <u>Obi/</u> 1000	pproved ram (APB) <u>Threshold</u> / 300	Demon- strated <u>Perf</u> TBD	Current Estimate 300	2
Detection for a Nuclear Subsurface Target (sqmn) Sonobuoys & ALFS: Maximum AOU with a 90% Probability of	(b)(1)			TBD	(b)(1)	
Detection for a						
Subsurface Target						
(sqnm)						
Sopar						
Operating Frequency (Khz)	<5	N/A	/ N/A	TBD	<5	
Maximum System	550	N/A	/ N/A	TBD	550	
Weight	(b)(1)				(h)(1)	
Source Level (db)		N/A	/ N/A	TBD		
Length (sec) (minimum duty cycle 6.7%)		N/A	7 N/A	IBD		
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 (sqmn)using AQS-22 ALFS only	N/A	1000	/ 500	TBD	500	(Ch-4)
Interoperability	N/A	All IE	/ IERs	.cal TBD	Critica IERs	1 (Cn-4)

(U) Note: Mission Duration (ASUW) definition was changed from hours to Nautical Miles (NM) in the approved APB.

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MH-60R, December 31, 2001

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

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b. Current Change Explanations --(U) (Ch-1) - Mission Duration (ASW) changed due to revised definiton in the Operational Requirements Document (ORD) and approved Acquisition Program Baseline (APB) excludes transit time. The revised estimate reflects this change in definiton.

(Ch-2) Mission Duration (ASUW) changed due to revised definition in the ORD and approved APB changed from Hours to Nautical Miles (NM). The revised estimate reflects this change in definition.

(Ch-3) Detectable Frequency Bandwith changed due to threshold value being revised in the ORD and approved APB.

(Ch-4) ALFS Only and Interoperability parameters were added in the revised ORD and the approved APB.

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

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	508.4	1117.5	1099.8
	Procurement	3512.1	6073.4	6056.4
	Airframe/CFE	(2119.0)		(4065.0)
	GFE	(435.7)		(918.7)
	Nonrecurring flyaway	(150.6)		(115.8)
	ECOs			(111.4)
	Total Flyaway	(2705.3)		(5210.9)
	Pubs	(40.0)		(34.4)
	Wcapon System	(5.6)		(17.7)
	Field Activities	(165.5)		(163.4)
	ILS/LSA/MES	(79.2)		(64.5)
	Total Other Wpn Sys	(290.3)		(280.0)
	Peculiar Support	(238.9)		(366.5)
	Initial Spares	(277.6)		(199.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1993 Base-Year \$	4020.5	7190.9	7156.2
	Escalation	1615.9	2400.9	2240.7
	Development (RDT&E)	(40.3)	(99.5)	(106.9)
	Procurement	(1575.6)	(2301.4)	(2133.8)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	_(0.0)
	Total Then Year \$	5636.4	9591.8	9396.9

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

b. (U) Quantity	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	0	2	2
Procurement	<u>_188</u>	_241	241
Total	188	243	243

Note: Excludes 2 RDT&E prototypes from the SAR Baseline and 0 from the Current Estimate that are not considered fully configured.

(U) The Low Rate Initial Production (LRIP) quantity is currently 11 which is less than 10% of the total procurement. The restructured program, presented to ASN(RDA) in November of 2001, changed the production profile and LRIP quantities. LRIP I quantities were reduced by two aircraft.

c. (U) Foreign Military Sales --None.

d. (U) Nuclear Costs --

None.

a .

12. (U) Unit Cost Summary:

а.	<pre>(U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1993 BY\$) (2) Quantity (3) Unit Cost</pre>	UCR Baseline (May 1997 APB)(D 4326.3 188 23.012	Current Estimate ec 2001 SAR) 7156.2 243 29.449	Percent Change +27.97
b.	<pre>(U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1993 BY\$) (2) Quantity (3) Unit Cost</pre>	3512.1 184 19.087	6056.4 241 25.130	+31.66
12c. (U) Unit Cost Summary (Cont'd):

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			UCR	Cur	rent	
			Baseline	Esti	nate	Percent
		(May	1997 APB)	(Dec 2001	SAR)	Change
	c. (U) Prog. Acq. Unit Cost (PAUC)					
	(1) Cost (TY\$)		5978.0	93	96.9	
	(2) Unit Cost		31.798	38	. 670	+21.61
	d. (U) Avg. Proc. Unit Cost (APUC)					
	(1) Cost (TYS)		5087.7	81	90.2	
	(2) Unit Cost		27.651	33	. 984	+22.90
e.	(U) Changes from Previous SAR (SEP20	001}	Dol	lars/Qty	Per	rcent
	(1) PAUC (BY\$)			10.709	+5	57.14
	(2) APUC (BY\$)			9.770	+6	63.61
	(3) PAUC Quantity			12	-	+5.19
	(4) PAUC (TY\$)			14.290	+5	58.61
	(5) APUC (TY\$)			14.024	+7	70.26
f.	(U) Initial SAR Information					
	Initial SAR Date (DEC1994):					
	(1) Program Acquisition Cost (BYS	\$}		4020.5		
	(2) Program Acquisition Cost (TYS	5)		5636.4		

g. (U) Unit Cost PAUC Changes --The PAUC (BY\$) increased from \$23.012 (Baseline) to \$29.592 (approved APB). The total percentage change is 29%. The PAUC in the approved APB, dated March 14, 2002, is based on the MH-60R newly restructured program. The revised PAUC reflects an increase in aircraft quantity from 188 to 243, procurement and integration of Airborne Low Frequency Sonar (ALFS) systems, increase in spares funding, and the change in acquisition strategy from Remanufacture to New Build Production.

Delta: 29% Quantity: 243 (vice 180) POR: 23.012 Proposed: 29.592

Program Change Break	out %Change	BY93 \$M Unit Cost	BY \$M (FY93)
FY97 Baseline		23.012	4326.3
Qty Increase	-88	21.182	820.9
Execution of Reman	14.5%	24.256	747.0
Schedule Extension	(19.38) 4.8%	25.419	282.7
ALFS	6%	26.982	379.8
Spares	28	27.353	90.0
Build New	10%	29.592	544.2
			7190.9

(U) Unit Cost APUC Changes --

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

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The APUC (BY\$) increased from \$19.087 (Baseline) to \$25.201 (approved APB). The total percentage change is 32%. The APUC in the approved APB, dated March 14, 2002, is based on the MH-60R newly restructured program. The APUC change is due to an increase in aircraft quantity from 184 to 241, procurement of ALFS, increase in spares funding, and procurement of newly manufactured vice remanufactured aircraft.

Delta: 32% Quantity: 241 (vice 184) POR: 19.087 Proposed: 25.201

Program Change Breakout:	*Change	BY93 (\$M) Unit Cost	by \$m (fy93)
FY97 Baseline		19.087	3512.1
Qty Increase	-68	17.979	820.9
Execution of Reman	17.2%	21.079	747.0
ALFS	78	22.569	359.2
Spares	38	22.943	90.0
Build New	11.0%	25.201	544.2
			6073.4

h. (U) Impact of Perf or Sched Changes --Schedule Change Impacts:
-Delay of LRIP II deliveries until FY05; three (3) year slip
-Delay of completion of LRIP I First Delivery, TECHEVAL, OPEVAL, MILESTONE III, AND IOC.
-ALL schedule slips identified are in excess of six months and are included in the program restructure.

Performance Change Impacts: N/A

- i. (U) Program Management & Control --Program Manager - Capt. William Shannon Dep. Program Manager - Mr. Ken Caniglia
- j. (U) Cost Control Actions ---EVM work packages shifted from Level Of Effort (LOE) to discrete task. -Contracts converted from Cost-Plus-Fixed-Fee to Cost-Plus-Award-Fee for the EMD II replan effort. -Integrated Master Schedule put into place -Planned vs. Actual Metrics established -Lockheed Martin meeting software release schedule -System specification aligned with contract & ORD -Dual Prime contractors shift to Weapon System Integration Team (WSIT) approach -Logistics support and Reliability and Maintainability (R&M) emphasis

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

increased

k. (U) Contract Information (In Millions of Then-Year Dollars) --

- (U) (1) Contractor(s): Lockheed Martin
 (2) Contract Title: Development (EMD II)
 - (3) Contract Number: N00019-93-C-0196

(4) Actual Cost of Work Performed (ACWP) to date: 33.5

(5) Percent contract completed (BCWP/target cost): 0.23

(6) Variances:

	Cost Var	riance	Schedule Var	riance	
	(\$/8))	(\$/%)		
Baseline Report	\$0.0/	0.00	\$-3.4/	-0.19	
Previous SAR	\$-17.3/	-0.50	\$-8.5/	-0.23	
Current Values	\$-17.3/	-0.50	\$-8.5/	-0.23	
Change from the Baseline Report	\$-17.3/	-0.50	\$-5.1/	-0.04	
Change from the Previous SAR	\$0.0/	0.00	\$0.0/	0.00	

(U) Explanation of Variances --

CV = -\$17.3M Multi-Mission Helicopter Common Cockpit proved to be less mature than expected and the resolution of Problem Trouble Reports (PTR)/Software Trouble Reports (STR) took more efforts and resources than planned. Multi-Mode Radar (MMR) contributed to the cost overrun, due to material conditions, increase in flight test requirements, and late deliveries of hardware. Software incurred higher costs due to ineffiencies experienced during AOP release 10.x development and high maintenance cost of release 7.x.

SV = -\$5.1M The program experienced schedule delays, due to Common Cockpit immaturity issues, increased software development efforts, and an increase in test requirements for MMR and ESM.

(U) Impact of Variances on Contract --Contract is presently undergoing a restructure to address program risks and issues, and recommendations identified during an Acquisition Baseline Review (ABR) and Program Manager's Advisory Group (PMAG) review of the contract.

(U) Impact of Variances on Unit Costs --The program received an Acquisition Decision Memorandum (ADM) and revised Acquisition Program Baseline (APB) approving the restructured program and updated unit costs. PB03 identified sufficient funds to support the restructured program including the necessary funding for the contract rebaseline.

- (U) (1) Contractor(s): Sikorsky Aircraft Corp.
 - (2) Contract Title: Test Articles
 - (3) Contract Number: N00019-99-C-1069
 - (4) Actual Cost of Work Performed (ACWP) to date: 81.7
 - (5) Percent contract completed (BCWP/target cost): 0.64

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

(6) Variances:

	Cost Vari	iance	Schedule Vari	ance
	(\$/%)		(\$/%)	
Baseline Report	\$-0.2/	-0.10	\$0.1/	+0.10
Previous SAR	\$-7.2/	-0.11	\$-2.7/	-0.04
Current Values	\$-8.8/	-0.12	\$-3.2/	-0.04
Change from the Baseline Report	\$-8.6/	-0.02	\$-3.3/	-0.14
Change from the Previous SAR	\$-1.6/	-0.01	\$~0.5/	0.00

(U) Explanation of Variances --

CV = -58.6M The unfavorable CV is associated with ineffiencies in the remanufacture process. Due to the aircraft arriving in poor condition for induction into the remanufacturing process, the original contract underestimated the amount of manufacturing work required for production modifications and harness rework. The variance is also associated with the availability and condition of GFE parts.

SV = -\$3.3M The unfavorable cumlative is driven by unavailability of remanufactured and other Contractor Furnished Equipment (CFE) parts for major and final assembly.

(U) Impact of Variances on Contract --Based on the delays identified in this contract, LRIP II and future procurements will be New Build Production.

(U) Impact of Variances on Unit Costs --The program received an Acquisition Decision Memorandum (ADM) and revised Acquisition Program Baseline (APB) approving the restructured program, including a revision in acquisition strategy from Remanufacture to New Build Production, and updated unit costs. PB03 identified sufficient funds to support New Build Production for FY04 (LRIP II) and beyond.

(U) (1) Contractor(s): Lockheed Martin

- (2) Contract Title: Production (LRIP 1)
- (3) Contract Number: N00019-00-C-0249

(4) Actual Cost of Work Performed (ACWP) to date: 50.4

(5) Percent contract completed (BCWP/target cost): 0.60

(6) Variances:

(0) variances.				
	Cost Var	iance	Schedule Var	iance
	(\$/%)		(\$/%)	
Baseline Report	\$1.2/	+0.09	\$3.3/	+0.34
Previous SAR	\$1.8/	+0.04	\$-1.0/	-0.02
Current Values	\$1.9/	+0.04	\$ - 1.3/	-0.02
Change from the Baseline Report	\$0.7/	-0.05	\$-4.6/	-0.36
Change from the Previous SAR	\$0.1/	0.00	\$-0.3/	0.00

(U) Explanation of Variances -CV = \$.7M Underruns in several Level of Effort (LOE) activities have required

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

less effort than anticipated or have started later than planned.

SV = -\$4.6M Variance increased because of delays in Multi-Function Display (MFD) deliveries, late deliveries of ESM hardware, delayed Sensor Operator Consoles production due to design changes, late delivery of GFE aircraft, and a rephasing of the MMR subcontractor's baseline

(U) Impact of Variances on Contract --Contractor is preparing a proposal addressing the cost impact of GFE aircraft delivery delays.

(U) Impact of Variances on Unit Costs --The program received an Acquisition Decision memorandum (ADM) and revised Acquisition Program baseline (APB) approving the restructured program and updated unit costs. PB03 identified sufficient funds to support the restructured program including the necessary funding for the contract rebaseline.

(U) (1) Contractor(s): Sikorsky Aircraft Corp.

- (2) Contract Title: Production (LRIP 1)
- (3) Contract Number: N00019-99-C-1069
- (4) Actual Cost of Work Performed (ACWP) to date: 81.7
- (5) Percent contract completed (BCWP/target cost): 0.64
- (6) Variances:

	Cost Variance		Schedule Variance	
	(\$/%)		(\$/%)	
Baseline Report	\$-0.2/	-0.10	\$0.1/	+0.1 0
Previous SAR	\$-7.2/	-0.11	\$-2.7/	-0.04
Current Values	\$-8.8/	-0.12	\$-3.2/	-0.04
Change from the Baseline Report	\$-8.6/	-0.02	\$-3.3/	-0.14
Change from the Previous SAR	\$-1.6/	-0.01	\$~0.5/	0.00

(U) Explanation of Variances ---

CV = -58.6M The unfavorable CV is associated with ineffiencies in the remanufacture process. Due to the aircraft arriving in poor condition for induction into the remanufacturing process, the original contract underestimated the amount of manufacturing work required for production modifications and harness rework. The variance is also associated with the availability and condition of GFE parts.

SV = -\$3.3M The unfavorable cumlative is driven by unavailability of remanufactured and other Contractor Furnished Equipment (CFE) parts for major and final assembly.

(U) Impact of Variances on Contract --Based on the delays identified in this contract, LRIP II and future procurements will be New Build Production.

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

(U) Impact of Variances on Unit Costs --The program received an Acquisition Decision Memorandum (ADM) and revised Acquisition Program Baseline (APB) approving the restructured program, including a revision in acquisition strategy from Remanufacture to New Build Production, and updated unit costs. PB03 identified sufficient funds to support New Build Production for FY04 (LRIP II) and beyond.

1. (U) General Comments ---

Pursuant to Title 10 USC, Section 2433, Nunn-McCurdy unit costs are computed on the total Major Defense Acquisition Program (MDAP) --in this case, Multi-Mission Helicopter-60 Romeo (MH-60R). Per DoD policy, programmatic increases (e.g. aircraft quantity increases, program schedule extension, addition of Airborne Low Frequency Sonar (ALFS) and Spares associated with program restructure from Remanufacture to New Build Production) are excluded from the unit cost calculations. For MH-60R, the program restructure from Remanufacture to New Build Production is a programmatic impact for unit cost calculations. Excluding the impact of the increase in aircraft quantity from 188 to 243, procurement and integration of Airborne Low Frequency Sonar (ALFS) systems, increase in spares funding, and the change in acquisition strategy from Remanufacture to New Build Production, the MH-60R Program Acquisition Unit Cost (PAUC) increased approximately 19%.

Excluding the impact of the increase in aircraft quantity from 184 to 241, procurement of ALFS, increase in spares funding, and procurement of New Build Production vice Remanufactured aircraft, the Average Procurement Unit Cost (APUC) increased approximately 17%. A Nunn-McCurdy unit cost breach determination was made by SECNAV and Congress was notified on March 21, 2002. The details of the unit cost increase, including and excluding the programmatic impacts, are provided in Section 12 of this SAR.

A new APB to reflect an MH-60R program restructure from Remanufacture to New Build Production was approved on March 14, 2002.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	548.7	5087.7	-	5636.4
Previous Changes:				
Economic	-24.2	-482.9	-	-507.1
Quantity	+153.0	+532.8	-	+685.B
Schedule	-	-63.0	-	-63.0
Engineering	+50.0	-485.0	-	-435.0
Estimating	+262.0	+496.0	-	+758.0
Other		-	-	-
Support	+70.2	-513.9	-	-443.7
Subtotal	+511.0	-516.0	-	-5.0
Current Changes:				
Economic	+0.2	-58.0	-	-57.8
Quantity		+242.2	-	+242.2
Schedule	-	+499.7	-	+499.7
Engineering	-	+434.6	-	+434.6
Estimating	+146.8	+2000.7	-	+2147.5
Other			-	-
Support	-	+499.3	-	+499.3
Subtotal	+147.0	+3618.5		+3765.5
Total Changes	+658.0	+3102.5	-	+3760.5
Current Estimate	1206.7	8190.2	-	9396.9

(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	+393.9	-	+527.2
Schedule	- 1	-120.2	-	-120.2
Engineering	+45.4	-362.0	-	-316.6
Estimating	+229.7	+477.2	-	+706.9
Other	-	-	-	-
Support	+60.4	-336.5	-	-276.1
Subtotal	+468.8	+52.4	-	+521.2
Current Changes:				
Quantity	-	+161.8	-	+161.8
Schedule	-	+173.2	-	+173.2
Engineering		+319.6	-	+319.6
Estimating	+122.6	+1462.1	-	+1584.7
Other	-	-		
Support	-	+375.2	-	+375.2
Subtotal	+122.6	+2491.9	-	+2614.5
Total Changes	+591.4	+2544.3	_	+3135.7
Current Estimate	1099.8	6056.4		7156.2

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

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	b. (U) Current Change Explanations		
	· · · · · · · · · · · · · · · · · · ·	(Dollars i	n Millions)
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	Rovised escalation indices (Economic)	N/A	+0.2
	Adjustment for Current and Prior Inflation	-0.2	-0.2
	(Estimating)		
	Revised Program Cost Estimate (Estimating)	-8.4	-9.2
	Realignment of funds from Procurement to	+131.2	+156.2
	RDT&E for Restructured Program (Estimating)		
	RDT&E Subtotal	+122.6	+147.0
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-58.0
	Total Quantity Variance associated with	+141.3	+211.6
	increase of 12 Aircraft.	.1.61 0	
	Quantity increase of 12 Aircraft from 229 to	+101.8	+242.2
	Allocation to Schedule variance resulting from	-7.7	-53
	Quantity Change. (OR) (Schedule)	/	5.5
	Allocation to Engineering variance resulting	-23.1	-40.6
	from Quantity Change. (QR) (Engineering)		
	Allocation to Estimating variance resulting	+10.3	+15.3
	from Quantity Change. (QR) (Estimating)		
	Stretchout of annual procurement rate to	0.0	+283.1
	accomodate 4 year program extension from 2013	1	
	to 2015. (Schedule)		
	Additional Schedule variance due to changes	+180.9	+221.9
	in procurement rate across all fiscal years		
	Addition of Dirborne Low Fromancy Sonar	+342 7	+175 2
	(ALES) (Engineering)	TJ42.7	79/J.Z
	Revised Estimate from Remanufacture to New	+1451.8	+1985.4
	Build Acquisition Strategy. (Estimating)		
	Revised estimate for changes in Initial	+146.5	+186.1
	Spares due to New Build Acquisition Strategy		
	(Support)		
	Revised estimate for changes in Peculiar	+125.5	+167.1
	Support due to New Build Acquisition		
	Strategy.		
	(Support)	120 0	
	New Build Acquisition Strategy (Support)	+20.0	TZ1,1
	Revised estimate for changes in Weapon	-18.5	-24 3
	Systems due to New Build Acquisition	20.0	E-11-U
	Strategy. (Support)		

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

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b. (U) Current Change Explanations --(Dollars in Millions) <u>Base-Year Then-Year</u> +101.7 +142.7 Activties (Engineering and Logistics) due to New Build Acquisition Strategy. (Support)

Procurement Subtotal

+2491.9 +3618.5

QR = Quantity related changes.

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

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

Current	SAR	Basel	ine	to	Current	Estimate

PAUC	Changes								PAUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.98	-2.32	-2.98	+1.80	-0.002	+11.96		+0.229	+8.69	38.67

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

Current SAR Baseline to Current Estimate

PUC	Changes					PUC			
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.06	-2.24	-2.74	+1.81	-0.209	+10.36		-0.061	+6.92	33.98

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JUL 1993	N/A	JUL 1993
Milestone III	N/A	OCT 2001	N/A	MAR 2005
IOC	N/A	MAR 2001	N/A	SEP 2005
Total Cost	N/A	5636.4	N/A	9396.9
Total Quantity	N/A	198	N/A	243
Prog Acg Unit Cost	N/A	30.0	N/A	38.7

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

a. RDT&E (U) <u>Development (EMD II):</u>	÷	Initial C <u>Target</u> C	Contract Pr Ceiling	ice <u>Otv</u>	
Lockheed Martin, Owego, NY N00019-93-C-0196, CPFF Award: June 10, 1999 Definitized: N/A			\$154.1	N/A	0
Curren	t Contract Pric	e	Estimated Pri	ce At Comp	letion
<u>Target</u> \$169.6	<u>Ceiling</u> N/A	Oty 2	Contractor \$191.0	Program \$1	Manager 191.0
			Cost Variance	Schedule \	Variance

	WART ATTAIN	MARCALLE YOLLOUDE
Previous Cumulative Variances	\$-17.3	\$-8.5
Cumulative Variances To Date (07/13/01)	\$-17.3	\$~8.5
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) The schedule variance shown is the result of immature software development which is taking more time than planned to correct. Additionally, the cost variance is being driven by the above software development as well as subcontractor material overruns.

(U) Contract Comments: CPR data for the EMD II Replan is not currently available. Reporting will begin upon completion of the rebaseline changes, and the cost and work performance will be addressed in the next SAR.

(U) <u>Test A</u>	rticles:		Initial (<u>Target</u> (Contract Pr <u>Ceiling</u>	ice <u>Otv</u>
Sikorsky Airc N00019-99-C-1	rait Corp., St. .069, CPIF	ratiord CT	\$63.9	N/A	4
Award: July 1	1, 1999		,		
Dcfinitized:	December 30, 1	.999			
Current	Contract Pric	:e	Estimated Pr	ice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Program	Manager
\$114.2	N/A	4	\$131.0	\$1	31.8
			<u>Cost Variance</u>	Schedule V	<u>ariance</u>
Previous Cumu	lative Varianc	es	ş-4.2	ş-5.	4
Cumulative Va	riances To Dat	e (12/31/01)	<u> \$-8.8</u>	<u>\$-3.</u>	2
Net Chang	e		\$-4,6	\$2.	2

Explanation of Change:

Net Change

(U) The Cost and Schedule variances have been caused by poor performance on machined parts, due to high setup hours and small lot sizes or single part setups; underestimation of manufacturing work for production modifications, and additional engineering effort to incorporate revisions into contract

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

drawing packages; the availability of serviceable GFE parts when required; induction of fleet aircraft into the remanufature program that were in worse-than-anticipated condition, and manufacturing delays and unbudgeted upper cabin structure pictures for manufacturing which adversely affected Tooling cost and schedule performance.

(U) Contract Comments:

Two test articles are funded with FY99 RDT&E and the second two test articles are funded with FY00 procurement funding.

(U) <u>Production (LRIP 1):</u>		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
N00019-00-C-0249, CPIF Award: March 14, 2000		\$88.1	N/A	7
Definitized: August 8, 2000				
Current Contract Price Target <u>Ceiling</u>	Oty	Estimated Pr <u>Contractor</u>	rice At Comp <u>Program</u>	letion Manager
\$88.1 N/A	7	\$88.1	Ş	88.1
		Cost Variance	<u>e Schedule V</u>	<u>ariance</u>
Previous Cumulative Variances		\$1.4	\$-1.	1
Cumulative Variances To Date Net Change		<u>\$1.9</u> \$0.5	<u> </u>	<u>3</u> 2

Explanation of Change:

(U) Cost variance improved slightly because of some LOE activities costing less than the amount budgeted. Schedule variance deteriorated because Radar deliveries have been delayed due to TWTA production problems.

(U) Contract Comments: The contract includes Mission Avionics for two test articles and the first LRIP Lot 1 aircraft.

Note: Contract number change from N00019-99-C-0249 to N00019-00-C-0249 to correct error in last SAR submission (Sept 01).

Note: Initial Contract Price and Current Contract Target Price were incorrectly reported as \$88.9 in the last SAR submission and has been corrected to reflect \$88.1, the correct Target Price.

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

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<pre>b. Procurement (U) Production (LRIP 1): </pre>	Initial <u>Target</u>	Contract : <u>Ceiling</u>	Price <u>Otv</u>
N00019-99-C-1069, CPIF Award: April 25, 2000 Definitized: N/A	N/A	N/A	5
Current Contract Price <u>Target Ceiling Otv</u> N/A N/A 5	Estimated Pr <u>Contractor</u> N/A	rice At Cor <u>Progr</u> i	mpletion <u>am Manager</u> N/A

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$-4.2	\$-5.4
Cumulative Variances To Date (12/31/01)	\$-8.8	\$-3.2
Net Change	\$-4.6	\$2.2

Explanation of Change:

(U) See Test Articles Section of contract no. N00019-99-C-1069.

(U) Contract Comments:

LRIP I and the Test Articles are part of the same contract.

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

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

Appropriation	Prior <u>Years</u> (FY90-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	<u>Total</u>
RDT&E	908.2	135.4	89.0	74.1	1206.7
Procurement	289.3	9.9	116.2	7774.8	8190.2
MILCON	-	-	-	~	-
OGM	-	-	-	-	-
Total	1197.5	145.3	205.2	7848.9	9396.9

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

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b. Annual Summary -- Multi-Mission Helicopter

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

		Flyaway	Flyaway		
		FY 1993	FY 1993	Total	Total
Fiscal	1	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1990	<u> </u>			11.0	10.2
1991				29.6	28.5
1992				53.5	53.0
1993				71.7	72.7
1994				68.4	70.7
1995				66.5	70.0
1996				60.8	65.1
1997				50.9	55.2
1998				78.0	85.3
1999				188.9	209.0
2000				98.1	110.1
2001				68.6	78.4
2002				116.7	135.4
2003				75.6	89.0
2004				43.6	52.2
2005				17.3	21.1
2006				0.3	0.4
2007				0.3	0.4
Subtotal	2			1099.8	1206.7

Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		
		FY 1993	FY 1993	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Oty	Nonrec	Rec _	Base-Year \$	Then-Year \$
2000	7	12.2	197.5	206.8	235.6
2001		30.7		46.4	53.7
2002		1.4		8.4	9.9
2003		28.1		97.2	116.2
2004	6	43.4	235.7	371.8	452.6
2005	10		251.3	372.7	462.2
2006	10		251.8	365.8	462.3
2007	10		279.7	366.9	472.5
2008	15		370.5	438.8	575.8
2009	21		479.0	519.8	695.1
2010	27		546.8	566.7	772.3
2011	27		542.8	562.3	780.8
2012	27		539.5	558.5	790.3
2013	27		537.1	554.9	800.1
2014	27		534.9	552.5	811.7
2015	27		328.5	447.5	670.0

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

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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 \$
2016				11.0	16.5
2017				8.4	12.6
Subtotal	241	115.8	5095.1	6056.4	8190.2

(U) Costs reported here reflect the FY03 President's Budget.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	243	115.8	5095.1	7156.2	9396.9

17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	2	2
	Procurement	2	2

(U) Percent Total Program Quantities Delivered: 1.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1053.4

(U) Percent Total Program Expended: 11.2%

(U) Four (4) Air Vehicles have been DD-250'd from Sikorsky Aircraft Corporation (SAC) to the government. The Air Vehicles were subsequently provided as Government Furnished Equipment (GFE) to Lockheed Martin Systems Integration (LMSI) for the installation of mission systems. All four (4) complete MH-60R's will be DD-250'd back to the government in 4th quarter FY02.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The average annual cost is based on 13 aircraft per squadron operating until FY31.

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

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b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

	Multi-Mission Helicopte	r SH-60B
	Avg Annual Cost	Avg Annual Cost Per
Cost Element	MH-60R per Squadron	Squadron
Mission Pay & Allowances	11.6	10.9
Unit Level Consumption	10.7	10.9
Intermediate Maintenance	1.5	1.7
Depot Maintenance	1.3	2.2
Contractor Support	0.0	0.0
Sustaining Support	3.9	6.2
Indirect Costs	4.9	6.1
Total	33.9	38.0

Total O&S Cost	Multi-Mission Helicopte	SH-60B
BY\$ (In Millions)	1453.3	1623.8
TY\$ (In Millions)	2778.2	3116.4

Report Creation Date: 03/27/2002 1:43:09 PM

N-8 00(x) *** SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: DD(X) Destroyer AS OF DATE: December 31, 2001 INDEX PAGE SUBJECT Cover Sheet Information 1 2 Mission and Description 2 Executive Summary Threshold Breaches 4 Schedule 5 5 Performance Characteristics Total Program Cost and Quantity 8

1. (U) Designation and Nomenclature (Popular Name): DD(X) (formerly DD 21 LAND ATTACK DESTROYER)

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2. (U) DoD Component: Navy

Unit Cost and Other History

Operating and Support Costs

Delivery/Expenditure Information

Unit Cost Summary Cost Variance Analysis

Contract Information Program Funding Summary

3. (U) Responsible Office and Telephone Number: PEO SURFACE STRIKE (PMS 500) CAPT C. H. Goddard 1333 Isaac Hull Ave. S.E. Assigned: June 22, Washington, DC 20376

Assigned: June 22, 2001 DSN 326-2641; COMM (202) 781-2532 Goddardch@Navsea.Navy.mil

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(U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0603513N Project 32465, 32467, 32468, 32469, 32470, 32471 (U) PE 0604300N Project 32464, 32465, 32466, 32735 (U) PE 0604755N Project 32735

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DD(X) Destroyer, December 31, 2001

5. (U) <u>References</u>:

SAR Baseline (Planning Estimate): (U) DAE Approved Acquisition Program Baseline (APB) dated January 12, 1998.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 11, 1999.

6. (U) Mission and Description:

(U) Future Surface Combatants must support National Military Strategy, Joint Vision 2010, Navy Operational Concept, Operational Maneuver From The Sea and the evolving Surface Warfare Vision. The mission of the ship is to provide credible independent forward presence and deterrence and operate as an integral part of Naval, Joint or Combined Maritime Forces. It will provide an advanced level of land attack in support of the ground campaign and contribute to Naval, Joint and Combined battlespace dominance in littoral operations. The ship will incorporate signature reduction to operate in all threat environments and will have seamless Joint interoperability to integrate all source information for battlespace awareness and weapons direction.

7. (U) Executive Summary:

(U) In a Memorandum signed by Assistant Secretary of the Navy (Research, Development and Acquisition) dated November 13, 2001, and approved by OUSD(AT&L), DD 21 was restructured to focus near-term on the transformational technologies that will enable the Navy to become a complementary balanced force. The Navy plans to develop a family of multi-mission ships, including a cruiser and a Littoral Combat Ship to meet future warfighting requirements. Specifically, the November 13, 2001 memo cancelled the DD 21 solicitation and redesignated the program as DD(X). The restructured acquisition strategy tasks the Navy to conduct a Spiral Design Review to revalidate ORD requirements prior to Milestone B, and eliminates the options for the construction of the first four ships. Furthermore, the detail design and construction effort of the lead ship will be RDT&E funded with a competitive award in the FY05 timeframe. A new RFP was released in November 2001 and industry proposals were received on February 4, 2002. The Navy anticipates an April 2002 downselect.

PEO DD 21 was established on April 6, 1998 and assigned the responsibility for the development of the DD 21 class of surface combatants and the major technology development and risk reduction efforts. On January 20, 2000 PEO DD 21 was renamed PEO Surface Strike (PEO(S)) and was expanded to include Naval Surface Fire Support (NSFS) and Advanced Land Attack Missile (ALAM).

The Navy awarded a \$70 million Agreement under Section 845/804 (Other Transaction Authority established by the National Defense Authorization Act of FY94/FY97, P.L. 103-160/P.L. 104-201) in August 1998 to begin Phase I, DD 21 System Concept Development. In Contract Phase I, the two competing DD 21 industry teams (Ingalls Shipbuilding Inc. (ISI)/Raytheon Systems Corp. (Gold Team) and Bath Iron Works (BIW)/Lockheed Martin Corp. (Blue Team)) proposed DD 21 system concept designs to meet the Navy's stated operational requirements,

*** UNCLASSIFIED *** DD(X) Destroyer, December 31, 2001

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

as well as cost, schedule and performance objectives. In November 1999 the Navy awarded Phase II of the 845/804 Agreement to the DD 21 industry teams for \$238M. This was subsequently modified to continue design, development and technical risk mitigation for a total value of \$516.3M. This includes \$153.4M for FY00, \$303.9M for FY01 and \$59.0M for FY02.

On June 2, 1999 the Navy awarded the Multi-Function Radar (MFR) 845/804 Agreement to Raytheon Systems Corp. for development and construction of an Engineering Development Model (EDM).

At the conclusion of Agreement Phase I, DD 21 industry teams narrowed their designs to a single concept. At the October 1999 System Requirements Review (SRR), the DD 21 industry teams provided their initial cost estimates based on their designs. The cost estimates presented by each team at the SRRs were greater than the DD 21 RDT&E funding in the Future Years Defense Plan (FYDP). This data was thoroughly reviewed by the DD 21 cost and technical engineering team in November, and presented to the Program Sponsor. As a result, the FY2001 President's Budget submission reflected a \$2.0B increase to DD 21 RDT&E funding. The FY2001 President's Budget Submission also reflected a rescheduling of the DD 21 first ship award from FY2004 to FY2005, as part of the Navy's overall shipbuilding plan. These changes, as reflected in the FY2001 President's Budget Submission, created cost and schedule breaches to the DD 21 APB. At a DD 21 Defense Acquisition Executive (DAE) Review on December 20, 2000, it was agreed to submit a revised DD 21 APB 30 days after contract award.

The DD 21 RFP was released to the Industry teams on September 13, 2000. In a letter from the Under Secretary of the Navy dated May 31, 2001, the Program Executive Officer for Surface Strike (PEO(S)) was directed to hold the DD 21 source selection in abeyance pending the results of the Secretary of Defense's Strategic Review, the Quadrennial Defense Review (QDR) and the OUSD(AT&L) Shipbuilding Study that was reviewing Navy Shipbuilding issues at large. The letter also directed the program to continue the two competing teams' development efforts for critical DD 21 technologies. In accordance with the letter, Phase II efforts were continued into FY02.

Following the restructure of the program in early November 2001, the Navy released the DD(X) RFP on November 30, 2001 and industry proposals were received on February 4, 2002. The Navy anticipates an April 2002 downselect, as previously stated.

Limited SAR reporting is permitted for pre-Milestone II programs in accordance with Title 10, United States Code, Section 2432, "SARs."

DD(X) Destroyer, December 31, 2001

8. (U) Threshold Breaches:

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

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

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

As reported in the December 1999 SAR, a cost and schedule breach existed. The Navy forwarded an updated APB to OUSD(AT&L), who agreed to extend the date of the revised APB to 30 days after contract award. Subsequently, the DD 21 program was restructured in November 2001. The restructuring transitioned the DD 21 program to the DD(X) program. A new DD(X) RFP was issued to industry and award is anticipated in April 2002. Outyear funding reflects DD(X) PB03 funding and Milestones beyond 1998 reflect DD(X) Program Milestones.

*** **CECTED** *** DD(X) Destroyer, December 31, 2001

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- 9. (U) Schedule:
 - a. Milestones --

	Flanning	Abbrosed	Current
	Estimate (SAR) Program (APB)	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
Milestone II	JUL 2003	JUL 2003	JUL 2004
Lead Ship Award	OCT 2003	OCT 2003	MAR 2005(Ch-1)
First Ship Delivery	AUG 2007	AUG 2007	JUL 2011(Ch-1)
Initial Operational Capability	AUG 2008	AUG 2008	JUL 2012 (Ch-1)
Milestone III	AUG 2011	AUG 2011	MAR 2014 (Ch-1)

 b. Current Change Explanations - (U) (Ch-1) Changes to the Estimated Milestone dates reflect the DD(X) Acquisition Strategy.

	FROM	TO	
Lead Ship Award	Dec 04	Jul 05	
First Ship Delivery	Dec 09	Jul 11	
Initial Operational Capability	Dec 10	Jul 12	
Milestone III	Aug 12	Mar 14	

Milestones II and III current estimate dates represent Milestones B and C for DD(X).

- 10. (U) Performance Characteristics:
 - a. Performance --



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DD(X) Destroyer, December 31, 2001



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

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DD(X) Destroyer, December 31, 2001

	Planning <u>Estimate (SAR)</u>	A Prog <u>Obj/</u>	pproved ram (APB) <u>Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Vertical launch cell capacity (#)	256	256	7 128	TBD	256
Magazine capacity per tube system	750	750	/ 600	TBD	750
Manning: Number of ship's company personnel (helo det included)	95	95	/ 150	TBD	95
Logistics and Readiness:					
Operational Availability (Ao) for mission critical systems	0.95	0.95	/ 0.90	TBD	.95

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

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(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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DD(X) Destroyer, December 31, 2001

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

		Planning	Approved	Current
а.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	1754.0	2764.2	9313.5
	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	<u>N/A</u>	0.0
	Total FY 1996 Base-Year \$	1754.0	2764.2	9313.5
	Escalation	335.0	428.0	1496.2
	Development (RDT&E)	(335.0)	(428.0)	(1496.2)
	Procurement	(0.0)	(N/A)	(0.0)
	Construction (MILCON)	(0.0)	(N/A)	(0.0)
	Acquisition O&M	(0.0)	<u>(N/A)</u>	(0.0)
	Total Then Year \$	2089.0	3192.2	10809.7

(U) The SAR Planning Estimate was developed at Milestone I in January 1998. The approved APB was signed in March 1999. Since March 1999 several changes occurred within the DD 21 Program, resulting in cost and schedule breaches. The December 1999 SAR reported a Then Year RDT&E Development cost of \$5,219.5M. An updated APB, reflecting program changes since March 1999, was prepared and submitted but never approved, as explained in the Executive Summary and Threshold Breach sections. The current estimate reflects DD(X) PB03 funding.

b. (U) Quantity --

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

DD(X) Destroyer, December 31, 2001

12. (U) Unit Cost Summary:

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

13. (U) Cost Variance Analysis:

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

<u> </u>	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2089.0		-	2089.0
Previous Changes:				
Economic	-124.5	-	-	-124.5
Quantity	~	-	-	-
Schedule	-	-	-	-
Engineering	+1672.3	-	-	+1672.3
Estimating	+1582.7	-	-	+1582.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3130.5	-	-	+3130.5
Current Changes:				
Economic	+20.1	-	-	+20.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3799.0	-	-	+3799.0
Estimating	+1771.1	-	-	+1771.1
Other	-	-	-	-
Support	-		-	-
Subtotal	+5590.2	-	-	+5590.2
Total Changes	+8720.7	-	-	+8720.7
Current Estimate	10809.7	_	-	10809.7

DD(X) Destroyer, December 31, 2001

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

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(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	+1524.4	-	-	+1524.4
Estimating	+1380.3	-	-	+1380.3
Other	-	-	-	-
Support		-	~	-
Subtotal	+2904.7	-	-	+2904.7
Current Changes:				
Quantity	-	~	-	-
Schedule	-	-	-	-
Engineering	+3196.5	-	-	+3196.5
Estimating	+1458.3	-]	-	+1458.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4654.8	-	-	+4654.8
Total Changes	+7559.5	-	_	+7559.5
Current Estimate	9313.5	-	-	9313.5

b. (U) Current Change Explanations --

(Dollars in Millions) <u>Base-Year</u> <u>Then-Year</u>

			THOM TOUL
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+20.1
	Adjustment for Current and Prior Inflation. (Estimating)	-10.9	-11.7
	Addition of FY06 and FY07 in POM-02 (Estimating)	+826.3	+976.4
	Revision of Outyear Estimates (Estimating)	+784.0	+962.1
	Miscellaneous Program Adjustments (Estimating)	-27.5	-31.2
	Congressional Reduction (FY01 -\$17.2M development cost growth, FY02 -\$107.3M for downselect delay) (Estimating)	-113.6	-124.5
	Added funding for Engineering Development Models (EDMs) to support DD(X) Acquisition Strategy (Engineering)	+1076.9	+1250.0
	Added First Ship Construction funded in RDT&E (Engineering)	+2119.6	+2549.0
	RDT&E Subtotal	+4654.8	+5590.2

DD(X) Destroyer, December 31, 2001

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	DEC 1997	N/A	N/A	JAN 1998
Milestone II	JUL 2003	N/A	N/A	JUL 2004
Milestone III	AUG 2011	N/A	N/A	MAR 2014
IOC	AUG 2008	N/A	N/A	JUL 2012
Total Cost	2089.0	N/A	N/A	10809.7
Total Quantity	0	N/A	N/A	0
Prog Acg Unit Cost	0.0	N/A	N/A	0.0

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

a. RDT&E	Initial	Contract	Price
(U) EDM FOR MFR:	<u>Target</u>	<u>Ceilina</u>	<u>Otv</u>
Raytheon Systems Corp., Sudbury MA			
N3999799-3754, OTA	\$140.4	N/A	1
Award: June 9, 1999			
Definitized: June 9, 1999			
Current Contract Price	Estimated P	rice At Co	mpletion

CHITCHE	concrace rire	G	Doctwored LITC(- HC COMPTECTON
Target	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program Manager
\$173.6	N/A	1	\$173.6	\$173.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.3	\$0.8
Cumulative Variances To Date (12/31/01)	<u>\$-0.2</u>	\$-2.5
Net Change	\$0.1	\$-3.3

Explanation of Change:

(U) This agreement incrementally funds the Multi-Function Radar (MFR) for development and construction of an Engineering Development Model (EDM) Prototype.

A new contract baseline was established in August 2001 to address software development issues. This increased the contract target price from \$140.4M to \$173.6M.

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DD(X) Destroyer, December 31, 2001

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

(U) <u>DD 21</u> Bath Iron Wo	. Initial Sys De	esian:	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Oty</u>
N0002498-9-	2300, OTA		\$238.0	N/A	
Award: Novem	uber 23, 1999				
Definitized:	November 23,	1999			
Curren	t Contract Prid	ce	Estimated H	rice At Co	mpletion
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Prog	cam Manager
\$516.3	N/A		\$516.3		\$516.3

Explanation of Change:

None.

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

(U) Contract Comments:

This reflects funding for Agreement Phase II, Initial System Design, for the DD 21 industry team. The difference between the initial contract target and the current contract target is an increase of scope for: Integrated Power Systems Studies, Common Aided Computer Design, Volume Search Radar, Advanced Gun System, Future Naval Capabilities and Permanent Magnet Motor. Additionally, the agreement was continued into FY02 to accommodate the redesignation of the DD 21 program and to continue development of critical path items.

DD(X) Destroyer, December 31, 2001

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

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

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-12)	<u>Total</u>
RDT&E	1111.4	513.8	960.4	8224.1	10809.7
Procurement	-	-	_		
MILCON	-	-	-	-	laterat
O&M	_	-	_	_	_
Total	1111.4	513.8	960.4	8224.1	10809.7

(U) The RDT&E total contains 2.549B (FY2005 - FY2011) for DD(X) detail design and construction of the first ship.

b. Annual Summary -- DD 21 Destroyer

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

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				7.0	7.0
1996				9.9	10.0
1997				11.7	12.0
1998				51.9	53.5
1999				206.1	215.1
2000				265.6	281.3
2001				494.2	532.5
2002				469.6	513.8
2003				864.8	960.4
2004				962.0	1087.2
2005				1299.3	1495.5
2006				1523.4	1786.6
2007				1157.9	1383.8
2008				856.5	1043.0
2009				585.8	727.0
2010				277.6	351.0
2011				194.0	250.0
2012				76.2	100.0
2013					
2014					i
2015					
Subtotal				9313.5	10809.7

(U) The RDT&E total contains 2.549B (FY2005 - FY2011) for DD(X) detail design and construction of the first ship.

DD(X) Destroyer, December 31, 2001

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

		Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total				9313.5	10809.7

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): \$ 926.8
 - (U) Percent Total Program Expended: 8.6%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone B programs.

Report Creation Date: 03/27/2002 3:01:05 PM

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

AS OF DATE: December 31, 2001



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1. Designation and Nomenclature (Popular Name): JSF

2. DoD Component: OSD

000-3 JSF

Joint Participants: DRECTORATE FOR THE WAY BURNESS TON USAF, USN, USMC, DARPA, United Kingdom, Norway, Denmark, the Netherlands, Canada, Italy 077

3. Responsible Office and Telephone Number:

INDEX

Joint Strike Fighter Program Office BGen John Hudson 1213 Jefferson Davis Hwy Assigned: October 26, 2001 DSN 332-7640; COMM 703-602-7640 Suite 600 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)



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Joint Strike Fighter, December 31, 2001

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

The United Kingdom, the Netherlands, Denmark, Norway, Canada and Italy were cooperative partners during the Concept Demonstration Phase of the program. The UK is a committed partner for the System Development and Demonstration phase which commenced in October 2001. Associated funding is reflected in Section 16.

5. References:

SAR Baseline (Planning Estimate): Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated November 15, 1996.

Approved Program / Development Estimate (DE): DAE Approved Acquisition Program Baseline (APB) dated October 26, 2001.

6. Mission and Description:

The 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 Joint Strike Fighter Program, originally named Joint Advanced Strike Technology (JAST) Program, in 1993. It was created as the focal point for defining affordable next-generation strike weapon systems to replace aging Navy and Air Force tactical assets. Fiscal Year 1995 legislation merged the Defense Advanced Research Projects Agency (DARPA) Advanced Short Take-Off and Landing (ASTOVL) program with the then-JAST Program.

The United Kingdom (UK) became a Collaborative Partner in 1995, extending a collaboration begun under the DARPA ASTOVL program, at an initial investment level of \$200M. Denmark, Norway, the Netherlands, Canada, and Italy also

Joint Strike Fighter, December 31, 2001

7. Executive Summary (Cont'd):

became partners, with investments of \$10M each in the Concept Demonstration Phase, with Turkey, Singapore, and Israel as Foreign Military Sales customers. The UK signed a Memorandum of Understanding in January 2001 committing \$2 Billion to the Systems Development and Demonstration (SDD) phase (formerly called Engineering and Manufacturing Development).

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 Department designated the JSF Program a joint, DoD Acquisition Category ID Program in May 1996. The Concept Demonstration Phase commenced in November 1996 with competitive contract awards to Boeing and Lockheed Martin for Concept Demonstration Programs (CDP), with Pratt and Whitney providing propulsion hardware and engineering support. The competing contractors conducted concept-unique ground demonstrations; continued refinement of the weapon system concepts that they proposed for SDD and Production; and built and flew concept demonstrator aircraft. Specifically, the Boeing and Lockheed Martin concept demonstrator aircraft demonstrated commonality and modularity, STOVL hover and transition, and low speed handling qualities of their respective concepts. Contractor flight demonstrations commenced in September 2000 and completed in August 2001. Flight test results met or exceeded expectations, to an unprecedented degree in many cases. A Milestone B Defense Acquisition Board (DAB) review was held on October 24, 2001. On October 25, 2001 the Secretary of Defense provided certification to congressional defense committees (in accordance with Section 212 of the FY 2001 Defense Authorization Act) that the JSF program successfully completed the CDP exit criteria, demonstrated sufficient technical maturity to enter SDD, and the short take-off vertical-landing variant selected for further development successfully flew at least twenty hours. On October 26, 2001 System Development and Demonstration contract awards were awarded to Lockheed Martin and to Pratt and Whitney. General Electric continues technical efforts related to development of a second, interchangeable, engine for competition in production.

Since December 31, 2001, a successful Air System Requirements Review (ASRR) was conducted with Lockheed Martin in February 2002. It was the first major post-award JSF technical review. Canada signed a Memorandum of Understanding in February 2002 for SDD participation, contributing \$150 million. Negotiations continue for additional international partnerships in the SDD phase of the program.

This is a transition SAR (Planning to Development), following a Milestone B decision in October 2001.

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Joint Strike Fighter, December 31, 2001

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	NO
Performanco	No
Cost RDT&E	No
Procurement	No
MILCON	NO
06M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

	Breach	
Program	Acquisition Unit Cost	No
Average	Procurement Unit Cost	No

9. <u>Schedule</u>:

a. Milestones --

Concept Demonstration	Planning Estimate (SAR) NOV 1996	Approved Program;DE NOV 1996	Current Estimate NOV 1996
Contract Award			
Milestone B	MAR 2001	OCT 2001	OCT 2001(Ch-1)
Milestone II	MAR 2001	N/A	N/A (Ch-1)
EMD Contract Award	N/A	OCT 2001	OCT 2001 (Ch-1)
Preliminary Design Review	N/A	APR 2003	APR 2003(Ch-1)
Critical Design Review	N/A	N/A	(Ch-1)
CDR (CTOL&Common)	N/A	APR 2004	APR 2004 (Ch-1)
CDR (STOVL&Common)	N/A	OCT 2004	OCT 2004 (Ch-1)
CDR (CV&Common)	N/A	JUL 2005	JUL 2005 (Ch-1)
DAE (IPR 1)	N/A	APR 2005	APR 2005(Ch-1)
lst Flt CTOL	N/A	NOV 2005	NOV 2005(Ch-1)
lst Flt STOVL	N/A	APR 2006	APR 2006(Ch-1)
1st Flt CV	N/A	JAN 2007	JAN 2007(Ch-1)
DAE (IPR 2)	N/A	APR 2006	APR 2006(Ch-1)
lst Operational Aircraft Delivered	N/A	JUN 2008	JUN 2008 (Ch-1)
USMC IOC	N/A	APR 2010	APR 2010(Ch-1)
USAF IOC	N/A	JUN 2011	JUN 2011 (Ch-1)
Completed IOT&E	N/A	MAR 2012	MAR 2012(Ch-1)
USN IOC	N/A	APR 2012	APR 2012(Ch-1)
DAB Milestone C	TBD	APR 2012	APR 2012(Ch-1)
IOC	TBD	N/A	(Ch-1)

9b. Schedule (Cont'd):

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b. Current Change Explanations --

Change 1 - The "Planning Estimate (SAR)" column reflects the Milestone I (November 1996) APB. The "Approved Program; DE" column reflects the Milestone B (October 2001) APB. The "Current Estimate" column reflects contractor projections based on SDD contract awards in October 2001. The government will further assess schedule in conjunction with contractor Integrated Baseline Reviews in Spring 2002.

10. Performance Characteristics:

a. Performance --

		Approved	Demon-	
	Planning	Program; DE	strated	Current
	Estimate (SAR)	Obj/Threshold	Perf	Estimate
CTOL Capability	Yes	N/A / N/A	N/A	N/A
STOVL Mission	Yes	Execute / Execute	TBD	Execute
Performance		550 ft. / 550 ft.		550 ft.
		STO with/ STO wit	h	STO with
		4 JDAM / 2 JDAM		2 JDAM
		(2 ext- / (inter-		(inter-
		ernal & / nal), 2		nal), 2
		2 inter-/ AIM-120		AIM-120
		nal), 2 / (inter-		(inter-
		AIM-120 / nal).		nal).
		(inter- / fuel		fuel to
		nal), / to fly		f1v
		fuel / 450nm		450nm
		to flv /		
		550nm /		
Aircraft Carrier Suitable (CV Variant and STOVL Variant)	Yes	N/A / N/A	N/A	N/A
Combat Radius NM - CTOL Variant	450-600	690 / 590	TBD	5 9 0
Combat Radius NM -	450-550	550 / 450	TBD	450
STOVL Variant				
Combat Radius NM -	>600	730 / 6 00	TBD	600
CV Variant				
Internal Weapons	2 X	Suffic- / Suffic-	TBD	Suffi-
Carriage - CTOL	1000#	ient bay/ ient ba	Y	cient
Variant	class	volume / volume	-	bay
	A~G, 2 X	to load, / to load	l,	volume
	AIM-120,	carry & / carry &	1	to load,
	Internal	employ / employ		carry &
	Gun	thresh- / object-		employ
		old / ive		objec-
		Annex A / Annex A	L	tive
		weapons / weapons	1	Annex A weapons

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10a. Performance Characteristics (Cont'd):

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		Approved	Demon-	
	Planning	Program; DE	strated	Current
	<u>Estimate (SAR)</u>	<u>Obj/Threshold</u>	Perf	Estimate
Internal Weapons	2 X	Suffic- / Suffic-	TBD	Suffi-
Carriage - STOVL	1000#	ient bay/ ient bay		cient
Variant	class	volume / volume		bay
	A-G, 2X	to load, / to load,		volume
	AIM-120	carry & / carry &		to load.
		employ / employ		carry &
		thresh- / object-		employ
		old / ive		objec-
		Annex A / Annex A		tive
		weapons / weapons		Annex A
				Weapons
Internal Weapons	2 X	Suffic- / Suffic-	TBD	Suffi-
Carriage - CV	2000#	ient bay/ ient bay		cient
Variant	class	volume / volume		bay
Var Lanc	A-G.	to load. / to load.		volume
	2 8	carry & / carry &		to load
	ATM-120	employ / employ		carry 4
	1111 120	thresh- / object-		employ
		old / ive		object
		Anney A / Anney A		tive
		weapons / weapons		Anney A
		acapono / acapono		Weapong
speed i	comua-	N/A / N/A	N/A	N/A
Manouverability	rable to	.,		
mineaverabeticy	F = 16 /			
	F/A=18			
Strike and Destroy	Yes	N/A / N/A	N/A	N/A
Targets Day or		• • • • • • • • • • • • • • • • • • • •		
Night in Adverse				
Woather				
Conditions				
Integration of	Ves	N/A / N/A	N/A	N/A
Offboard Sonsore	165		,	
Orrobate Sensors				
Padio Fraguency (PF)	Ves	See / See	TBD	Classi-
Radio Frequency (Kr)	165	Classi- / Classi-	100	fied
Signature		fied / fied		
		Extract / Extract		
Logistic Footprint -	5-8	Less / Less	TBD	Less
OTOL Variant	C-141R	than or / than or	~ ~ ~	than or
CION AGITAUC		to ferme to the second		equal to
	lont	6 C = 17 / 8 C = 17		8 C-17
	loade	equiva- / equiva-		eguiva-
	TOGOD	lent / lent		lent
		loads / loads		loads
		/		
		,		

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10a. Performance Characteristics (Cont'd):

•

		Approved	Demon-	
	Planning	Program; DE	strated	Current
	Estimate (SAR)	Obj/Threshold	Perf	Estimate
Logistic Footprint -	N/A	Less / Less	TBD	Less
CV Variant		than or / than or		than or
		equal to/ equal to		equal to
		34,000 / 46,000		46,000
		cu ft, / cu ft,		cu ft,
		183 / 243		243
		Short / Short		Short
		Tons / Tons		Tons
Logistic Footprint -	N/A	Less / Less	TBD	Less
STOVL Variant		than or / than or		than
		equal to/ equal to		or
		4 C-17 / 8 C-17		equal to
		equiva- / equiva-		8 C-17
		lent / lent		egui-
		loads / loads		valent
				loads
Sortie Generation	3-4/day	4/day / 3/day	TBD	3/dav
Rate - CTOL	sus-	initial / initial		initial
Variant	tained;	surge; / surge;		surge;
	4-5/day	3/day / 2/day		2/day
	surge	sus- / sus-		sus-
	-	<pre>tained / tained</pre>		tained
		surge; / surge;		surge;
		2/day / 1/day		1/day
		Wartime / Wartime		Wartime
		Sus- / Sus-		Sus-
		tained / tained		tained
		based on/ based on		based on
		ASD of / ASD of		ASD of
		2.5 / 2.5		2.5
Sortie Generation	3/day	4/day / 3/day	TBD	3/day
Rate - CV Variant	sus-	initial / initial		initial
	tained;	surge; / surge;		surge;
	4/day	3/day / 2/day		2/day
	surge	sus- / sus-		sus-
		tained / tained		tained
		surge; / surge;		surge;
		l/day / l/day		1/day
		Wartime / Wartime		Wartime
		Sus- / Sus-		Sus-
		tained / tained		tained
		based on/ based on		based on
		ASD of / ASD of		ASD of
		1.8 / 1.8		1.8

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10a. Performance Characteristics (Cont'd):

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		Approved	Demon-	
	Planning	Program; DE	strated	Current
	Estimate (SAR)	Obj/Threshold	Perf	<u>Estimate</u>
Sortie Generation	4/day	6/day / 4/day	TBD	4/day
Rate - STOVL	sus-	initial / initial		initial
Variant	tained;	surge; / surge;		surge;
	6/day	4/day / 3/day		3/day
	surge	sus- / sus-		sus-
		tained / tained		tained
		surge; / surge;		surge;
		2/day / 1/day		1/day
		Wartime / Wartime		Wartime
		Sus- / Sus-		Sus-
		tained / tained		tained
		based on/ based on		based on
		ASD of / ASD of		ASD of
		1.1 / 1.1		1.1
Unit Flyaway Cost	\$28M	N/A / N/A	N/A	N/A
- CTOL Variant				
Unit Flyaway Cost	\$30-35M	N/A / N/A	N/A	N/A
- STOVL Variant				
Unit Flyaway Cost	\$31-38M	N/A / N/A	N/A	N/A
- CV Variant				
Signature Reduction	N/A	N/A / N/A	N/A	N/A
/Low Obserables				
Interoperability	N/A	100% of / 100% of	TBD	100% of
		all top / critical		critical
		level / top		top
		IERs / level		level
		/ IERs		IERs
Mission Reliability	N/A	98% for / 95% for	TBD	95% for
		all / CV &		CV &
		variants/ STOVL &		STOVL &
		at ASD's/ 93% for		93% for
		listed / CTOL at		CTOL at
		in / ASD's		ASDs
		Table 13/ listed		listed
		/ in Table		ln Table 12
		/ 13.	m D D	Table 13
CV_Recovery	N/A	Max / Max	1.BD	max
Performance,		approach/ approach		approach
Approach Speed		speed / speed		Speed
		(vpa)at / (vpa)at	1	(vpa) at
		Carrier / Carrier	ı	Carrier
		Landing / Landing		Landing
		Waight / Waight		Weight
		(PCLW) / (PCLW)		(RCLW)
		of less / of less		of less
		than $140/$ than 145	5	than 145

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10a. Performance Characteristics (Cont'd):

	1	Approved	Demon-	
Planning	Pi	cogram;DE	strated	Current
Estimate (SAR)	Obj,	Threshold	Perf	Estimate
	kts	/ kts w/		kts w/
		/ 15 kts		15 kts
		/ WOD at		WOD at
		/ RCLW		RCLW

The "Planning Estimate (SAR)" column reflects the Milestone I (November 1996) APB, with Desired Operational Characteristics from the Services' Joint Initial Requirements Document (JIRD I) dated August 1995. The "Approved Program; DE" column reflects the Milestone B (October 2001) APB, with Key Performance Parameters (KPPs) from the Services' March 2000 Joint Operational Requirements document (ORD), revalidated by the JROC in October 2001. The "Current Estimate" column reflects KPP threshold values pending completion of the Air System Requirements Review assessment and reconciliation.

b. Current Change Explanations -- None

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

		Planning	Approved	Current
а.	Cost	Estimate (SAR)	Program; DE	Estimate
	Development (RDT&E)	21359.8	32300.0	32390.9
	Procurement	0.0	143300.0	145139.7
	Total Flyaway			(122771.7)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		(15601.3)
	Initial Spares	(0.0)		(6766.7)
	Construction (MILCON)	0.0	1500.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 2002 Base-Year \$	21359.8	177100.0	177530.6
	Escalation •	3440.2	55900.0	48927.7
	Development (RDT&E)	(3440.2)	(2100.0)	(2000.6)
	Procurement	(0.0)	(53300.0)	(46927.1)
	Construction (MILCON)	(0.0)	(500.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	24800.0	233000.0	226458.3

The Services have not yet established basing plans for JSF. No MILCON projects are included in the FY 2003 President's Budget request and supporting documentation. The "Approved Program; DE" column for MILCON reflects a top-level parametric estimate, not discrete estimates for specific sites. "PM's Estimate" for MILCON will be updated as specific MILCON requirements are identified in future budget requests.

b. Quantity --

Development (RDT&E)	N/A	14	14
Procurement	N/A	2852	2852
Total	N/A	2866	2866

Procurement Quantities: USAF (CTOL variant) 1763 USMC (STOVL variant 609 USN (CV variant) 480 Total DoD 2852

JSF procurement cost reflects DoD cost only, but assumes the benefits of 150 UK aircraft anticipated but not formalized in a MOU for procurement.

The approved Low-Rate Initial Production (LRIP) aircraft quantity of 465 exceeds 10% of planned total production. This is necessary to meet Service IOC requirements, prevent a break in production, and to ramp up to full rate production. The DAE reaffirmed the LRIP quantity in the Milestone B Acquisition Decision Memorandum dated October 26, 2001.

c. Foreign Military Sales -- None.

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

- d. Nuclear Costs -- None.
- 12. Unit Cost Summary:

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	(OCT	UCR Baseline 2001 APB)	Current Estimate (Dec 2001 SAR)	Percent Change
a. Prog. Acq. Unit Cost ()	PAUC)			
(1) Cost (FY 2002 B	Y\$)	177100.0	177530.6	
(2) Quantity		2866	2866	
(3) Unit Cost		61.793	61.944	+0.24
b. Avg. Proc. Unit Cost (i	APUC)			
(1) Cost (FY 2002 B)	Y\$)	143300.0	145139.7	
(2) Quantity		2852	2852	
(3) Unit Cost		50.245	50.890	+1.28

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	24800.0	-	-	24800.0
Previous Changes:				
Economic	-1947.3	-	- '	-1947.3
Quantity	-	-	-	-
Schedule	-1870.4	- 1	-	-1870.4
Engineering	+1420.0	-	-	+1420.0
Estimating	-463.5		-	-463.5
Other	-	-	_	
Support	-	-	-	-
Subtotal	-2861.2	-	-	-2861.2
Current Changes:				
Economic	-186.3	-4548.2	-	-4734.5
Quantity	-	-	-	-
Schedule	+1486.2	-	-	+1486.2
Engineering	+4670.0	-	-	+4670.0
Estimating	+6482.8	+15.0		+6497.8
Other	-			-
Support	-	-		-
Subtotal	+12452.7	-4533.2	-	+7919.5
Total Changes	+9591.5	-4533.2	-	+5058.3
Adjustments	-	+196600.0	-	+196600.0
Current Estimate	34391.5	192066.8	-	226458.3

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(Dollars in Millions)

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

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	21359.8	-		21359.8
Previous Changes:				
Quantity	-	-	- (
Schedule	-1433.1	-	-	-1433.1
Engineering	+1263.7	-		+1263.7
Estimating	-128.7	-	-	-128.7
Other		-	· –	-
Support	-		-	-
Subtotal	-298.1	-	-	-298.1
Current Changes:				
Quantity	-		-	
Schedule	+1414.0	-	-	+1414.0
Engineering	+4188.0	-	-	+4188.0
Estimating	+5727.2	+1839.7		+7566.9
Other	-		-	-
Support	-	-	-	
Subtotal	+11329.2	+1839.7		+13168.9
Total Changes	+11031.1	+1839.7	-	+12870.8
Adjustments	-	+143300.0	-	+143300.0
Current Estimate	32390.9	145139.7		177530.6

RDT&E: The cost summary reflects changes between the September 2001 SAR and the October 2001 Milestone B APB cost estimate. The September 2001 SAR reflected the FY 2002 President's Budget for FY 2002 and prior, and the FY 2001 President's Budget (December 1999 SAR) for FY03 and subsequent. JSF SDD technical, schedule and programmatic assumptions evolved considerably since December 1999. This was documented in a USD(AT&L) JSF program status report dated August 27, 2001 provided to congressional defense committees as well in prior and subsequent interim briefings to defense committee staffs.

Procurement: This is the first post-Milestone B JSF SAR; previous SARs were RDT&E only.

b. Current Change Explanations --

		(DOTTGID I	T DETERMINAL
		Base-Year	<u> Then-Year</u>
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	~186.3
	Adjustment for Current and Prior Inflation. (Estimating)	+17.7	+17.1
	Reflects outyear impact of schedule delays in FY 2002 and prior (Schedule)	+1414.0	+1486.2
	Implemented Block Development approach; maturation of mission systems and	+4188.0	+4670.0
	improved weapons capability resulted in an expansion of SDD from 90 to 126 months		

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

	b. Current Change Explanations		
		(Dollars i <u>Base-Year</u>	n Millions) <u>Then-Year</u>
	(Engineering) Changes in cost modeling methodologies and assumptions (see note below) (Estimating)	+5709.5	+6465.7
	RDT&E Subtotal	+11329.2	+12452.7
(2)	Procurement Revised escalation indices (Economic) Refinement of Oct 2001 Milestone B APB value (note, Base Year adjustment reflects impact of revised inflation indices) (Estimating)	N/A +1839.7	-4548.2 +15.0
	Procurement Subtotal	+1839.7	-4533.2

The cost estimating variance shown above reflects incorporation of site-specific cost data such as overhead and labor rates. Further modeling changes included updating estimating relationships with current tactical aircraft actuals, refining engine estimates, and shifting support equipment depot capability from procurement to RDT&E.

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
Plan Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A									79.02

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Plan Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A									67.34

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Cost Variance Schedule Variance

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

c. schedule, cost, and Quantity aistor	ile, Cost, and Quantity Histor	ity Histo	Quantit	and	COSt	Le,	ieau.	SCI	с.	
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	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	_N/A	N/A	N/A	NOV 1996
Milestone B	MAR 2001	N/A	N/A	OCT 2001
Milestone C	TBD	TBD	N/A	APR 2012
IOC	TBD	TBD	N/A	APR 2010
Total Cost	24800.0	N/A	N/A	226458.3
Total Quantity	0	0	0	2866
Prog Acq Unit Cost	0.0	N/A	N/A	79.0

Note: "Current Estimate" for each Service IOC: USMC - Apr 2010 USAF - Jun 2011 USN - Apr 2012

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

a. RDT&E	Initial	Contract Price
GE F136 Phase IIIb:	Target	Coiling Qty
NO0019-96-C-0176, CPAF Award: November 13, 2001 Definitized: November 13, 2001	\$411.0	N/A
Current Contract Price	Estimated Pr	ice At Completion
Target <u>Ceiling</u> Qty	Contractor	Program Manager
\$411.0 N/A	\$411.0	\$411.0

Previous Cumulative Variances Cumulative Variances To Date Net Change

Explanation of Change:

None.

Contract Comments: Scope reported in previous SAR is complete; the information above reflects a new contract modification. Earned value data not yet available.

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15. Contract Information (Cont'd):

Propulsion JSF F135 SDD: Pratt and Whitney, East Hartford CT			Initial (<u>Target</u> (Contract Pr Ceiling	ice <u>Qty</u>
N00019-02-C-3	003, CPAF r 26, 2001		\$4827.8	N/A	33
Definitized:	October 26, 20	001			
Current	Contract Prie	ce	Estimated Pri	ice At Comp	letion
Target \$4827.8	Ceiling N/A	<u>Oty</u> 33	Contractor \$4827.8	Program \$48	Manager 27.8
Provious Cumu	lativo Varian		Cost Variance	Schedule V	ariance
Cumulative Va	riances To Da	te	\$	\$	
net chang	Ċ		2	Ş	

Explanation of Change:

None.

Contract Comments: New contract; earned value data not yet available.

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JSF Air System SDD:	Initial (Contract Price	
Lockbeed Martin, Fort Worth, TX	<u>Target</u> (Ceiling Oty	
N00019-02-C-3002, CPAF Award: October 26, 2001 Definitized: October 26, 2001	\$18981.9	N/A 14	
Current Contract Price	Estimated Pri	ice At Completion	2
<u>Target Ceiling Oty</u>	Contractor	Program Manage:	
\$18981.9 N/A 14	\$18981.9	\$18981.9	
Previous Cumulative Variances Cumulative Variances To Date Net Change	Cost Variance \$ \$ \$ \$	Schedule Variance \$ \$ \$ \$	

Explanation of Change:

None.

Contract Comments: New contract; earned value data not yet available.

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

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

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-26)	Total
RDT&E	4229.9	1619.9	3632.2	24909.5	34391.5
Procurement	-	-	-	192066.8	192066.8
MILCON		-	-	-	-
OGM	-	-	-	-	-
Total	4229.9	1619.9	3632.2	216976.3	226458.3

b. Annual Summary -- JSF

Appropriation: 0400 - RDT&E, Defense Agencies

		Flyaway	Flyaway		
		FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1996				30.4	28.9
1997				70.9	68.2
1998				21.4	20.9
Subtotal				122.7	118.0

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

		Flyaway	Flyaway		
]	1	FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1994				32.8	29.5
1995				107.4	98.3
1996		1		86.3	80.4
1997				258.1	243.3
1998				471.6	448.2
1999				489.9	471.3
2000		1		244.2	238.4
2001				343.5	341.2
2002				756.4	763.0
2003				1687.3	1727.5
2004				1854.3	1931.8
2005				2346.0	2489.1
2006		-		1838.0	1987.2
2007				1533.8	1689.8
2008				1123.1	1260.9
2009	······································			1032.6	1181.3
2010				562.0	655.1
2011	· · · · · · · · · · · · · · · · · · ·	T		227.2	269.9

Joint Strike Fighter, December 31, 2001

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

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

		Flyaway FY 2002	Flyaway FY 2002	Total	Total
) Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2012				80.3	97.2
Subtotal	9			15074.8	16003.4

Note: USN and USAF RDT&E funding in FY04 and subsequent assumes approval to waive current policy on full funding of termination liability.

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

		Flyaway	Flyaway		
		FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				91.5	83.8
1996				87.3	81.3
1997				266.9	251.6
1998				467.5	444.3
1999				474.1	456.1
2000				255.1	249.1
2001				343.5	341.2
2002				755.4	761.9
2003				1703.2	1743.7
2004				1864.1	1942.0
2005				2342.8	2485.8
2006				1835.4	1984.4
2007				1530.9	1686.6
2008				1108.9	1244.9
2009				1032.6	1181.3
2010				562.0	655.1
2011				227.2	269.9
2012				80.3	97.2
Subtotal	5			15028.7	15960.2

Note: USN and USAF RDT&E funding in FY04 and subsequent assumes approval to waive current policy on full funding of termination liability.

*** UNCLASSIFIED *** Joint Strike Fighter, December 31, 2001

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

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Appropriation: 9991 - Other RDT&E Funding

		Flyaway	Flyaway		
		FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
1996				15.0	14.0
1997				75.3	71.0
1998				81.2	77.2
1999				56.9	54.7
2000				35.3	34.5
2001				2.5	2.5
2002				94.2	95.0
2003				157.3	161.0
2004				192.0	
2005				335.5	356.0
2006			· · · · · · · · · · · · · · · · · · ·	355.6	384.5
2007				322.4	355.2
2008				237.1	266.2
2009				74.3	85.0
2010				65.5	76.3
2011				64.1	76.2
2012				0.5	0.6
Subtotal				2164.7	2309.9

"Other RDT&E Funding" reflects firm international cooperative committments as of December 2001. The United Kingdom, the Netherlands, Denmark, Norway, Canada and Italy were cooperative partners during the Concept Demonstration Phase of the program. The UK is a committed partner for the System Development and Demonstration phase which commenced in October 2001.

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal		Flyaway FY 2002 Dollars	Flyaway FY 2002 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2005				46.4	50.1
2006	4	44.0	509.1	694.2	762.9
2007	8	98.5	840.4	1183.5	1325.3
2008	29	197.0	2547.7	3189.9	3640.1
2009	52	216.0	3733.8	4851.8	5641.6
2010	64	280.7	3960.6	4962.8	5880.4
2011	84	269.3	4631.0	5959.9	7196.0
2012	84	162.2	4058.6	5190.0	6385.4
2013	84	152.6	3817.7	4770.3	5980.6
2014	84	145.9	3651.6	4630.7	5915.9
2015	84	140.6	_3519.2	4580.3	5962.7

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 \$
2016	84	137.3	3435.6	4409.8	5849.8
2017	84	134.0	3351.9	4150.3	5610.2
2018	84	130.9	3276.1	4064.0	5597.9
2019	71	109.1	2729.7	3258.2	4573.2
2020	36	54.8	1371.1	1685.0	2410.1
2021	36	57.4	1436.9	1742.9	2540.2
2022	36	56.8	1422.4	1725.0	2561.9
2023	36	53.4	1336.4	1591.5	2408.6
2024	36	52.9	1324.7	1568.9	2419.4
2025	9	13.2	331.5	380.1	597.2
Subtotal	1089	2506.6	51286.0	64635.5	83309.5

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				68.6	74.0
2006	6	63.6	704.2	949.0	1042.9
2007	14	167.5	1348.4	1621.4	1815.7
2008	20	127.3	1543.6	1804.6	2059.3
2009	30	114.7	1908.2	2571.4	2990.0
2010	44	180.1	2399.5	2928.9	3470.4
2011	72	210.5	3462.1	4223.5	5099.4
2012	110	183.9	4602.4	5599.2	6888.9
2013	110	172.5	4315.2	5267.7	6604.2
2014	110	164.7	4121.1	5146.4	6574.7
2015	110	158.7	3972.0	4957.6	6453.8
2016	110	155.0	3879.1	4739.7	6287.4
2017	110	151.4	3787.9	4525.1	6116.8
2018	110	148.1	3706.9	4521.7	6228.4
2019	110	146.2	3656.9	4481.2	6289.8
2020	110	145.2	3633.0	4329.9	6192.9
2021	110	143.8	3597.7	4411.0	6428.8
2022	110	142.2	3558.8	4342.4	6449.1
2023	110	140.9	3524.6	4320.3	6538.2
2024	110	139.6	3492.3	4160.6	6416.1
2025	110	139.6	3493.1	4182.5	6572.4
2026	37	49.1	1227.5	1351.5	2164.1
ubtotal	1763	3044.6	65934.5	80504.2	108757.3

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*** UNCLASSIFIED *** Joint Strike Fighter, December 31, 2001

		Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD				122.7	118.0
Navy	1098	2506.6	51286.0	79710.3	99312.9
USAF	1768	3044.6	65934.5	95532.9	124717.5
Other Funding				2164.7	2309.9
Grand Total	2866	5551.2	117220.5	177530.6	226458.3

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

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): \$ 3976

Percent Total Program Expended: 1.8%

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 2,852 total. The O&S differences between JSF CTOL and F-16 are representative of the comparisons across legacy fleets.

JSF CTOL costs reflect 24-aircraft squadrons operating at 300 flying hours per aircraft per year. F-16 costs have been normalized to the same groundrules as were used in estimating the JSF CTOL costs. The F-16 costs are reconciled numbers developed in a joint effort by the JSF Program Office and the Air Force, and reflected in JSF Milestone B briefings in Fall 2001.

"Total O&S Cost" below reflects the O&S costs for all three variants based on an estimated 8000 hour aircraft service life. A comparable number for antecedent systems is not available.

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

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

· · · · · · · · · · · · · · · · · · ·	JSF	F-16C/D
	Cost per Flying Hour	Cost per Flying Hour
Cost Element	(\$BY02)	(\$BY02)
Mission Pay & Allowances	3289.0	5233.0
Unit Level Consumption	3295.0	3507.0
Intermediate Maintenance	0.0	3.0
Depot Maintenance	399.0	293.0
Contractor Support	0.0	44.0
Sustaining Support	861.0	627.0
Indirect Costs	1301.0	2329.0
Total	9145.0	12036.0

Total O&S Cost	JSF	F-16C/D
BY\$ (In Millions)	151923.0	N/A
TY\$ (In Millions)	387615.0	N/A

Report Creation Date: 03/25/2002 9:05:19 AM

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AF-6 C-17A

*** UNCLASSIFIED ***

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: C-17A

AS OF DATE: December 31, 2001

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1. Designation and Nomenclature (Popular Name): C-17 Globemaster III

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

C-17 SYSTEM PROGRAM OFFICE AERONAUTICAL SYSTEMS CENTER 2590 LOOP ROAD WEST WPAFB, OH 45433-7142

COL THOMAS J. OWEN Assigned: September 21, 2001 DSN 785-1545; COMM 937-255-1545 Thomas.Owen@wpafb.af.mil

4. Program Elements/Procurement Line Items: RDT&E: PE 0401130F PE 0604227F (Shared) Project 663282 PE 0604231F PE 0604609F (Shared) Project 663263 (Shared) **PROCUREMENT:** APPN 3010 ICN C017AD (Air Force) MILCON: PE 0401130F

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5. <u>References</u>:

SAR Baseline (Production Estimate): Program Management Directive 0020(22), dated May 10, 1989. Amended FY91 President's Budget.

Approved Program:

CAE Approved Acquisition Program Baseline (APB) dated February 1, 2002.

6. Mission and Description:

The C-17 is a multi-engine, turbofan, wide-body, strategic airlift aircraft which improves the overall capability of the United States Air Force to rapidly project, reinforce, and sustain combat forces worldwide. The aircraft augments the C-5 and C-141 in intertheater deployment and the C-130 with intratheater operations. The C-17 is capable of carrying outsized cargo over intertheater ranges into austere airfields and introduces a direct deployment capability that significantly improves airlift responsiveness. The C-17 provides needed total force structure modernization and responsiveness to dramatically improve the mobility of our general purpose forces.

Significant features of the multi-engine C-17 include: super critical wing design and winglets reduce drag and increase fuel efficiency and range; receiving inflight refueling capability increases range; externally blown flap configuration, direct lift control spoilers, and a high impact landing gear system contribute to the aircraft capability to operate into and out of small austere airfields; a forward and upward directed thrust reverser system provides backup capability, reduces the aircraft ramp space requirements, and minimizes interference of dust and debris with the activities of ground personnel; cargo door, ramp airdrop, and cargo restraint systems are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two-man cockpit, with multi function displays, reduces complexity and improves reliability; built-in test features reduce maintenance and troubleshooting times; and walk-in avionics bays improve accessibility. This aircraft was designed to have lower maintenance manhours per flight hour than predecessors.

7. Executive Summary:

The C-17 research and development contract was awarded in July 1982, and initial production began in January 1988. The Milestone IIIB decision in November 1995 authorized the full rate production of 120 total aircraft.

On May 31, 1996, The Secretary of the Air Force signed letters of transmittal to McDonnell Douglas Aircraft (now Boeing Airlift and Tankers) and Pratt & Whitney for procurement of 80 C-17 aircraft and the associated engines. The contracts are valued at \$16.0B. These long-term commitments are the longest and largest multi year contracts ever entered into by the Department of Defense. Execution of the multi year procurement strategy will save the U.S. taxpayers more than \$1B over a seven year period. This \$1B savings is in addition to the previously negotiated annual savings of more than \$4.4B

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7. Executive Summary (Cont'd):

realized from production efficiencies, streamlining, and reform initiatives.

The FY00 President's Budget added 14 C-17s to support Air Mobility Command's Special Operations Low Level Mission. Total aircraft to be procured increased from 120 to 134.

The FY02 Appropriation Act (PL 107-117)recognized a requirement and authorized a follow-on multi year contract for 60 aircraft, bringing the total USAF fleet size to 180 aircraft. The 14 C-17s added in the FY00 President's Budget are included in the 180 aircraft total.

The following significant accomplishments have occurred since the Dec 1999 SAR:

C-17 AIRCRAFT DELIVERIES: During calendar year 2000/2001, a total of 27 aircraft were delivered, including 4 aircraft to the United Kingdom, at an average of 124 days ahead of schedule. Eighty (80) aircraft have been delivered to the USAF to date.

UNITED KINGDOM MINISTRY OF DEFENSE (UK MOD) COMMENCES LEASE OF 4 C-17 AIRCRAFT: On May 16 2000, the UK MOD announced their intention to lease 4 C-17 aircraft for the Royal Air Force beginning in 2001. The USAF, UK MOD, and Boeing developed an approach whereby the aircraft are currently being leased from Boeing and depot level support is provided through a Foreign Military Sales Case on the Flexible Sustainment contract.

EXTENDED RANGE FUEL CONTAINMENT SYSTEM (ERFCS): The ERFCS converts the center wing dry bay into a 9,522-gallon fuel tank, increasing C-17 range by 600nm with a 90K pound payload. The Extended Range team awarded an \$88.4M Commercial Firm Fixed Price contract for this capability on 50 aircraft on October 12, 2000. Production cut-in began with aircraft P-71.

COMMUNICATIONS OPEN SYSTEM ARCHITECTURE (COSA): The COSA contract continues to progress toward replacing the existing Integrated Radio Management System (IRMS) with new open architecture line replaceable units (LRUs). The new system provides secure communications at all crew stations, and growth capability for all future programs requiring additional radios and audio channels. Critical Design Review (CDR) is complete and provisions are being implemented to minimize risk in transition to the new communications management system. Production cut-in is currently planned to be P-108.

FLEXIBLE SUSTAINMENT: The current Flexible Sustainment FY01-03 contract was awarded on November 29,2000. The contract continues the performance-based framework introduced in the initial Flexible Sustainment contract with a Firm Fixed Price/Award Fee contract for labor and engine support and a Cost Plus Award Fee contract for material. The contractor met or exceeded all performance metrics in FY01 and was awarded 100% award fee. Performance on this contract will be used to aid in making the FY03 depot support decision.

PUBLIC-PRIVATE PARTNERSHIP: During calendar year 2001, Boeing and the USAF drafted a long-range memorandum of agreement and started the initial phases of

7. Executive Summary (Cont'd):

partnering agreements for long range sustainment. The Secretary of the Air Force, Acquisition (SAF/AQ) and Deputy Chief of Staff, Installation and Logistics (AF/IL) are providing oversight of the process. The first oversight meeting resulted in a decision to have a single performance-based contract for C-17 sustainment with Boeing having total system sustainment responsibility (TSSR), to include performance guarantees and partnerships with the Air Logistics Centers.

C-17 FOLLOW-ON BUY PROGRAM: The Air Force plans to enter into a multi year procurement to buy 60 additional C-17 Globemaster airplanes over 6 fiscal years (FY03-08) using one multi year contract for the airframe and a companion multi year contract for engines. The expected contract award date for the new multi year contract is April 2002.

C-17 SERVICE IN OPERATION ENDURING FREEDOM: From October 7 to December 17, 2001, the C-17 Globemaster IIIs flew more than 198 humanitarian airdrop missions and dropped more than 1,200 container delivery system (CDS) bundles of food and clothing and more than 2.4 million humanitarian daily rations in support of OPERATION ENDURING FREEDOM. Total delivery of humanitarian assistance via tri-wall aerial delivery systems(TRIADS) and CDS is more than 3,800 tons.

As the fielded fleet grows in both number and increased capability, we are experiencing the expected increase in operational problems. The following 5 operational issues have garnered increased attention of the C-17 team:

MAIN LANDING GEAR (MLG) DURABILITY ISSUES: Between Apr and Jun 00, 4 failures occurred on the C-17 landing gear. The Safety Investigation Boards (SIB) have issued their final reports, and four potential contributing factors have been identified: bearing installation; corrosion pitting; fretting damage; and overload. The Air Force Research Lab(AFRL) and SPO/Boeing team have put together a corrective action plan to address each of the potential causes. The plan consists of minor redesign improvements and field inspections. The fleet has been stabilized by inspection and replacement of all suspect bearings. Another failure occurred on September 23, 2001, which has placed renewed emphasis on the program office's implementation of the remaining SIB recommendations. A new SIB was formed to investigate the September 23, 2001 incident. Further action will be evaluated based on the recommendation from the ongoing SIB.

FUEL TUBES: Investigation revealed that engineering drawings were not consistent or adequate in specifying appropriate steps to ensure corrosion prevention measures were compatible with lightning and bonding requirements. An Interim Safety Supplement was released on March 2, 2001 to ensure aircraft without an operable On Board Inert Gas Generating System (OBIGGS) had an increased separation distance from thunderstorm or convective activity until a fix could be retrofitted. A Fuel System Lightning Modification (TCTO 1171) is being implemented on aircraft with fuel and vent tubes that do not meet lightning protection and electrical bonding requirements. The first production delivered aircraft with lightning modification was P-71 which was delivered on

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7. Executive Summary (Cont'd):

11 May 01. The modifications have been completed on 31 of 76 aircraft. The remaining aircraft will be modified over the next 9 months.

ON BOARD INERT GAS GENERATING SYSTEM (OBIGGS): The use of the OBIGGS has increased due to the operational flight restriction generated by the lightning and bonding issue. This has created an increase in demand for parts and caused an adverse effect on mission capability. The Air Force has taken steps to overcome technology limits of the C-17 by implementing upgrades in affected areas. OBIGGS II, new system consisting of a simpler continuous flow design has been defined and is programmed for funding in FY03. Estimates indicate a nine-fold improvement in system reliability and significant cost and weight savings.

STATION KEEPING EQUIPMENT (SKE 2000): The C-17 is incurring erroneous displays while flying in formation. These problems occur without adequate warning to the crew. Air Mobility Command has issued 2 Flight Crew Information File (FCIF) notices and the program office has issued an Interim Safety Supplement (ISS) establishing safe operation conditions until the problem is resolved. The most probable root cause is a noisy signal generated by hardware that is damaged by extremely high vibration levels in the C-17 tail cone. Recovery plans include moving line replaceable units to a reduced vibration environment inside the fuselage, installing locking connectors, and incorporating software to annunciate problems to the crew. Operational restrictions should be lifted by October 2002.

GATM: 178B certification: Current software processes do not meet civil (RTCA DO-178B) guidelines outlined by the Electronic System Center, Global Air Traffic Operations (ESC/GATO). Both the ESC/GATO and C-17 program offices met with Boeing July 16-20, 2001 and formulated a way forward to provide certification for an interim capability. We are currently in the process of doing a functional hazard analysis that will be used to define the extent of the software modifications necessary to become compliant with the certification quidelines.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT6E	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			Brea	ach
Program	Acquisition	Unit	Cost	NO	5
Average	Procurement	Unit	Cost	No	o 🔤

9. Schedule:

a. Milestones --

Production Approved Current Estimate (SAR) Program (APB) Estimate Source Selection Decision AUG 1981 AUG 1981 N/A Contract Award JUL 1982 N/A JUL 1982 Start FSED FEB 1985 N/A FEB 1985 FEB 1985 NOV 1987 Milestone II (DSARC) FEB 1985 First Full Funded Production Lot **JAN 1988** JAN 1988 **JAN 1988** Milestone IIIA (DAB) NOV 1987 **JAN 1989 JAN 1989 JAN 1989** Low-Rate Initial Production N/A **JAN 1989** JUN 1991 SEP 1991 First Flight N/A SEP 1991 T-l First Flight N/A JUN 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 SEP 1991 JUN 1991 N/A Start Complete N/A DEC 1994 DEC 1994 IOTAE Start N/A DEC 1994 DEC 1994 JUN 1995 JUN 1995 Complete N/A 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 APR 2008 FOC SEP 2001 TBD TBD Depot Support Date N/A TBD

Depot Support Date will be determined by the long-term sustainment

9a. <u>Schedule (Cont'd)</u>:

Acquisition Strategy Planning outcome May 03.

b. Current Change Explanations -- None.

10. Performance Characteristics:

a. Performance --

L. FEITOIMANCE		2.00	around	Domon	
	Production	Broar	proved	Demon-	Current
	Fitimato (SAR)	Obj/T	hrechold	Dorf	Ectimate
Waintenance Nanhours	14 K	N/A	/ N/A	5 0	10.0 (Ch-1)
Per Flying Hour (Air Vehicle)	14.0	мун	/ 0/1	5.0	10.0 (CH-1)
Mean Time Between Maintenance Inherent	1.69	N/A	/ N/A	4.5	3.4 (Ch-2)
Mean Time Between Maintenance	.83	.78	/ .75	2.6	1.8
Corrective (hrs) (MTBMC)					
Mean Time Between Removal (hrs)	5,37	2.8	/ 2.5	9.7	8.4
Mean Manhours to Repair (hrs)	4.51	7.35	/ 7.35	8.7	10.2
Maximum Take-off Gross Weight (1bs) (TOGW)	580000	N/A	/ N/A	N/A	N/A
Maximum Pavload (lbs)	172200	N/A	/ N/A	N/A	N/A
Pavload at Range (lbs	167006	N/A	/ N/A	N/A	N/A
@ 2400 nm)	20.000		, .,		,
Range Unrefueled (nm)	2372	N/A	/ N/A	N/A	N/A
Landing Field Length (ft)	2541	3,000	/ 3,000	2,500	2,900
Takeoff Field Length	7370	N/A	/ N/A	N/A	N/A
Cruise Speed (Mach)	. 77	N/A	/ N/A	N/A	N/A
Backup Capability	2	2	/ 1.5	3.8	3.8
(* grade) Mission Completion Success Probability	94	N/A	/ N/A	N/A	N/A
Payload Range at	N/A	130,000	/ 110,000	113,000	130,000
Turning Capability (ft for 180 degree turn)	N/A	96	/ 90	96/80	96/80

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10a. Performance Characteristics (Cont'd):

	Production <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obi/Threshold</u>	Demon- strated Current <u>Perf Estimate</u>
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/ 60,000 60,000
No. of CDS bundles	N/A	40 / 30	40 40

PERFORMANCE CHARACTERISTICS: These performance characteristics are no longer Key Performance Parameters in the June 10, 1998, Air Mobility Command Operational Requirements Document.

Payload changes at 3200 nm (lbs) for Extended Range aircraft (P71-P134) is 127,000 pounds.

b. Current Change Explanations --(Ch-1) The Demonstrated Performance column now represents a moving three month average based on the Contractor's reviewed set of G081 maintenance records. 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 (RMSAE) performance as measured and agreed upon by the C-17 System Program Office, Contractor, and AFOTSE organizations.

Each value in the Demonstrated Performance column currently represents the moving three month average for the months of September, October, and November 2001 at 322,000 fleet flying hours.

(Ch-2) The Current Estimate column now represents cumulative values based on G081 maintenance records. As a cumulative value, only minor variations may be experienced. Prior to December 2001, values in this column represented estimates expected at 100,000 fleet flying hours. That milestone was exceeded in August 1998.

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

		Production	Approved	Current
a.	Cost	<u>Estimate (SAR)</u>	<u>Program (APB)</u>	<u>Estimate</u>
	Development (RDT&E)	6463.2	8382.0	8233.8
	Procurement	34419.2	46456.6	47167.4
	Airframe	(22158.8)		(31163.4)
	Engines	(5478.3)		(3376,9)
	Avionics	(1168.8)		(1106.7)
	ECO			(0.0)
	Product Improvement			(651.7)
	Non Recurring			(1109.8)
	Total Flyaway	(28805.9)		(37408.5)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(2267.0)		(8930.3)
	Initial Spares	(3346.3)		(828.6)
	Construction (MILCON)	368.5	726.2	750.7
	Acquisition OsM	0.0	0.0	0.0
	Total FY 1996 Base-Year \$	41250.9	55564.8	56151.9
	Escalation	561.0 [.]	3128.6	2846.4
	Development (RDT&E)	(-1122.3)	(-809.9)	(-841.7)
	Procurement	(1673.7)	(3867.9)	(3618.6)
	Construction (MILCON)	(9.6)	(70.6)	(69.5)
	Acquisition O&M	(0.0)	_ (0.0)	(0.0)
	Total Then Year \$	41811.9	58693.4	58998.3
ь.	Quantity			
1	Development (RDT&E)	0	0	0
1	Procurement	_210	180	180
	Total	210	180	180

NOTES:

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The quantity excludes one aircraft (T-1) which is fully configured as a test article. It is not maintained in the current production configuration.

c. Foreign Military Sales --The United Kingdom Ministry of Defense entered into an agreement with Boeing to lease 4 C-17 aircraft, for a total Foreign Military Sales case value of \$206.6M.

d. Nuclear Costs -- None.

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C-17A, December 31, 2001

12. Unit Cost Summary:

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	UCR	Current	
	Baseline	Estimate	Percent
	(FEB 2002 APB) (Dec	2001 SAR)	<u>Change</u>
a. Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	55564.8	56151.9	
(2) Quantity	180	180	
(3) Unit Cost	308.693	311.955	+1.06
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	46456.6	47167.4	
(2) Quantity	180	180	
(3) Unit Cost	258.092	262.041	+1.53

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	+55.9	-1588.0	-15.8	-1547.9
Quantity	-	-9536.0	-	-9536.0
Schedule	-	+3287.6	+10.1	+3297.7
Engineering	+168.2	+96.0	-	+264.2
Estimating	+1204.1	+9224.9	-5.6	+10423.4
Other	+170.0	+178.0	-	+348.0
Support	-21.8	-179.4	-	-201.2
Subtotal	+1576.4	+1483.1	-11.3	+3048.2
Current Changes:				
Economic	+4.5	+552.8	-	+557.3
Quantity	-	+5810.3	+	+5810.3
Schedule	-	+1092.5	-	+1092.5
Engineering	-	+13.4	-	+13.4
Estimating	+470.3	+189.0	+453.4	+1112.7
Other	-	+64.0	-	+64.0
Support	-	+5488.0	-	+5488.0
Subtotal	+474.8	+13210.0	+453.4	+14138.2
Total Changes	+2051.2	+14693.1	+442.1	+17186.4
Current Estimate	7392.1	50786.0	820.2	58998.3

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	6463.2	34419.2	368.5	41250.9
Previous Changes:				
Quantity	-	-7360.2	-	-7360.2
Schedule	-	+724.5	-	+724.5
Engineering	+158.0	+91.9	-	+249.9
Estimating	+1075.9	+8533.1	-4.4	+9604.6
Other	+171.6	+170.7	-	+342.3
Support	-28.1	-524.0	-	-552.1
Subtotal	+1377.4	+1636.0	-4.4	+3009.0
Current Changes:				
Quantity	-	+4848.2	-	+4848.2
Schedule	-	+291.6	-	+291.6
Engineering	-	+17.1	-	+17.1
Estimating	+393.2	+1217.0	+386.6	+1996.8
Other	-	+68.7	-	+68.7
Support	-	+4669.6	-	+4669.6
Subtotal	+393.2	+11112.2	+386.6	+11892.0
Total Changes	+1770.6	+12748.2	+382.2	+14901.0
Current Estimate	8233.8	47167.4	750.7	56151.9

b. Current Change Explanations --

		(Dollars : <u>Base-Year</u>	in Millions) <u>Then-Year</u>
(1)	RDTEE		
	Revised escalation indices. (Economic)	N/A	+4.5
	Adjustment for Current and Prior Inflation. (Estimating)	-3.3	-3.5
	Transfers to Other Programs (LAIRCM transferred to Non-C-17 Program Element) (Estimating)	45.0	-49.8
	Congressional Reductions (Including: PBDs, Taxes and Inflation Savings) (Estimating)	-11.9	-13.2
	Congressional Adds (Including PBD 604 and FY03 ABES Plus-up) (Estimating)	+461.9	+546.0
	Reprogramming (Including: Below Threshold Reprogramming and Current for Cancelled Bills (Estimating)	-8.5 3)	-9.2
	RDT&E Subtotal	+393.2	+474.8
(2)	Procurement		
. ,	Revised escalation indices. (Economic)	N/A	+63.3
	Economic adjustment for negative program change. (Economic)	N/A	+489.5
	Total Quantity Variance associated with increase of 46 aircraft from 134 to 180.	+8680.3	+10405.0
	Quantity increase of 46 aircraft. (Quantity)	+4848.2	+5810.3

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

b. Current Change Explanations --(Dollars in Millions) Base-Year Then-Year Allocation to Schedule variance resulting from +291.6 +1181.4 Quantity Change. (QR) (Schedule) Allocation to Engineering variance resulting +37.0+34.5from Quantity Change. (QR)(Engineering) Allocation to Estimating variance resulting +3434.8+3314.8from Quantity Change. (QR)(Estimating) Allocation to Other variance resulting from +68.7 +64.0Quantity Change. (QR)(Other) Acceleration of annual procurement buy profile. 0.0 -88.9 (Schedule) Engineering Change Proposals including: ARC-210 -19.9 -21.1radio, Multi-functional Display Redesign (Engineering) Adjustment for Current and Prior Inflation. -56.3 -70.9 (Estimating) Congressional Reductions including: PBD 604, -470.0 -608.0 630 and Realignment to Working Capital Fund (QR)(Estimating) Congressional Adds including: PBD 819, Prior +504.3 +641.6 Year Payback and PBD 604 (Estimating) Reprogramming (QR)(Estimating) -413.8 -562.1 Adjustment to quantity variance to reflect the -1782.0 -2526.4 C-17 Follow-on buy efficent funding profile (Estimating) Adjustment for Current and Prior Inflation. -7.9 -8.6 (Support) Change in Initial Spares (Support) -535.9 -592.7Change in Peculiar Support (QR)(Support) +5213.4 +6089.3+11112.2 +13210.0 Procurement Subtotal (3) MILCON Revised Estimate to Include Follow-On Buy +386.6+453.4(Estimating) +386.6 +453.4 MILCON Subtotal

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	Changes							PAUC	
Prod Est		(c							
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
199.10	-5.50	+12.48	+24.39	+1.54	+64.09	+2.29	+29.37	+128.66	327.77

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	
171.87	-5.75	+7.96	+24.33	+0.608	+52.30	+1.34	+29.49	+110.27	282.14

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	58998.2
Total Quantity	210	N/A	210	180
Prog Acq Unit Cost	189.3	N/A	199.1	327.8

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

a. RDT&E <u>Performan</u>	ce_Improvement:		Initia. <u>Target</u>	l Contract H <u>Ceiling</u>	rice <u>Oty</u>
Boeing Airli: F33657-95-D-3 Award: July 9 Definitized:	ft & Tankers, L 2026, CPAF 9, 1995 July 9, 1995	ong Beach, CA	\$71.3	N/A	0
Current <u>Target</u> \$547.5	t Contract Pric <u>Ceiling</u> N/A	e Oty O	Estimated : <u>Contractor</u> \$537.9	Price At Com <u>Progra</u> S	pletion Manager 537.4

\$1.0

15a. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-3.2	\$-4.7
Cumulative Variances To Date (11/23/01)	<u>\$-8.0</u>	\$-9.0
Net Change	\$-4.8	\$-4.3

Explanation of Change:

The net unfavorable cost and schedule variance was primarily due to delays and replanning for the Global Air Traffic Management (GATM) and Station Keeping Equipment-Follow-on Projects.

Contract Comments: Current Contract Price changed from the previous SAR with additional funding for the following Performance Improvement projects: Global Air Traffic Management (GATM); Mobility 2000; Systems Engineering Program Management (SEPM); and Software Infrastructure.

b. Procure	ement		Initial	Contract Pr	rice
Produciblt	<u>y Enhancement:</u>		<u>Target</u>	<u>Ceiling</u>	OLV
Boeing Airlif	t & Tankers, Lor	ng Beach, CA			
F33657-95-D-2	026, CPAF		\$123.4	N/A	0
Award: July 9	, 1995			-	
Definitized:	July 9, 1995				
Current	Contract Price		Estimated P	rice At Com	letion
Target	Ceiling	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$403.0	N/A	0	\$396.9	\$3	397.2
			Cost Varianc	e <u>Schedule v</u>	<u>/ariance</u>
Previous Cumu	lative Variances	1	\$-14.8	\$-3.	. 5
Cumulative Va:	riances To Date	(11/23/01)	<u>\$-14.1</u>	<u>\$-2</u>	.5

Explanation of Change:

Net Change

The primary driver of the favorable cost and schedule variance was the performance of the Cargo Winch Project.

\$0.7

Contract Comments: Current Contract Price changed from the previous SAR due to the additional funding required for the Cargo Winch Improvements Project, the Avionics Integrator Support Facility, and Proposal Preparation.

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15. Contract Information (Cont'd):

			Initial	Contract Pr	ice
<u>Aircraft</u>	MYP (FY97-03):		Target	Ceiling	Oty
Boeing Airli	ft & Tankers, Lon	g Beach, C	A		
F33657-96-C-2	2059, FFP		\$14209.4	N/A	80
Award: May 31	1, 1996				
Definitized:	May 31, 1996				
Current	t Contract Price		Estimated P	rice At Comp	letion
Target	<u>Ceiling</u>	<u>Oty</u>	Contractor	Program	Manager
\$14474.3	N/A	80	\$14474.3	\$144	74.3

Explanation of Change:

None.

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

Contract Comments: Increase in contract price due to Engineering Change Proposals resulting from implementation of Producibility Enhancement/Performance Improvement(PE/PI)contract efforts.

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

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

Appropriation	Prior <u>Years</u> (FY81-01)	Budget <u>Xear</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	Total
RDT&E	6413.8	109.5	157.2	711.6	7392.1
Procurement	28165.1	3652.2	3698.5	15270.2	50786.0
MILCON	369.7	41.0	55.2	354.3	820.2
OGM	-	-	-	-	-
Total	34948.6	3802.7	3910.9	16336.1	58998.3

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

b. Annual Summary -- C-17

.

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

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal	}	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1981				54.1	33.4
1982					
1983				86.3	59.6
1984				37.4	26.8
1985				163.2	121.0
1986				461.4	350.4
1987	[787.8	625.5
1988			i <u> </u>	1351.1	1101.4
1989		1		1098.1	938.3
1990	1	Ĵ	<u> </u>	1026.2	903.9
1991		1	1	818.8	748.3
1992			1	268.9	252.9
1993			i	171.1	164.3
1994		· · ·		228.8	223.5
1995				185.1	184.2
1996				71.1	72.0
1997		1		64.6	66.3
1998				98.0	101.3
1999	······			114.3	119.4
2000				144.5	153.3
2001			ļ	155.7	168.0
2002				99.9	109.5
2003				141.4	157.2
2004				119.9	135.7
2005				134.6	155.1
2006			i	123.5	145.0
2007		1	1	91.7	109.7
2008				136.3	166.1
Subtotal				8233.8	7392.1

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		74.3	61.2
1988	2	90.9	660.9	848.6	733.4
1989	4	17.2	1002.8	1329.3	1186.3
1990	4	77.2	1252.8	1642.0	1511.7
1991		80.3		244.7	233.7
1992	4	43.3	1291.6		1804.5

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

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1993	6	19.5	1923.4	1986.7	1959.4
1994	6	155.7	1867.1	2176.2	2180.5
1995	6	381.0	1769.3	2359.7	2399.6
1996	8	7.6	1984.2	2492.0	2565.6
1997	8	6.0	1769.6	1994.7	2073.1
1998	9		1876.4	2153.2	2256.7
1999	13		2484.9	2775.8	2943.1
2000	15	33.5	2685.4	3131.9	3379.6
2001	12	45.8	2227.9	2632.7	2876.7
2002	15		2739.3	3291.3	3652.2
2003	12		2316.1	3279.1	3698.5
2004	10		1656.0	2961.6	3400.8
2005	11		1650.3	3086.9	3611.2
2006	12		1800.3	3031.2	3613.4
2007	14	119.6	2266.4	2683.2	3259.3
2008	9		1178.0	1136.6	1385.5
Subtotal	180	1109.8	36298.7	47167.4	50786.0

Appropriation: 3300 - Military Construction, Air Force

[Flyaway	Flyaway		
)	FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1989		1		6.6	5.7
1990				5.4	5.0
1991				31.2	29.5
1992				79.2	76.1
1993	}			31.7	31.1
1994				15.2	15.2
1995					
1996				6.7	6.9
1997				78.3	80.9
1998				6.2	6.5
1999				67.4	71.0
2000				24.4	26.1
2001				14.5	15.7
2002				36.9	41.0
2003				48.9	55.2
2004				73.5	84.5
2005				52.7	61.8
2006				49.6	59.2
2007				122.3	148.8
Subtotal				750.7	820.2

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

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	180	1109.8	36298.7	56151.9	58998.3

17. Delivery/Expenditure Information:

a.	Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	1	1
	Procurement	80	80

Percent Total Program Quantities Delivered: 45.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 26449.8

Percent Total Program Expended: 44.8%

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 15 Jan 02). The total (O&S) cost was divided by the fifteen operational squadrons and further divided by the number of years covered by the estimate (34 years, from FY01 through FY34). This estimate was developed in FY96 Base Year dollars.

The O&S costs were based on a total of 180 aircraft, 169 Primary Authorized Aircraft (PAA) and 11 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 reparables; 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.

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C-17A, December 31, 2001

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

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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 FY01 to FY34.

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

Cost Element	C-17 Avg Annual Cost Per C-17 Squadron	Avg Annual Cost for Antecedent System
Mission Pay & Allowances	21.2	0.0
Unit Level Consumption	39.9	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	67.0	0.0
Sustaining Support	28.9	0.0
Indirect Costs	8.2	0.0
Total	165.2	0.0

Total O&S Cost	C-17	Avg Annual Cost for
BY\$ (In Millions)	84193.9	2476.3
TY\$ (In Millions)	144876.1	4261.1

Report Creation Date: 03/26/2002 2:30:34 PM

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AF-ZZ SBIRS HIGH

SELECTED ACQUISITION REPORT (RCS: DD-A&T(OGA)823) PROGRAM: SBIRS

AS OF DATE: December 31, 2001

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- (U) <u>Designation and Nomenclature (Popular Name)</u>: Space Based Infrared System (SBIRS) Program
- 2. (U) DoD_Component: USAF
- 3. (U) Responsible Office and Telephone Number:
SMC/MTCol Mark L. Borkowski185 Discoverer Blvd.Assigned: June 25, 2001Suite 2512DSN 833-1807; COMM (310) 363-1807El Segundo, CA 90245-4695mark.borkowski@losangeles.af.mil
- 4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0640441
 PROCUREMENT:
 (U) APPN 3020 ICN MSSBIR (Air Force)
 MILCON:
 (U) PE 0640441
 O&M:
 (U) PE 0350915

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CONGRESSIONAL

(U) PE 63441 and PE 64442 (SBIRS Low) were deleted. SBIRS Low is not being reported in this SAR. Reference the SBIRS Low paragraph in the Executive Summary.



02-6-6435-

5. (U) <u>References</u>:

SAR Baseline (Development Estimate): (U) DAE Approved Acquisition Baseline (APB) dated March 19, 1998.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated August 13, 1999.

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), Geosynchronous Earth Orbits (GEO), and Low Earth Orbits (LEO), in addition to the following ground elements: a CONUS-based Mission Control Station (MCS) and backup (MCSB), overseas Relay Ground Stations (RGSs), Multi-Mission Mobile Processor (M3P), and associated communication links. The High Component consists of four satellites in GEO, two hosted sensors in HEO (platforms provided by another organization), and associated ground elements.

7. (U) Executive Summary:

(U)

SBIRS LOW

Secretary of Defense memorandum, "Missile Defense Program Direction," dated January 2, 2002, directed that Director, Missile Defense Agency, will have all management authority and funding responsibility for SBIRS Low. Therefore, SBIRS Low data is not included in this Selected Acquisition Report (SAR).

SDIRS High

The SBIRS High program made significant technical progress during calendar years 2000 and 2001 and experienced significant cost and schedule delays leading to a Nunn-McCurdy breach. After an Acquisition Program Baseline (APB) breach was declared in December 1999, for failure to meet the original Increment 1 Initial Operational Capability (IOC) schedule, SBIRS Increment 1 development successfully tracked to its re-plan and was declared operational in December 2001. This IOC declaration completed the consolidation of all Defense Support Program legacy ground processing into a single Mission Control Station (MCS) located at Buckley Air Force Base, Colorado. Additionally, a redesign of the operational concept and some features of the Geosynchronous Earth Orbit (GEO) spacecraft was completed to improve sensor performance; Increment 2 system critical design review was conducted; and the first Highly Elliptical Orbit (HEO) flight payload entered the assembly and test phase. A new organization, designated the Combined Task Force (CTF), was stood up to support testing and early operational checkout of new ground and space capabilities.

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

Along with these accomplishments, the program experienced significant cost growth and schedule delays. Driven by poor cost and schedule performance and the contractor's projection of a fiscal year 2002 funding shortfall, the System Program Office and Lockheed Martin Space Systems Company (LMSSC) completed a preliminary Estimate at Completion (EAC) exercise in October 2001. The preliminary EAC results indicated potential cost growth in excess of \$2B across the Engineering and Manufacturing Development contract and schedule delays of 12 to 36 months. The System Program Director (SPD) briefed the results to the Secretary of the Air Force (SECAF), the Chief of Staff of the Air Force, and the Under Secretary of Defense for Acquisition, Technology and Logistics (USD [AT&L]) during the week of November 5, 2001. The program office is reviewing restructure options to reduce the likely program costs but the SPD does not believe any restructure could completely mitigate a significant cost growth. On November 16, 2001, the SPD reported a Nunn-McCurdy breach was likely to occur. Additionally, many of the APB schedule milestones are likely to breach, as indicated by the Program Manager's current estimate in Section 9. On December 31, 2001, the SECAF notified Congress of a Program Acquisition Unit Cost (PAUC) breach above the 25 percent threshold.

Nunn-McCurdy Breach: In accordance with Title 10 USC 2433, the Service Secretary is required to notify Congress whenever a Major Defense Acquisition Program experiences a Program Acquisition Unit Cost (PAUC) increase of at least 15% in a given fiscal year. If the unit cost increase is at least 25%, USD (AT&L) must certify that 1) the program is essential to national security; 2) there are no alternatives to the program that provide the same military capability at less cost; 3) the new cost estimates are reasonable; and 4) program management is adequate to control costs. On December 31, 2001, the SECAF reported an estimated PAUC increase of 70%, exceeding both the 15% and 25% thresholds. Consequently, USD (AT&L) must provide congressional certification of the four items listed above by May 3, 2002, in order to continue to obligate funds.

Defense Acquisition Executive (DAE) Review: In preparation for the Nunn-McCurdy certification in May 2002, USD (AT&L) directed a DAE program review not later than April 26, 2002. The Single Acquisition Management Plan, the Cost Analysis Requirements Description, and the APB cost and schedule thresholds will be revised to support a program re-baseline. The National Reconnaissance Office will lead an investigation of technical alternatives to the SBIRS High program. Additionally, the Office of the Secretary of Defense (OSD) Cost Analysis Improvement Group will complete a cost assessment. The DAE has already conducted status reviews on December 14, 2001, and Again on January 18, 2002; a third is scheduled on or about February 21, 2002. These status reviews are designed to ensure senior Department of Defense leaders have near real-time information about the program to support deliberations in advance of certification.

Funding Adjustments: To support FY 2002 funding requirements, the Air Force solicited Congressional support for an RDT&E funding increase. The defense appropriations bill provided an additional \$40M in FY 2002. The Air Force is
7. (U) Executive Summary (Cont'd):

also pursuing an \$88M Above Threshold Reprogramming for FY 2002. Congress denied the SBIRS High procurement funding request for the advance procurement of GEO satellites 3-5 and the Mission Control Station Backup (MCSB). The loss of FY 2002 advanced procurement funding will result in a need to redevelop and requalify radiation-hardened parts due to industry obsolescence issues. During Congressional deliberations on the advanced procurement budget, we noted the cost impact for redevelopment and requalification could reach \$150 million. The program office is currently investigating alternatives to minimize the impact. We will provide a more detailed assessment of the impact during the EAC update activity in support of the April 2002 DAE review. To meet operational and developmental requirements, we will need to re-plan the MCSB budget. This re-plan will also be part of the EAC update activity. Additionally, OSD directed the Air Force to fully fund the program throughout the Future Years Defense Plan. The Air Force and OSD reached an agreement on out year funding, and it will be approved through normal procedures and, if necessary, updated with the final EAC.

Independent Review Team (IRT): At SECAF direction, and in concert with the prime contractor (LMSSC), an IRT was formed to review the program and diagnose the root causes and contributing factors of the significant cost growth. Findings from the IRT are that 1) the SBIRS program was too immature to enter System Design and Development; 2) the system requirements decomposition and flow down was not well understood as the program continued to evolve; and 3) there was a significant breakdown in execution management. The Air Force had already initiated several corrective actions to address the problems. The IRT recommended corrective actions that contribute to and are consistent with the Air Force initiatives.

Increment 1 IOC: Commander, Air Force Space Command declared the MCS operational and signed the Increment 1 IOC declaration on December 18, 2001. This initial deployment of SBIRS operational capability meets or exceeds our legacy system's performance. Some system shortfalls, with operational workarounds, exist. But by May 2002, the discrepancies will be resolved and the remaining legacy systems will be closed. Increment 1 capability will reduce manning for strategic and tactical warning. In addition to these savings, Increment 1 lays the foundation for Increment 2 ground capabilities.

Geosynchronous Earth Orbit Satellite Design Change: In early calendar year 2000, it became apparent that the initial GEO satellite design would not support many of the Key Performance Parameters (KPPs). Tests and analyses indicated sunlight in the telescope bore sight would degrade the sensor's capability much more than expected. The problem was resolved by reorienting the payload within the spacecraft, adding a 12-foot sunshade, and changing the spacecraft operations to a "solar flyer." A "solar flyer" design rotates the spacecraft slowly about its yaw-axis to ensure the sunshade is between the sun and payload aperture at all times. This major design change resolves the performance problems and ensures that all the SBIRS High KPPs are met.

Increment 2 Critical Design Review (CDR): The SBIRS High Increment 2 system CDR was conducted August 30-31, 2001. Additionally, GEO spacecraft and payload

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

CDRs were held in May and June 2001. The CDRs demonstrated acceptable maturity in spacecraft hardware design. Although software design is less mature, the system CDR defined an adequate closure plan for its development. The CDRs demonstrated significant technical progress and provided confidence in the system's ability to meet operational needs. System maturity will receive continued, emphasis through detailed closure plans of opened items and baseline design updates.

Highly Elliptical Orbit Payload Delivery Status: The first HEO payload flight unit was scheduled for delivery to the host contractor for space vehicle integration in February 2002. Host contract changes, as well as HEO payload development issues, have resulted in a new delivery date to the host of February 2003 to meet the host launch schedule. This change provides a high confidence SBIRS payload delivery schedule. All major elements of the flight sensor have been delivered to the payload integrator, and sensor characterization testing started in mid January 2002. Risk reduction work continues, using the HEO payload qualification unit as a pathfinder for the test program. Integration of the qualification unit sensor with the gimbal assembly is ongoing. Functional testing began in January 2002 on the HEO qualification unit, which is then scheduled for delivery to the host in late March 2002, for use in early electrical interface testing.

Combined Task Force (CTF): A SBIRS CTF, co-located at the contractor's facility in Boulder, Colorado, was activated on March 29, 2001. The CTF is a joint government and industry team responsible for testing and activation of the evolving SBIRS ground capability, and conducting launch and early-on-orbit checkout of SBIRS spacecraft and payloads. The CTF will minimize perturbations to the operational activities. The CTF concept was developed to respond to a key lesson learned from Increment 1 experience.

8. (U) Threshold Breaches:

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

		Breach	
Schee	lul	e	Yes
Perfo	ormi	ance	No
Cost		RDT&E	Yes
		Procurement	No
MILCON		Yes	
		O&M	Yes
	• -	Program Acquisition Unit Cost (PAUC)	Yes
		Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Breach			
Program	Acquisition	Unit	Cost	Yes
Average	Procurement	Unit	Cost	No

c. (U) Explanation of Breach:

Initially, the Schedule and Cost breached due to Air Force two year delay to SBIRS High and were previously reported in both the December 31, 1998, and the September 30, 1999, Selected Acquisition Reports.

Subsequently, the program experienced significant cost growth and schedule delays. Driven by poor cost and schedule performance and the contractor's projection of a fiscal year 2002 funding shortfall, the System Program Office and Lockheed Martin Space Systems Company completed a preliminary Estimate at Completion (EAC) exercise in October 2001. The preliminary EAC results indicated potential cost growth in excess of \$2B across the Engineering and Manufacturing Development contract and schedule delays of 12 to 36 months. The System Program Director briefed the results to the Secretary of the Air Force, the Chief of Staff of the Air Force, and the Under Secretary of Defense for Acquisition, Technology and Logistics during the week of November 5, 2001. program office is reviewing restructure options to reduce the likely program costs but the SPD does not believe any restructure could completely mitigate a significant cost growth. On November 16, 2001, the SPD reported a Nunn-McCurdy breach was likely to occur. Additionally, many of the APB schedule milestones are likely to breach, as indicated by the Program Manager's current estimate in Section 9. On December 31, 2001, the Secretary of the Air Force notified Congress of a PAUC breach above the 25 percent threshold.

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9. (U) Schedule:

a. Milestones --

	Development		Approved		Curi	rent
	Estimat	e (SAR)	Progra	IM (APB)	Est	mate
High Component Milestone II	OCT	1996	OCT	1996	OCT	1996
High Component PDR (Space and Ground Increment 2)	DEC	1997	DEC	1997	DEC	1997
Ground Segment Increment 1 Certification	AUG	1999	AUG	1999	DEC	2001(Ch-1)
High Component CDR (Space and Ground Increment 2)	SEP	1999	SEP	1999	AUG	2001(Ch-2)
HEO Sensor 1 Delivery	SEP	2001	SEP	2001	FEB	2003(Ch-3)
Ground Segment Increment 2 Certification	JAN	2002	JAN	2002	SEP	2008(Ch-4)
GEO Satellite 1 Launch	N/A		JUN	2002	OCT	2006(Ch-5)
GEO Satellite 2 Launch	JUN	2003	JUN	2003	OCT	2007(Ch-6)
HEO Sensor 2 Delivery	SEP	2003	SEP	2003	JAN	2004(Ch-7)
SBIRS IOC	DEC	2003	N/A		TBD	
GEO Satellite 3 Launch	JUN	2004	JUN	2004	OCT	2008(Ch-8)
GEO Satellite 4 Launch	JUN	2005	JUN	2005	OCT	2009(Ch-9)

(U) ACRONYMS:

CDR - Critical Design Review

GEO - Geosynchronous Earth Orbit HEO - High Elliptical Orbit IOC - Initial Operational Capability

PDR - Preliminary Design Review

b. Current Change Explanations --(U) (Ch-1) Ground Segment Increment 1 changed from TBD to December 2001. After an APB breach was declared in December 1999, SBIRS Increment 1 development successfully tracked to its re-plan and was declared operational in December 2001.

(Ch-2) High Component CDR changed from June 2001 to August 2001. SBIRS High Increment 2 system CDR was conducted August 30-31, 2001.

(Ch-3) HEO Sensor 1 Delivery changed from February 2002 to February 2003. Host contract changes, as well as HEO payload development issues, resulted in new delivery dates to the host to meet the host launch schedule.

(Ch-4) Ground Segment Increment 2 Certification changed from July 2005 to September 2008 to reflect the System Program Director's (SPD's) current assessment based upon the preliminary Estimate at Completion results.

(Ch-5) GEO Satellite 1 Launch changed from September 2004 to October 2006 to reflect the SPD's current assessment based upon the preliminary Estimate at Completion results.

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SBIRS, December 31, 2001

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

(Ch-6) GEO Satellite 2 Launch changed from September 2005 to October 2007 to reflect the SPD's current assessment based upon the preliminary Estimate at Completion results.

(Ch-7) HEO Sensor 2 Delivery was changed from November 2002 to January 2004. Host contract changes, as well as HEO payload development issues, resulted in new delivery dates to the host to meet the host launch schedule.

(Ch-8) GEO Satellite 3 Launch changed from September 2006 to October 2008 to reflect the SPD's current assessment based upon the preliminary Estimate at Completion results.

(Ch-9) GEO Satellite 4 Launch changed from September 2007 to October 2009 to reflect the SPD's current assessment based upon the preliminary Estimate at Completion results.

	Development Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Coverage North America Missl Warning	.e ^{(b)(1)}		14-23	
(Focused Areas)				

10. (U) <u>Performance Characteristics</u>: a. Performance --

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



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



5 (km)

> Technical Intelligence

Report Time

***

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

	Development	Approved Program (APB) Obj/Threshold	Demon- strated	Current
North America Misele	(b)(1)	OD IT INTESHOLD	Terr	ESCIMALE
Warning (seconds)				
warning (seconds)	the state of the second			
	and the second second			
	12 - Verlandia			
Theater Msl Warning	and the second second			
(seconds)	ALT THE REPORT			
(aeconda)	A State of the state of the			
	La harris			
	Sector of Sectors			
Theater Mel Defense	and the second se			
(seconds)				
(Beconds)	12 1			
	and the second s			
	1			
	Land to the second second			
Probability Warning				
North America Missle				
Warning				
Theater Mel Warning	ST. C. La La			
Theater Msl Defense				
Technical Intell-				
igence				
2 yenee				
Data Availability				
Battlespace				
Characterization				
Theater Msl Defense				
		and the second sector and	17	1005 1 E. P.

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	Development Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current Estimate
	(b)(1)	12.0		
	and the second			
Technical Intel	1			
Igence				
(U) ACRONYMS:		and the second se		The state of the

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

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CFLOS - Cloud-free Line of Sight FA - Focused Area MRC - Major Regional Conflict MSLs - Missiles MTR - Major Threat Region NLT - Not Later Than

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

Pc - Probability of Collection Pw - Probability of Warning RV - Re-entry Vehicle TBD - To Be Determined

b. Current Change Explanations -(U) None.

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

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	3016.6	3016.6	5111.0
	Procurement	496.7	496.7	538.4
	Flyaway	(496.7)		(536.B)
	Other Weapon Systems	•		(0.0)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(1.6)
	Construction (MILCON)	26.0	26.0	51.9
	Acquisition O&M	140.2	140.2	235.6
	Total FY 1995 Base-Year \$	3679.5	3679.5	5936.9
	Escalation	467.8	467.8	806.6
	Development (RDT&E)	(369.9)	(369.9)	(659.0)
	Procurement	(87.8)	(87.8)	(101.9)
	Construction (MILCON)	(2.5)	(2.5)	(5.1)
	Acquisition OsM	(7.6)	(7.6)	(40.6)
	Total Then Year \$	4147.3	4147.3	6743.5

(U) The Current Estimate totals include Pre-EMD and EMD costs for SBIRS High through FY09. It also includes Missile Procurement funds for Geosynchronous Satellites GEO 3 through GEO 5. The Current Estimate does not include potential increase to procurement costs that may be reflected in the EAC that is being prepared to support the Nunn-McCurdy breach certification.

b. (U) Quantity --

Development (RDT&E)	3	3	2
Procurement	2	2	3
Total	5	5	5

(U) The SBIRS Single Acquisition Management Plan dated August 26, 1996, identifies no Low Rate Initial Production.

c. Foreign Military Sales -- None.

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

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

UCR	Current
Baseline	Estimate Percent
(AUG 1999 APB) (Dec	2001 SAR) Change
}	_
3679.5	5936.9
5	5
735.900	1187.380 +61.35
)	
496.7	538.4
2	3
248.350	179.467 -27.74
	UCR Baseline (AUG 1999 APB)(Dec) 3679.5 5 735.900) 496.7 2 248.350

(U) The difference between the percent change for the current PAUC of about 60% and the 70% amount reported to Congress by the Secretary of the Air Force on December 31, 2001, reflects the current funded program vice the preliminary Estimate at Completion (EAC) results. The program funding will be adjusted based on the final EAC and the Secretary of Defense's certification.

The Current Estimate does not include potential increase to procurement costs that may be reflected in the the EAC that is being prepared to support the Nunn-McCurdy breach certification.

		UCR Baseline (AUG 1999 APB)(De	Current Estimate c 2001 SAR	Percent Change
	c. (U) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (TY\$)	4147.3	6743.5	
	(2) Unit Cost	829.460	1348.700	+62.60
	d. (U) Avg. Proc. Unit Cost (APUC)		<i></i>	
	(1) Cost (TY\$)	584.5	640.3	
	(2) Unit Cost	292.250	213.433	-26.97
e.	(U) Changes from Previous SAR (DEC]	.999) Dollar	s∕Qty Pe	ercent
	(1) PAUC (BYS)	44	9,820 -	60.99
	(2) APUC (BY\$)	2	3.066 +	-14.75
	(3) PAUC Quantity		5	N/A
	(A) PAUC (TVS)	53	9.120 -	66.59
	(T) FRUC (117)	20	2 966	18 86
	() APUC (TI)	3	J.000 1	10.00

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

f. (U) Initial SAR Information
Initial SAR Date (JUN 1995):
(1) Program Acquisition Cost (BY\$) 2308.0
(2) Program Acquisition Cost (TY\$) 2670.3

(U) Note (12.f): As SBIRS High was a Pre-Milestone II program, the June 1995 Initial SAR reported only RDT&E costs. Therefore, the Program Acquisition Cost reflects only RDT&E costs.

g. (U) Unit Cost PAUC Changes --

At Secretary of the Air Force (SECAF) direction, and in concert with the prime contractor, Lockheed Martin Space Systems Company (LMSSC), an Independent Review Team (IRT) was formed to review the program and diagnose the root causes and contributing factors of the significant cost growth. Findings from the IRT are 1) the SBIRS program was too immature to enter System Design and Development; 2) the system decomposition and flow down was not well understood as the program continued to evolve; and 3) there was a significant breakdown in execution management.

(U) Unit Cost APUC Changes --The APUC, as compared to the APB, has decreased primarily due to a change in estimating methodology for GEO 3-5 and Congressional action which denied the FY02 procurement funds for the Mission Control Station Backup.

The Current Estimate does not include potential increase to procurement costs that may be reflected in the the EAC that is being prepared to support the Nunn-McCurdy breach certification.

- h. (U) Impact of Perf or Sched Changes --The preliminary EAC results indicated potential cost growth in excess of \$2B across the Engineering and Manufacturing Development contract and schedule delays of 12 to 36 months. In preparation for the Nunn-McCurdy certification in May 2002, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD[AT&L]) directed a Defense Acquisition Executive (DAE) program review not later than April 26, 2002. The APB cost and schedule thresholds will be revised to support a program re-baseline.
- i. (U) Program Management & Control --Based on the recommendations of the IRT, the Air Force should initiate an independent expert risk assessment for programs entering system design and development. As part of this assessment, the Air Force will ask the warfighters, through the Commander in Chief's Senior Warfighter Forum process, to assess operational risk and prioritize the requirements to support an incremental, block approach to system fielding. Further, the Major Command should be responsible for the detailed description of the

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

expectations associated with each of the top level requirements and assist the developer in producing a Technical Requirements Document to articulate user expectations for how the system will be employed to meet the system requirements. In the particular case of SBIRS High, which is well advanced into system design and development, the Air Force will work towards a final design review of the system in order to close out the liens from the Critical Design Review (CDR) and to ensure the maturity of the program to proceed further. The Air Force is on track to complete the CDR in the fall of 2002.

To stabilize the requirements baseline, the Air Force has established a flag-level executive committee consisting of acquisition and operational expertise from the government and contractor, that has oversight of execution and of requirements flow management. The activities of the executive committee are overseen by a tiered management structure including the Secretary of the Air Force, Undersecretary of the Air Force, Chief of Staff of the Air Force, and the contractor's Chief Executive Officers (CEOs). The executive committee has the authority to adjudicate cost, schedule and performance issues associated with requirements trades and includes all mission area stakeholders. In the past, there was no single forum empowered to adjudicate these issues below the level of the Joint Requirements Oversight Council. As a further corrective action to stabilize SBIRS High, the program will be restructured to embrace an evolutionary block modification strategy that will phase in prioritized requirements in a well-defined manner, controlled through the executive committee process. Of significant importance, the content baseline has been put under program office management control. The System Program Director (SPD) established a Program Management Board (PMB) that will ensure content, schedules, and costs are managed as an integrated baseline. This board has already been active in establishing a revised program baseline. Of particular note, is the implementation of a lower risk ground software approach that breaks up a single large development and transition to operations into multiple block deliveries in concert with mission needs and an achievable schedule. Such a "spiral" approach is consistent with the modern way of developing extremely complex, software-intensive weapons systems.

The most significant action is a wholesale change in the program management philosophy. Under acquisition reform the Air Force applied the concept of Total System Performance Responsibility (TSPR) to the SBIRS High program at contract award. Our assessment is that on highly complex, multi-mission programs such as SBIRS High, contractor TSPR is not an adequate mechanism for ensuring program success. As we restructure the program, we will remove the TSPR clause from the contract. The program office will resume leadership of functions that had been relinquished to the contractor under TSPR. The greatly increased government oversight and involvement should preclude further precipitous cost increases.

SBIRS management has been strengthened. The contractor has brought in new, experienced personnel to manage the program. LMSSC replaced its program director, and the new director reports directly to the President, LMSSC.

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

Further, the program director's span of responsibility has been reduced so that his full attention is on the SBIRS program. Other major leadership changes have been made in the organization structure, bringing significant new experience and expertise to the program. Fundamental in our view, the contractor has committed to an integrated management approach and subcontract management improvements. The CEOs of LMSSC and Northrop Grumman, a major subcontractor, have jointly reaffirmed their commitment to the SBIRS program in a letter to USD(AT&L).

System engineering at the contractor, as well as within the government program office, has been significantly increased, and will continue to be upgraded both in terms of additional personnel and systems engineering management tools. For example, the contractor has instituted a Systems Engineering Review Board (SERB), chaired by the program manager, to manage the technical baseline (including cost and schedule impacts). The SERB will feed directly into the government's PMB process, which manages the overall program baseline in terms of cost, schedule, and technical risk.

Control of a disciplined process has been re-established. This includes periodic independent reviews, annual estimate at completion updates, a revised award fee structure, and new, meaningful metrics that measure program executability, for example, risk management, requirements verification, and software producibility.

j. (U) Cost Control Actions --The most significant action is a wholesale change in the program management philosophy. Under acquisition reform the Air Force applied the concept of TSPR to the SBIRS High program at contract award. Our assessment is that on highly complex, multi-mission programs like SBIRS High, contractor TSPR is not an adequate mechanism for ensuring program success. We have removed the TSPR clause from the contract. The program office has resumed leadership of functions that had been relinquished to the contractor under TSPR. The greatly increased government oversight and involvement should preclude

further precipitous cost increases.

Of significant importance, the content baseline has been put under program office management control. The SPD has established a PMB that will ensure content, schedules, and costs are managed as an integrated baseline. The newly implemented PMB acts as the decision gate and authority to approve content and implement changes and associated budgets for each change. Major program technical and schedule assumptions and decisions will be made at this forum with cost and available funding in mind. This process will help to contain and capture requirements to avoid the surprise growth factor seen previously. This board has already been active in establishing a revised program baseline.

Additional cost control measures include augmenting the Contract Funds Status Report with a detailed report of monthly budget, forecast and expenditure per product Integrated Product Team and total program. This

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

report provides timely visibility of contract funds expenditure information at the appropriate level to enable proactive management. A schedule analysis tool will be implemented to analyze schedule performance. This tool links Cost Performance Report data and Integrated Master Schedule tasks to better correlate schedule and cost performance. Early detection of potential program issues provides the "headlight" metrics required for successful program execution.

k. (U) Contract Information (In Millions of Then-Year Dollars) --

- (U) (1) Contractor(s): Lockheed Martin Space Sys
 - (2) Contract Title: SBIRS High EMD Mod
 - (3) Contract Number: F04701-95-C-0017
 - (4) Actual Cost of Work Performed (ACWP) to date: 1721.7
 - (5) Percent contract completed (BCWP/target cost): 0.43
 - (6) Variances:

	Cost var	ciance	Schedule Var	lance
	(\$/%))	(\$/%)	1
Baseline Report	\$1.6/	+0.46	\$0.9/	+0.25
Previous SAR	\$-32.0/	-4.06	\$-14.1/	-1.73
Current Values	\$0.2/	+0.10	\$0.1/	0.00
Change from the Baseline Report	\$-1.4/	-0.36	\$~0.8/	-0.25
Change from the Previous SAR	\$32.2/	+4.16	\$14.2/	+1.73

Explanation of Variances -- None.

(U) Impact of Variances on Contract --The Baseline Report is intended to reflect the cost and schedule variance information at the time of the last approved APB. The SBIRS High Development APB was dated March 19, 1998; however, the Baseline Report contractor variances are as of March 31, 1998.

The current cumulative variances of +\$0.2M for cost and \$0.1M for schedule reflect the Over Target baseline (OTB) reset in July 2000 and another reset in November 2001. The OTB recognized the pre-OTB plan was no longer valid and that a new plan was necessary to provide more realistic work packages to more accurately measure cost/schedule performance. Prior to the OTB reset, the contractor experienced a cumulative negative Cost Variance (CV) of -\$66.5M and cumulative negative Schedule Variance (SV) of -\$18.7M. The initial portion of these variances was reported in the previous SAR amount. Following the OTB, the program continued to experience cost/schedule difficulties - negative CV of -\$102.4M and negative SV of -\$59.1M as of end of November 2001. The November 2001 reset once again zero out all variances, in order to accommodate an interim plan for performance evaluation as the program proceeds to the DAE review in April 2002.

Note: Percent Complete based on Work Performed to Date divided by the current System Program Office (SPO) EAC.

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SBIRS, December 31, 2001

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

(U) Impact of Variances on Unit Costs --Driven by the poor cost and schedule performance and the contractor's projection of a Fiscal Year 2002 funding shortfall, the System Program Office and LMSSC completed a preliminary EAC exercise in October 2001. The results of the EAC led the Secretary of the Air Force to notify Congress of a PAUC breach above the 25 percent threshold.

1. General Comments -- None.

13. (U) Cost Variance Analysis:

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

	RDTAE	PROC	MILCON	Oam	TOTAL
Development Estimate	3386.5	584.5	28.5	147.8	4147.3
Previous Changes:					
Economic	-111.0	-25.0	-1.2	-3.3	-140.5
Quantity	-152.7	+180.1	-	-	+27.4
Schedule	+485.1	-146.0	-	-	+339.1
Engineering	+82.1	-	•	-	+82.1
Estimating	-339.6	-109.4	+18.1	-31.1	-462.0
Other	-	-	-	-	-
Support	-	+54.5	-	-	+54.5
Subtotal	-36.1	-45.8	+16.9	-34.4	-99.4
Current Changes:					
Economic	+10.8	-2.2	-	+0.7	+9.3
Quantity	-	-	-	-	**
Schedule	-	+24.2	-	-	+24.2
Engineering	+526.7	-	+7.8	-15.6	+518.9
Estimating	+1882.1	+132.2	+3.8	+177.7	+2195.8
Other	-	-	-	-	-
Support	-	-52.6	-		-52.6
Subtotal	+2419.6	+101.6	+11.6	+162.8	+2695.6
Total Changes	+2383.5	+55.8	+28.5	+128.4	+2596.2
Current Estimate	5770.0	640.3	57.0	276.2	6743.5

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

.

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	3016.6	496.7	26.0	140.2	3679.5
Previous Changes:			·		
Quantity	-128.4	+155.6	-	-	+27.2
Schedule	+416.6	-115.1	-	-	+301.5
Engineering	+73.0	-	-	-	+73.0
Estimating	-302.9	-115.7	+16.0	-38.5	-441.1
Other		-	-	r – 1	-
Support	-	+47.7	-	-	+47.7
Subtotal	+58.3	-27.5	+16.0	-38.5	+8.3
Current Changes:					
Quantity	-	-	-	-	-
Schedule		-	-	-	-
Engineering	+431.3	-	+6.8	-13.5	+424.6
Estimating	+1604.8	+115.3	+3.1	+147.4	+1870.6
Other	-	-	-	-	-
Support	-	-46.1	-	-	-46.1
Subtotal	+2036.1	+69.2	+9.9	+133.9	+2249.1
Total Changes	+2094.4	+41.7	+25.9	+95.4	+2257.4
Current Estimate	5111.0	538.4	51.9	235.6	5936.9

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

		Dase rear	Inen lear
(1)	<u>RDTAE</u>	/-	
	Revised escalation indices. (Economic)	N/A	+10.8
	Add Survivable Strategic Communications and	+0.1	+U.b
	delete SABRS requirement (Engineering)		
	Addition of CTF (November 00 EAC)	+44.5	+52.8
	(Engineering)		
	Addition of Block II re-design funds	+386.7	+473.3
	(Engineering)		
	Adjustment for Current and Prior Inflation.	~8.9	-9.7
	(Estimating)		
	Accounting adjustments - SBIRS Low/DSP funds	+7.9	+11.2
	transfer (Estimating)		
	November 2000 additional funds for EMD	+297.7	+344.7
	cost growth, less CTF (Estimating)		
	December 2001 additional funds for EMD	+1241.9	+1452.2
	contract cost growth. (Estimating)		
	Cost growth due to one-year contract	+66.2	+83.7
	extension (FY09) (Estimating)		
	RDT&E Subtotal	+2036.1	+2419.6
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-2.3

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

•••••

	b. (U) Current Change Explanations		
		(Dollars <u>Base-Year</u>	in Millions) <u>Then-Year</u>
	change. (Economic)	N/A	+0.1
	Addition of Survivable Strategic Communications (Support)	+1.6	+1.9
	November 2000 additional funds for EMD contract cost growth (Estimating)	+91.6	+105.0
	Deletion of MCSB (3080) (Support)	-47.7	-54.5
	Accounting adjustments - SBIRS Low funds transfer (Estimating)	+23.7	+27.2
	Slipped both G3-G5 procurement and G4-G5 launch support two years (Schedule)	0.0	+24.2
	Procurement Subtotal	+69.2	+101.6
(3)	MILCON		
	Expand MCS to accommodate SBIRS High (FY02 and FY03) (Engineering)	+6.8	+7.8
	Additional funds for MCS MILCON Project (Estimating)	+3.1	+3.8
	MILCON Subtotal	+9.9	+11.6
(4)	<u>Oem</u>		
	Revised escalation indices. (Economic)	N/A	+0.3
	change. (Economic)	N/A	+0.4
	SBIRS Low and SWORD Activation Deleted (Engineering)	-13.5	-15.6
	Adjustment for Current and Prior Inflation. (Estimating)	~0.2	-0.2
	Additional OeM costs for FY06 through FY08 (Estimating)	+43.5	+53.1
	Refinement of estimates for RGS, MCSB activation costs and from other SPO (Estimating)	+30.8	+34.1
	Add MCSB CLS (Estimating)	+39.0	+47.1
	Add O&M costs for FY09 (Estimating)	+34.3	+43.6
	O&M Subtotal	+133.9	+162.8

(U) ACRONYMS:

CLS Contract Logistic Support

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

CTF	Combined Task Force
DSP	Defense Support Program
EAC	Estimate at Completion
EMD	Engineering, Manufacturing and Development
MCS	Mission Control Station
MCSB	Mission Control Station Backup
RGS	Relay Ground Station
SABRS	Space and Atmospheric Burst Reporting System
SPO	System Program Office
SWORD	SBIRS Warfighters Operational Requirements Document

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	[c							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
829.46	-26.24	+5.48	+72.66	+120.20	+346.76		+0.380	+519.24	1348.70

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

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est	j							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
292.25	-9.07	-37.38	-40.60		+7.60		+0.633	-78.82	213.43

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	TBD
Total Cost	2670.3	4147.3	N/A	6743.5
Total Quantity	N/A	5	N/A	5
Prog Acg Unit Cost	N/A	829.5	N/A	1348.7

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

(U) PM's price EAC includes negotiated August 2000 OTB amount and initial EAC results.

a. RDTSE			Initial	Contract P:	rice
(U) SBIRS	High EMD Mod:		<u>Target</u>	<u>Ceiling</u>	Oty
Lockheed Mar	tin Space Sys,	Sunnyvale CA			
F04701-95-C-	0017, CPAF		\$80.0	\$80.0	0
Award: Octob	er 31, 1995				
Definitized:	October 31, 19	995			
Curren	t Contract Pric	ce	Estimated H	Price At Com	pletion
Target.	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Progra	n Manager
\$2401.4	N/A	2	\$3415.1	\$4	409.8
			Cost Variand	e Schedule '	<u>Variance</u>
Previous Cum	ulative Variand	es	\$-32.0	\$-14	.1
Cumulative V	ariances To Dat	te (12/31/01)	<u> </u>	\$0	1
Net Chan	ge		\$32.2	\$14	. 2

Net Change

Explanation of Change:

(U) Cost Variance

Cumulative variances of +\$0.247M for cost and +\$0.130M for schedule reflect the Over Target Baseline (OTB) reset in July 2000 and another reset in November 2001. The OTB recognized that the pre-OTB plan was no longer valid and that a new plan was necessary to provide more realistic work packages to more accurately measure cost/schedule performance. The reset in November 2001 was to accommodate an interim plan as the SBIRS program proceeds to a Defense Acquisition Executive (DAE) review in April 2002. A final Earned Value Management (EVM) plan will be laid in after the DAE review. Details of the OTB and November 2001 reset are discussed below:

1. During July 2000, the SBIRS High program reset its cost baseline by implementing an OTB. The OTB allowed the contractor to re-plan work on contract and equalized Budgeted Cost of Work Schedule (BCWS), Budgeted Cost of Work Performed (BCWP) and Actual Cost of Work Performed (ACWP). This action zeroed out any cost/schedule variances through July 2000 and replanned future work to a revised baseline. Prior to the reset, the contractor experienced a cumulative negative Cost Variance (CV) of -\$66.5M and cumulative negative Schedule Variance (SV) of ~\$18.7M.

2. Following the OTB, the program continued to experience cost/schedule difficulties - negative CV of -\$102.4M and negative SV of -\$59.1M as of end of November 2001. As the SPO proceeds to the April DAE review, and in order to accommodate an interim plan for performance evaluation, the bascline was reset in November 2001, again equalizing BCWS, BCWP and ACWP. All variances were once again zeroed out.

3. During December 2001, the program began measuring performance against

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

the interim plan and experienced a favorable CV of \$0.247M and SV of \$0.130M. The December favorable cost variance is mainly due to a favorable one time retroactive adjustment FY01 fringe rate change (\$400K). This favorable variance was offset by an unfavorable variance in Highly Elliptical Orbit (HEO) Pointing Control Assembly (PCA) (-\$300K). The PCA variance was due to problems related to the simulation software within the PSTS and to higher costs to achieve Gimbal Drive Assembly Software Test Environment certification. The major contributor to the December period favorable schedule variance is the HEO Payload (\$172K). The PCA product team is ahead of schedule on the Motor Drive Electronics Flight #1 final acceptance testing.

(U) Contract Comments:

The current contract prices have been adjusted from \$2,335.2M to \$2,401.4M to incorporate modifications for Integrated Training Suite (\$28.6M) Combined Task Force (\$13.7M), National Missile Defense Capability 1 Analysis and Requirements (\$13.4M), Request for Equitable Adjustment (\$7.3M), CLIN 33 SBIRS Low Integration (\$7.0), Technical Intelligence Offline Processing (\$6.8M), HEO Preprocessing (\$6.0M), Geosynchronous Earth Orbit 3-5 Proposal Preparation (\$3.1M), HEO Contamination Shield (\$3.0M), Integrated Ground Testing 6 (IGT-6) SBIRS Tape Delivery, SBIRS Protection Guide, SBIRS Simulation, Scenario Development, Space and Atmospheric Burst Reporting System on SBIRS Integration, Interim Mission Control Station Backup 24/7 Front Desk Security. Target Fee was reduced from \$375.5M to \$348.2M.

Note: PM's price EAC includes negotiated August 00 OTB amount and initial EAC results.

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

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

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-09)	<u>Total</u>
RDTSE	2260.6	438.7	814.9	2255.8	5770.0
Procurement	-	-	-	640.3	640.3
MILCON	31.3	18.8	6.9	-	57.0
0.6M	60,6	22.2	15.5	177.9	276.2
Total	2352.5	479.7	837.3	3074.0	6743.5

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

b. Annual Summary -- SBIRS (High)

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

		Flyaway	Flyaway		m - h - 1
		FY 1995	FY 1995	Total	TOTAL
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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				369.7	400.0
2001				500.1	550.1
2001				392.4	438.7
2002				718.6	814.9
2005				537.5	620.3
2004				379.2	445.6
2005				252.9	303.0
2000				252.5	308.1
2007		<u>.</u>		222.0	285 1
2008				227.7	203.1
2009				431.0	<u> </u>
Subtotal	2			5111.0	5770.0

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					
2002					
2003					
2004				83.6	97.5
2005	3		536.8	421.5	500.8
2006]		
2007				5.9	7.3
2008				13.0	16.4
2009				12.8	16.4
Subtotal	3		536.8	536.8	638.4

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 \$
2002				<u></u>	
2003					

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

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Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year 2004	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005					
2006				0.6	0.7
2007				1.0	1.2
2008					
2009					
Subtotal				1.6	1.9

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				16.6	18.8
2003				6.0	6.9
Subtotal				51.9	57.0

Appropriation: 3400 - Operation & Maintenance, Air Force

		Flyaway FY 1995	Flyaway FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998				9.9	10.4
1999				16.0	17.0
2000				14.4	15.6
2001				16.0	17.6
2002				19.9	22.2
2003				13.7	15.5
2004				16.5	19.0
2005				19.2	22.6
2006				16.7	20.0
2007				24.8	30.3
2008				34.1	42.4
2009				34.4	43.6
Subtotal				235.6	276.2

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Actual

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	5		536.8	5936.9	6743.5

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

17. (U) Delivery/Expenditure Information:

а.	(U)	Deliveries	TO	Date	<u>Plan</u>
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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): \$ 2202.6

(U) Percent Total Program Expended: 32.7%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --These Operations and Maintenance funds support the activation of new SBIRS High Component ground operating and training facilities at four sites worldwide. SBIRS High Component Increment 1 consolidates operations from three Defense Support Program sites into one CONUS-based site. These funds support the procurement of temporary facilities, minor construction, office equipment, furniture, travel, supplies, and communication links necessary for the activation of the SBIRS Mission Control Station, two OCONUS Relay Ground Stations, and Initial Qualification Training facility in FY99. Also supported with these funds are the repair and transportation of Government Furnished Equipment and TDY for training of the initial cadre of operators.

The SBIRS High profile reflects a 25-year Life Cycle Cost and is based upon an October 2000 Program Office Estimate. The DSP costs is Acquisition O&M only.

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

Cost Element	SBIRS (High) Avg Annual Cost Per SBIRS High System	Avg Annual Cost Per DSP System
Mission Pay & Allowances	49.3	N/A
Unit Level Consumption	11.1	12.3
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	12.3

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

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Total O&S Cost	SBIRS (High)	Avg Annual Cost Per
BY\$ (In Millions)	2917.0	116.7
TYS (In Millions)	3985.0	159.4

Report Creation Date: 03/26/2002 2:46:38 PM

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SELECTED ACOUISITION REPORT (RCS: DD-AGT (OGA) 823) PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 2001

SUBJECT PAGE Cover Sheet Information 1 Mission and Description 2 Executive Summary 2 Threshold Breaches 3 4 Schedule Performance Characteristics 6 9 Total Program Cost and Quantity Unit Cost Summary 10 Cost Variance Analysis 16 Unit Cost and Other History 21 Contract Information 22 Program Funding Summary 25 Delivery/Expenditure Information 31 Operating and Support Costs 31

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1. Designation and Nomenclature (Popular Name): V-22 JOINT SERVICES ADVANCED VERTICAL LIFT AIRCRAFT (OSPREY)

2. DoD Component: Navy

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Joint Participants: USMC, USN, USSOCOM, USAF MAR 271.2 R

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3. Responsible Office and Telephone Number: PROGRAM EXECUTIVE OFFICE (PMA-275) AIR ASW ASSAULT AND SPECIAL MISSION Assigned: June 14, 2001 47123 BUSE ROAD UNIT IPT SUITE 151 PATUXENT RIVER, MD 20670-1547

COL DAN SCHULTZ DSN 757-5161; COMM (301) 757-5161 SCHULTZD@NAVAIR.NAVY.MIL

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4. Program Elements/Procurement Line Items:

RDT&E: PE 0603203N Project (SUNK) PE 0603256N (Shared) Navy Proj. W1557SUNK Project 642973 PE 0604222A Project (SUNK) PE 0604262N (Shared) Navy MLR Proj. W2088 Project H1425 PE 1110011F (Shared) Proj. 643752 (SUNK) PE 1160404BB (Shared) Proj. 643752 **PROCUREMENT:** APPN 1506 ICN 016300 (Navy) APPN 1506 ICN 016400 (Navy) APPN 0300 ICN 1160404BB (DCA/DNA) APPN 3010 ICN 41318F (Air Force) MILCON: PE 1120493BB PE 1120547BB PE M62470

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02-12-0626

V-22 (OSPREY), December 31, 2001

5. <u>References</u>:

SAR Baseline (Development Estimate): FY 1988/89 President's Budget.

Approved Program: NAE Approved Acquisition Program Baseline (APB) dated August 15, 2000.

6. Mission and Description:

The V-22 Osprey is a Department of the Navy program for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the strike rescue needs of the Navy, and the special operations needs of the Air Force and United States Special Operations Command (USSOCOM). The V-22 will replace the CH-46E and CH-53A/D in the Marine Corps (MV-22); replace the H-53, H-60 and augment the C-130 in the Air Force and USSOCOM (CV-22); and supplement the H-60 in the Navy (HV-22). The V-22 will be capable of flying over 2100 nautical miles with a single refueling, giving the services the advantage of a Vertical/Short Take-off and Landing (VSTOL) aircraft that could rapidly self-deploy to any location in the world.

7. Executive Summary:

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 Dec 00 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 is being restructured. The restructure addressed both execution aspects of the program and organizational structure within the program.

On December 21, 2001, USD (AT&L) authorized the V-22 program to proceed with a much more comprehensive and rigorous "event driven" flight test program and at the minimum sustaining production rate pending a review of the technical progress during flight testing. USD (AT&L) also authorized the definitization of production lots 5 and 6 (FY01 and FY02) and advanced procurement for lot 7. A revision to the Acquisition Program Baseline (APB) that reflects this guidance is in process.

The program will resume Engineering Manufacturing Development (EMD) MV-22flight testing in the third quarter of FY02 with CV-22 flight testing resuming in the fourth quarter of FY02. Flight test plans have been established for FY02 through FY 04 that address all required testing prior to Fleet Marine Corps return to flight ops for training, for shipboard operations and OPEVAL Phase II. Present plans support return to fleet training operations in the first quarter of FY04 and start of OPEVAL Phase 2 in the fourth quarter of FY04 which

V-22 (OSPREY), December 31, 2001

7. Executive Summary (Cont'd):

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leads to a MS III decision in the fourth quarter of FY05.

Two CV-22 production representative test vehicles (PRTVs) will be procured with FY02 Air Force RDT&E funding. They will be delivered for testing in FY05.

As of November 2000, 10 aircraft were delivered. Aircraft continue to be fabricated and assembled but are not being delivered as a result of the requirement to modify them to a Block A configuration (updated configuration to return fleet aircraft to a safe operational and suitable condition). Delivered and production aircraft are being placed in preservation/storage condition awaiting modification. Aircraft modifications will begin in the first quarter of FY03 with first delivery to test in the third quarter of FY03. MV-22 Block A aircraft will be delivered to the fleet starting in the first quarter of FY04.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	Yes
Procurement	No
MILCON	No
0&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:

Acquisition Program Baseline (APB) schedule breaches include: MS III, CV-22 flight test completion, CV-22 Initial Operational Test and Evaluation (IOT&E) start and completion, and cost, among others. A Program Deviation Report notification was processed on August 2, 2001. A revised APB has been prepared and is being staffed for approval.

The unit cost breach is attributed to the V-22 program restructure. Factors include reduced quantity from the baseline, increase in overhead and labor rates, flattened learning curves, schedule and scope growth in the development program.

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8c. Threshold Breaches (Cont'd):

9. <u>Schedule</u>:

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a. Milestones ---

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Milestone 0 (DEPSECDEF MEMO)	DEC 1981	DEC 1981	DEC 1981
Milestone I (DSARC I)	DEC 1982	DEC 1982	DEC 1982
Preliminary Design Contract Award	APR 1983	APR 1983	APR 1983
Milestone II (DSARC II)	APR 1986	APR 1986	APR 1986
FSD Contract Award	MAY 1986	MAY 1986	MAY 1986
Production Contract Award (Long Lead AAC)	JAN 1989	JAN 1989	MAR 1989
Operational Testing IIA	AUG 1989	N/A	N/A
Milestone IIIA (USMC Pil Prod)	DEC 1989	N/A	N/A
Operational Testing IIB	AUG 1990	N/A	N/A
Milestone IIIB (All Serv Ltd Prod)	DEC 1990	N/A	N/A
Operational Testing IIIC (OPEVAL)	AUG 1991	N/A	N/A
Operational Testing IID (AF OPEVAL)	AUG 1991	N/A	N/A
First Fleet Deliveries	DEC 1991	N/A	N/A
Milestone IIIC (USN/MC/A Full	DEC 1991	N/A	N/A
Production)			,
USMC IOC (5 Acft Trng Det)	SEP 1992	N/A	N/A
USAF IOC (6 Acft Mission Capable)	SEP 1994	N/A	N/A
USA IOC (First Operational Company	SEP 1995	N/A	N/A
Equipped)			•
EMD Airframe Contract Award	N/A	OCT 1992	OCT 1992
EMD Engine Contract Award	N/A	DEC 1992	DEC 1992
SRR Complete	N/A	AUG 1993	AUG 1993
EMD Trade Studies Complete	N/A	N/A	JAN 1994
PDR Complete	N/A	APR 1994	APR 1994
MS II Plus Program Review	N/A	SEP 1994	SEP 1994
CDR Complete	N/A	DEC 1994	DEC 1994
DAB LRIP REVIEW	N/A	FEB 1997	APR 1997
MV-22 TECHEVAL			
Start	N/A	FEB 1999	JUL 1999
Complete	N/A	APR 1999	SEP 1999
MV-22 OPEVAL			
Start	N/A	MAY 1999	NOV 1999
Complete	N/A	DEC 1999	JUL 2000
LRIP 1 Contract Award (Long lead \$)	N/A	FEB 1996	JUN 1996
LRIP 1 First Delivery	N/A	APR 1999	MAY 1999
LRIP 2 Contract Award (Long lead \$)	N/A	FEB 1997	APR 1997
LRIP 2 First Delivery	N/A	FEB 2000	APR 2000
LRIP 3 Contract Award (Long Lead \$)	N/A	FEB 1998	MAR 1998
LRIP 3 First Delivery	N/A	NOV 2000	FEB 2003(Ch-1)
LRIP 4 Contract Award (Long Lead \$)	N/A	FEB 1999	MAR 1999
LRIP 4 First Delivery	N/A	OCT 2001	OCT 2004 (Ch-1)

9a. <u>Schedule (Cont'd)</u>:

	Development	Approved	Current
e(stimate (SAR)	Program (APB)	Estimate
Full Rate Production Contract Award	N/A	FEB 2000	JAN 2005 (Ch-2)
(Long lead \$)			
Physical Configuration Audit (PCA)	N/A	DEC 1999	DEC 1999
MS III	N/A	DEC 2000	SEP 2005 (Ch-3)
MV-22 IOC	N/A	APR 2001	SEP 2004 (Ch-4)
GSD	N/A	MAR 2007	JAN 2009 (Ch-2)
Modification to EMD Contract to Includ CV-22 Efforts	le N/A	JUN 1995	AUG 1995
CV-22 SRR	N/A	AUG 1996	AUG 1996
CV-22 PDR	N/A	FEB 1998	DEC 1997
CV-22 CDR	N/A	DEC 1998	DEC 1998
CV-22 Production Contract Award (Long lead \$)	N/A	FEB 2000	JUN 2000
CV-22 Flight Test			
Start	N/A	OCT 1999	FEB 2000
Complete	N/A	FEB 2002	DEC 2005(Ch-2)
CV-22 IOT&E			
Start	N/A	MAR 2002	JAN 2006(Ch-2)
Complete .	N/A	SEP 2002	JUN 2006(Ch-2)
CV-22 First Production Delivery	N/A	MAR 2003	FEB 2006(Ch-2)
IOC-CV	N/A	OCT 2005	OCT 2009(Ch-2)

ACRONYMS and Abbreviations List

AAC - Advanced Acquisition Contract CDR - Critical Design Review DAB - Defense Acquisition Board EMD - Engineering Manufacturing Development FSD - Full Scale Development GSD - Government Support Date IOC - Initial Operational Capability IOT&E - Initial Operational Test and Evaluation LRIP - Low Rate Initial Production PDR - Preliminary Design Review SRR - System Requirements Review

Note: Milestone 0 through USA IOC (First Operational Company Equipped) reflects the FSD program which was terminated in April 1989.

OPEVAL Phase II is currently scheduled to begin November 2004 and will be reflected in the revised APB. OPEVAL Phase II will provide a formal report of the operational suitability and effectiveness of the Block A aircraft in support of the MS III decision.

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9b. <u>Schedule (Cont'd)</u>:

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b. Current Change Explanations --(Ch-1) LRIP 3 First Delivery is changed from TBD to February 2003 and will be pre-Block A LRIP to the EMD program. LRIP 4 First Delivery is changed from TBD to October 2004 and is planned to be delivered as Block A.

(Ch-2) The following program estimates have been updated to reflect current planning in support of rebaseline effort:

Full Rate Production Contract Award	Changed From: June 00	Changed To: January 05
(Long Lead \$)		-
GSD	March 07	January 09
CV-22 Flight Test - Complete	THD	December 05
CV-22 IOTLE - Start	TED	January 06
- Complete	TED	June 06
CV-22 First Production Delivery	TED	February 06
CV-IOC	TED	October 09

(Ch-3) MS III is changed from TBD to September 2005 and should be 6 months after the end of OPEVAL Phase II.

(Ch-4) MV-22 IOC is changed from TED to September 2004 and is defined as the delivery of 12 aircraft.

10. Performance Characteristics:

a. Performance --

		App	roved	Demon-	
	Development	Progra	m (APB)	strated	Current
	Estimate (SAR)	Obj/Th	reshold	Perf	<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 (1bs)	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	98	N/A	/ N/A	N/A	N/A
Probability, Rate					
(MFHBMA Design					
Controllable) (%)					
Direct Maintenance					
Manhours per Flight					
Hour, Design					

Controllable:

10a. Performance Characteristics (Cont'd):

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		Apj	pr	oved	Demon-		
	Development	Progra	am	(APB)	strated	Current	
	Estimate (SAR)	Obi/T	nr	eshold	Perf	Estimate	3
Org Level,	7.0	N/A	7	N/A	N/A	N/A	-
Unscheduled							
(corrective)							
Org Level, Scheduled	1 2.5	N/A	1	N/A	N/A	N/A	
(preventive)			r			N/A	
World-wide	2100	N/A	1	N/A	N/D	N/A	
Self-Deployment (nm)	2100	N7 73	,	117.45	57 A	N/A	
(minimum distance)							
Continuous Cruise	250	N/A	1	NI / 7	NI / D	N7 / N	
Speed (kte)	250	N/A	/	N/A	N/A	N/A	
Dach Speed (kts)	275	N1 / D	,	NT / B	11/2		
Tastastasous	215	N/A	1	N/A	N/A	N/A	
Clardine							
G-Loading	1.0		,				
Plus	4.0	N/A	1	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 (1bs)	10000	N/A	1	N/A	N/A	N/A	
MV-22							
Cruise Speed (kts)	N/A	270	/	240	258	265	
			1				
Mission Radius (NM)							
Land Trooplift	N/A	200X1	1	200X1	243X1	229X1	
Land External	N/A	110X1	1	50X1	50X1	54X1+	
Sea Trooplift	N/A	110X2	1	50X2	80X2	92X2	
Sea External	N/A	110X1	1	50X1	50X1	112X1	
Payload	-		,				
Troops	N/A	24	1	24	24	24	
External Lift	N/A	15,000	1	10.000	10.000	10.000	
(lbs)			'	20,000	-0,000	10,000	
Aerial Refuel	N/A	Ves	1	Ves	Ves	VAR	
Capable		yee	'	J 05	162	yes	
Self-Deployment	N/A	2100/	1	2100 1/1	2113/1	2200	
(nm)	N7 N	2100 47	',	2100 W/1	2115 W/1	2230	
(,		rofuel	',	refuel		w/1	
		rerder	1	Ternet	terder	aetial	
Shipboard	N/A	VAE	,	tion		reruer	
Compatible	N/A	yes	/	yes	yes	yes	
V/STOL Capable	N/D		,				
Sugginability (mm		yes	',	yes	yes	yes	
DET 0009moll	N/A	14.2	/	12.7	12.1+	12.1	
Reliability							
MADE	NI / D	>-2.0	,	> 1 4	0.7	1 0	
Mincipp (%)	N/A	>=2.0	',	>=1.4	0.7	1.2	
GT233 GT2310U (2)	N/A	>=00	/	>=80	92	85	
	N7 / B	250	,			0.05	
Cruise Speed (kts)	N/A	250	1	230	TBD	235	(Ch-1)
Mission Radius (nm)	N/A	750	1	500	TBD	503**	
rayload - Troops	N/A	24	/	1.8	TBD	18	

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10a. Performance Characteristics (Cont'd):

		Approved		Demon-	
	Development	Program	(APB)	strated	Current
	Estimate (SAR)	Obi/Thr	<u>eshold</u>	<u>Perf</u>	Estimate
Aerial Refuel Capable	N/A	yes /	yes	TBD	yes
Self-Deployment (nm)	N/A	2100 w/0/ aerial / refuel /	2100 w/1 aerial refuel	TBD	2340 w/l aerial refuel
Shipboard Compatible	N/A	yes /	yes	TBD	yes
Operational Environment	N/A	100' / TF/TA, / Day/ / Night, / VMC/IMC / /	300' TF/TA, Day/ Night, VMC/IMC	Ť₿D	300' TF/TA, Day/ Night, VMC/IMC
Precision Naviga- tion (diameter @ MAX Combat Radius) Reliability	N/A	Locate / LZ W/IN / 1 Rotor /	Locate L2 W/IN 2X Rotor	TBD	Locate LZ W/IN 2X Rotor
MTBF Weapon System (%)	N/A N/A	>=2.0 / >=84 /	>=1.4 >=77	TBD TBD	1.2 77

All radius/range demonstrated and estimated performance are prior to incorporation of Way Forward items.

*Aft Sponson Tank Kit not installed for MV-22 Land External Mission. **The Program Manager's estimate of the CV-22 Mission Radius is 503NM, using agreed to clarification of ambient operating temperatures for ORD mission.

As part of the restructure, the DT return-to-flight envelope is being developed.

b. Current Change Explanations --(Ch-1) CV-22 data has been updated based on latest analysis and test. Summary of changes are as follows:

CV-22	Demonstrated Perf	Current Estimate
Cruise Speed (kt	ts) No Change	from TBD to 235

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

. . . .

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	2443.7	5562.5	7021.6
	Procurement	20493.1	21441.7	22447.6
	Flyaway	(15517.1)		(0.0)
	Recurring Flyaway			(17969.6)
	Nonrecurring Flyaway			(463.6)
	Total Flyaway	(15517.1)		(18433.2)
	Other Weapon Systems Cos	t (3299.6)		(1734.4)
	Peculiar Support	(0.0)		(1201.5)
	Initial Spares	(1676.4)		(1078.5)
	Construction (MILCON)	136.2	34.5	35.5
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1986 Base-Year \$	23073.0	27038.7	29504.7
	Escalation	6589.3	25923.2	16736.1
	Development (RDT&E)	(181.5)	(1388.5)	(1984.1)
	Procurement	(6371.1)	(24515.2)	(14732.6)
	Construction (MILCON)	(36.7)	(19.5)	(19.4)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	29662.3	52961.9	46240.8
ь.	Quantity			
	Development (RDT&E)	0	0	2
	Procurement	<u>_913</u>	<u> 523 </u>	<u>456</u>
	Total	913	523	458

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

Quantities: Deleted 11 development aircraft from the APB baseline because they are not fully configured and will not become fleet assets.

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), and 11 (FY02 - includes 9 MV and 2 PRTV CV aircraft). An additional LRIP Lot VII of 11 MV aircraft is requested for FY03.

This LRIP is more than 10% of the total program buy because of the MS III slip caused by the December 00 mishap and the subsequent program restructure. MS III is currently scheduled for FY05.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR	Current	
	Baseline	Estimate	Percent
	(AUG 2000 APB)	(Dec 2001 SAR)	Change
a. Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1986 BYS)	27038.7	29504.7	
(2) Quantity	523	458	
(3) Unit Cost	51.699	64 421	+24 61
	311033	01.121	121.01
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1986 BYS)	21441 7	22117 6	
(1) COSC (FI I)OU DIV (2) Ouantity	502	22447.0	
(2) Duit Cost	JZJ 40.000	4.30	
(3) UNIC COSE	40.998	49.221	+20.07
	1100		
	UCR	Current	
	Baseline	Estimate	Percent
	(AUG 2000 APB)	(Dec 2001 SAR)	<u>Change</u>
c. Prog. Acq. Unit Cost (PAUC)			
(1) Cost $(TY$)$	52961.9	46240.8	
(2) Unit Cost	101.266	100.962	-0.30
d. Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	45956.9	37180.2	
(2) Unit Cost	87.872	81.536	-7.21
e. Changes from Previous SAR (SEP 2001) Dol	lars/Qty Pe	rcent
(1) PAUC (BY\$)		8.583 +	15.37
(2) APUC (BY\$)		7.642 +	18.38
(3) PAUC Quantity		19	+4.33
(4) PAUC (TY\$)		15.795 +	18.55
(5) APUC (TYS)		14.230 +	21.14
f. Initial SAR Information			
Initial SAR Date (DEC 1983):			
(1) Program Acquisition Cost (BY	'S)	14986.6	
(2) Program Acquisition Cost (TY	(\$)	24467.0	

g. Unit Cost PAUC Changes --

The Program Acquisition Unit Cost breach is attributed to the V-22 program restructure. Factors include reduced quantity from the baseline, increase labor rates, flattened learning curves, schedule and scope growth in the development program. A revised APB is being staffed for approval.

Unit Cost APUC Changes --The Average Procurement Unit Cost breach is attributed to the V-22 program restructure. Factors include reduced quantity from the baseline, increase labor rates, flattened learning curves, schedule and incorporation of Block Upgrades. A revised APB is being staffed for approval.

h. Impact of Perf or Sched Changes --The PAUC and APUC increased due to the program restructure. The second of two fatal mishaps in CY-2000 resulted in the suspension of flight activity

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12h. Unit Cost Summary (Cont'd):

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and the postponement of the pending full rate production decision until the results of the mishap investigation were understood. Independent reviews, principally the SECDEF Blue Ribbon Panel and NASA Ames' Tiltrotor Aeromechanical Phenomena Assessment, recommended additional program development and flight test while slowing production to a minimum sustainable rate in order to address safety of flight changes, including reliability and maintainability improvements. The additional development costs, the reduced production rate, and the cost of incorporating improvements into the aircraft are the primary drivers of the unit cost growth.

i. Program Management & Control --

The Program Office was reorganized to join the old Bell-Boeing Joint Program Office with the government program office. The new organization is co-located at NAVAIR and is called the Joint Program Office. Several other improvements to Program communications were also implemented. Among them is the Executive Committee (EXCOMM), chaired by the Principal Deputy Assistant Secretary of the Navy for Research Development, and Acquisition, with membership including the Deputy Secretary of the Air Force (Acquisition), the Commander, Naval Air Systems Command, the Assistant Commandant of the Marine Corps, Aviation, senior commanders from the Marine Corps, Air Force and Special Operations Command. Representing the prime contractors on the EXCOMM are the CEO of Bell Textron Helicopters, and the President and CEO of Boeing Military Aircraft and Missile Systems Division.

- j. Cost Control Actions --In addition to the restructure of the program management, "smart manufacturing" measures have been taken in order to limit scrap and rework when incorporating block upgrade changes on partially built airplanes. Also, in accordance with the Blue Ribbon Panel recommendation, when the Development Phase is complete, the program will establish a maximum economic, production rate and buy out the remaining aircraft with firm, fixed-price, multiyear procurements beginning in FY08 to help recover total
- k. Contract Information (In Millions of Then-Year Dollars) ---
 - (1) Contractor(s): Bell-Boeing JPO
 - (2) Contract Title: EMD (Airframe)

program cost and schedule.

- (3) Contract Number: N00019-93-C-0006
- (4) Actual Cost of Work Performed (ACWP) to date: 3149.5
- (5) Percent contract completed (BCWP/target cost): 94.30
12k. Unit Cost Summary (Cont'd):

(6) Variances:

1 - / ·				
	Cost Var	iance	Schedule Var	iance
	(\$/%)		(\$/%)	
Baseline Report	\$-24.6/	+0.80	\$-17.8/	+0.60
Previous SAR	\$-49.0/	+1.60	\$-26.8/	+0.90
Current Values	\$-61.8/	+2.00	\$-32.2/	+1.00
Change from the Baseline Report	\$-37.2/	+1.20	\$-14.4/	+0.40
Change from the Previous SAR	\$-12.8/	+0.40	\$-5.4/	+0.10

Explanation of Variances --

"Change from the Baseline Report" - Net change to Cost Variance was primarily due to reconciliation of material actual accounts plus the addition of a 12.3 month aircraft month flight test extension being worked for CV-22 aircraft. Flight test extension also impacted Schedule Variance.

"Changes from the Previous SAR" - Cost and Schedule Variance have been negatively impacted by the aircraft being grounded since December 2000 and by the associated cost of efforts to return the aircraft to flight.

Impact of Variances on Contract --Engineering Manufacturing Development (EMD) MV-22 flight testing will resume in the third quarter of FY02 with CV-22 flight testing resuming in the fourth quarter of FY02. Flight test plans have been established for FY02 through FY04 that address all required testing prior to Fleet Marine Corps return to flight ops for training, for shipboard operations and OPEVAL Phase II.

Impact of Variances on Unit Costs --This contract did not significantly contribute to the programs Nunn-McCurdy unit cost breach.

(1) Contractor(s): Rolls Royce

- (2) Contract Title: V-22 Engine
- (3) Contract Number: N00019-95-C-0209
- (4) Actual Cost of Work Performed (ACWP) to date: N/A
- (5) Percent contract completed (BCWP/target cost): N/A

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12. Unit Cost Summary (Cont'd):

(6) Variances:

. . .

(0) (2120000)	Cost Variance (\$/%)		Schedule Var: (\$/%)	ance
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$0.0/	0.00	\$0.0/	0.00
Current Values	\$0.0/	0.00	\$0.0/	0.00
Change from the Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Change from the Previous SAR	\$0.0/	0.00	\$0.0/	0.00

Explanation of Variances --Variance reporting is not required on this Firm Fixed Price Contract.

Impact of Variances on Contract --Variance reporting is not required on this FFP contract.

Impact of Variances on Unit Costs --Variance reporting is not required on this FFP contract.

(1) Contractor(s): Bell-Boeing JPO (2) Contract Title: FY98 LRIP 2 (AIRFRAME)

(3) Contract Number: N0001996C0054/2

(4) Actual Cost of Work Performed (ACWP) to date: 477.3

(5) Percent contract completed (BCWP/target cost): 96.10

(6) Variances:

	Cost Va	riance	Schedule Varianc		
	(2/8))	(2/8)		
Baseline Report	\$-0.3/	-0.10	\$-4.1/	-0.90	
Previous SAR	\$5.1/	+1.10	\$-4.4 /	-0.90	
Current Values	\$23.1/	+4.60	\$-1.8/	-0.40	
Change from the Baseline Report	\$23.4/	+4.70	\$2.3/	+0.50	
Change from the Previous SAR	\$18.0/	+3.50	\$2.6/	+0.50	

Explanation of Variances ---"Change from the Baseline Report" - Cost Variance has improved as the level of effort for Lot 2 has decreased during the operational pause that has adversely affected Schedule Variance until delivery of the last two aircraft can occur.

"Changes from the Previous SAR" - Cost Variance has continued to improve as the level of effort for Lot 2 has decreased during the operational pause. Schedule Variance has also been positively affected.

Impact of Variances on Contract --5 of the 7 LRIP 2 aircraft had been delivered by November 2000 with the remaining 2 aircraft approaching delivery between December 2000 and January 2001. Remaining 2 aircraft were placed in preservation/storage with delivery planned for the first quarter of FY03.

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\$-0.3/

12. Unit Cost Summary (Cont'd):

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Impact of Variances on Unit Costs --This contract did not significantly contribute to the programs Nunn-McCurdy unit cost breach.

(1) Contractor(s): Bell-Boeing JPO (2) Contract Title: FY99 LRIP 3 (AIRFRAME) (3) Contract Number: N0001996C0054/3 (4) Actual Cost of Work Performed (ACWP) to date: 438.4 (5) Percent contract completed (BCWP/target cost): 90.90 (6) Variances: Cost Variance Schedule Variance (\$/8) (\$/%) Baseline Report \$-9.4/ -3.50 \$-2.3/ -0.90\$-22.1/ -5.40 \$-8.4/ Previous SAR -2.00-3.60 \$-8.7/ Current Values \$-15.3/ -2.00 Change from the Baseline Report \$-5.9/ -0.10\$-6.4/ -1.10

Explanation of Variances --

Change from the Previous SAR

"Change from the Baseline Report" - LRIP Lot 3 Cost Variance has been negatively impacted by increased parts cost and increased rates. Late delivery of parts to support the production line has been a primary driver in the negative Schedule Variance.

\$6.8/

+1.80

"Changes from the Previous SAR" - Cost Variance improvement is primarily due to favorable performance in Boeing's material accounts. Schedule variances decreased slightly primarily due to parts shortages.

Impact of Variances on Contract --LRIP 3 First Delivery has been changed to February 2003 and will be a pre-Block A LRIP to the EMD program.

Impact of Variances on Unit Costs --This contract did not significantly contribute to the programs Nunn-McCurdy unit cost breach.

(1) Contractor(s): Bell-Boeing JPO
(2) Contract Title: FY00 LRIP 4 (AIRFRAME)
(3) Contract Number: N0001999Cl090/0
(4) Actual Cost of Work Performed (ACWP) to date: 467.1
(5) Percent contract completed (BCWP/target cost): 65.80

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12. Unit Cost Summary (Cont'd):

(6) Variances:

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	Cost Va (\$/%	riance)	Schedule Var	iance
Baseline Report	\$1.2/	+2.10	\$-2.3/	-3.70
Previous SAR	\$-24.6/	-7.40	\$-14.9/	-4.30
Current Values	\$-37.1/	-8.60	\$-14.6/	~3.30
Change from the Baseline Report	\$-38.3/	~10.70	\$-12.3/	+0.40
Change from the Previous SAR	\$-12.5/	-1.20	\$0.3/	+1.00

Explanation of Variances --Change from the Baseline Report" - Cost Variance has been negatively impacted by increased cost of composite parts and rates increases. Schedule Variance is reflective of parts shortages due to delays in receiving parts from vendors.

"Changes from the Previous SAR" - Cost Variance has been negatively impacted by increase cost of composite parts and rates increases. Schedule Variance is reflective of parts shortages due to delays in receiving parts from vendors.

Impact of Variances on Contract --LRIP 4 First Delivery has been changed to October 2004 and is planned to be delivered as a Block A.

Impact of Variances on Unit Costs --This contract did not significantly contribute to the programs Nunn-McCurdy unit cost breach.

(1) Contractor(s): Bell-Boeing JPO
(2) Contract Title: FYO1 LRIP 5 (AIRFRAME)
(3) Contract Number: N0001993C0183/0
(4) Actual Cost of Work Performed (ACWP) to date: N/A
(5) Percent contract completed (BCWP/target cost): 0.00
(6) Variances:

	Cost Variance (S/%)		Schedule Vari (\$/%)	ance
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$0.0/	0.00	\$0.0/	0.00
Current Values	\$0.0/	0.00	\$0.0/	0.00
Change from the Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Change from the Previous SAR	\$0.0/	0.00	\$0.0/	0.00

Explanation of Variances ---There are currently no changes to report from the "Baseline Report" or from the "Previous SAR".

Impact of Variances on Contract ---

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12. Unit Cost Summary (Cont'd):

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There is currently no impact of Variances on Contract.

Impact of Variances on Unit Costs --There is currently no impact of Variances on Unit Costs.

1. General Comments -- None.

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2625.2	26864.2	172.9	29662.3
Previous Changes:				
Economic	-155.2	-5583.0	-7.7	-5745.9
Quantity	-77.0	+10626.7	-	+10549.7
Schedule	+28.2	-3669.3	+7.8	-3633.3
Engineering	+66.8	+374.3	-	+441.1
Estimating	+5263.0	+2020.9	-119.1	+7164.8
Other	-		-	-
Support	-	-1220.9	**	-1220.9
Subtotal	+5125.8	+2548.7	-119.0	+7555.5
Current Changes:				
Economic	-0.2	-371.1	-0.4	-371.7
Quantity	+180.0	+1089.2	-	+1269.2
Schedule	-	+850.0	-	+850.0
Engineering	+644.1	+203.3	-	+847.4
Estimating	+430.8	+3890.8	+1.4	+4323.0
Other	-	-		-
Support		+2105.1		+2105.1
Subtotal	+1254.7	+7767.3	+1.0	+9023.0
Total Changes	+6380.5	+10316.0	-118.0	+16578.5
Current Estimate	9005.7	37180.2	54.9	46240.8

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

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Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2443.7	20493.1	136.2	23073.0
Previous Changes:				
Quantity	-72.9	-1093.5	-	-1166.4
Schedule	+16.9	-400.5	-	-383.6
Engineering	+46.6	+220.1	-	+266.7
Estimating	+3759.8	+1128.5	-101.4	+4786.9
Other	-	-	-	-
Support	-	-2175.2	-	-2175.2
Subtotal	+3750.4	-2320.6	-101.4	+1328.4
Current Changes:				
Quantity	+122.9	+587.3	-	+710.2
Schedule		-	-	-
Engineering	+428.7	+141.6	-	+570.3
Estimating	+275.9	+2332.6	+0.7	+2609.2
Other	-	-		~
Support		+1213.6		+1213.6
Subtotal	+827.5	+4275.1	+0.7	+5103.3
Total Changes	+4577.9	+1954.5	-100.7	+6431.7
Current Estimate	7021.6	22447.6	35.5	29504.7

b. Current Change Explanations --

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(Dollars in Millions) Base-Year Then-Year

		Dage Teat	ALCH TOOL
(1)	RDTAE		
	Revised escalation indices - Navy/Air Force/USSOCOM (Fconomic)	N/A	-0.2
	Increase to fund two Production	+122.9	+180.0
	Representative Test Vehicles as directed in		
	the FY02 appropriations bill - Air Force		
	(Quantity)		
	Increase to fully fund the V-22 Way Forward	+398.4	+599.7
	development efforts - Navy (Engineering)		
	Increase to fully fund the restructured Block 20 development efforts - Air Force (Engineering)	+30.3	+44.4
	Adjustment for Current and Prior Inflation -	-0.1	-0.1
	Navy/Air Force/USSOCOM (Estimating)		
	Increase to fully fund the development	+55.2	+83.0
	efforts of Block 10 - USSOCOM (Estimating)		
	Adjustment for Current and Prior Inflation ~ Navy/Air Force/USSOCOM (Estimating)	-0.3	-0.4
	Increase to fully fund the restructured Block 0 development efforts - Navy (Estimating)	+222.2	+348.3

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

	b. Current Change Explanations		
		(Dollars i <u>Base-Year</u>	in Millions) <u>Then-Year</u>
	Adjustment due to refinement of estimate - Air Force (Estimating)	-1.1	0.0
	RDT&E Subtotal	+827.5	+1254.7
(2)	Procurement		
	Revised escalation indices - Navy/Air Force/USSOCOM (Economic)	N/A	-380.3
	Economic adjustment for negative program change - Navy/Air Force/USSOCOM (Economic)	N/A	+9.2
	Total Quantity Variance associated with increase of 11 aircraft from 397 to 408 - Navy (see note 13b), (Quantity)	+339,5	+629.6
	Total Quantity Variance associated with increase of 8 aircraft from 42 to 50 - Air Force (see note 13b), (Quantity)	+247.8	+459.6
	Stretchout of annual procurement buy profile	0.0	+671.1
	Stretchout of annual procurement buy profile	0.0	+178.9
	Addition of Directed Infrared Countermeasures (DIRCM) to increase electronic warfare	+146.9	+245.9
	Addition of Global Air Navigation System / Global Air Traffic Management (GANS/GATM) in order to meet International Air Traffic	+9.7	+16.5
	Include Reliability and Maintainability upgrades and remove Gun from FY08 and beyond	-86.2	-155.0
	Adjustment for Lean Manufacturing of Out-of-Sequence work - Navy (Engineering)	+87.1	+133.0
	Remove Gun from FY08 and beyond - Air Force	-15.9	-37.1
	Adjust Engineering Change Order percent of Airframe (CFE - USSOCOM (Estimating)	+13.5	+23.0
	Change in Non-Recurring Flyaway - USSOCOM	-84.9	-130.9
	Update Material Curve / Slopes - USSOCOM	+70.5	+124.9
	Update Labor Curve / Rates - USSOCOM	+341.7	+595.3
	Adjustment for Current and Prior Inflation - Navy (Estimating)	+0.6	+1.0

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

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b. Current Change Explanations --

Change in estimating assumptions due to shift in Multi Year Procurement (MYP) from FY03-FY07 to FY08-FY12 - Navy (Estimating) Addition of Cost Reduction Initiative to current program - Navy (Estimating) Change in Non-Recurring Flyaway - Navy (Estimating) Adjustment Engineering Change Order percent of Airframe / CFE - Navy (Estimating) Update of Ancillary Equipment estimate - Navy (Estimating) Update Material Curve / Slopes - Navy (Estimating) Update Labor Curve / Rates - Navy (Estimating) Update of Ancillary Equipment estimate - Air Force (Estimating) Update of Ancillary Equipment estimate - Air Force (Estimating) Update of Ancillary Equipment estimate - Air Force (Estimating) Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating) Adjust Engineering Change Order percent of Airframe / CEE - Air Force (Estimating) Adjust Engineering Change Order percent of Airframe / CEE - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Adjust Engineering Change Order percent of Airframe / CEE - Air Force (Estimating) Adjust Engineering Change Order percent of Airframe / CEE - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Update Material Curve / Slopes - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Update Material Spares - USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Navy (Support) Change in Initial Spares - Navy (Su		(Dollars i	n Millions)
<pre>Change In estimating assumptions due to the table table</pre>	Change in estimating accumptions due to	Base-Year	Then-Year
FY03-FY07 to FY08-FY12 - Navy (Estimating)Addition of Cost Reduction Initiative to current program - Navy (Estimating)Change in Non-Recurring Flyaway - Navy (Estimating)Adjustment Engineering Change Order percent of Airframe / CFE - Navy (Estimating)Update of Ancillary Equipment estimate - Navy (Estimating)Update Material Curve / Slopes - Navy (Estimating)Update Labor Curve / Rates - Navy (Estimating)Update of Ancillary Equipment estimate - Navy (Estimating)Update Iabor Curve / Rates - Navy (Estimating) typdate of Ancillary Equipment estimate - Air (Estimating)Update of Ancillary Equipment estimate - Air Force (Estimating)Update of Ancillary Equipment estimate - Air Force (Estimating)Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating)Addition of Cost Reduction Initiative to Current program - Air Force (Estimating)Adjust Engineering Change Order percent of (Estimating)Alifframe / CFE - Air Force (Estimating)Change in Non-Recurring Flyaway - Air Force (Estimating)Update Labor Curve / Rates - Air Force (Estimating)Update Labor Curve / Rates - Air Force (Estimating)Update Labor Curve / Rates - Air Force (Estimating)Adjustment for Current and Prior Inflation - vionics) - USSOCOM (Support)Change in Initial Spares - USSOCOM (Support) (Aiyustment for Current and Prior Inflation - vionics) - USSOCOM (Support)Adjustment for Current and Prior Inflation - vionics) - USSOCOM (Support)Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, ec	shift in Multi Year Procurement (MYP) from	140.0	+35.5
Addition of Cost Reduction Initiative to current program - Navy (Estimating)-328.1-552.2Change in Non-Recurring Flyaway - Navy (Estimating)+88.5+139.1Adjustment Engineering Change Order percent of Airframe / CFE - Navy (Estimating)+91.8+164.8Update of Ancillary Equipment estimate - Navy (Estimating)+867.2+1491.8Update Material Curve / Slopes - Navy (Estimating)+867.2+1491.8Update Labor Curve / Rates - Navy (Estimating) Holdste Labor Curve / Rates - Navy (Estimating)+815.0+1295.8Adjustment for Current and Prior Inflation - Air Force (Estimating)0.0+0.1Update of Ancillary Equipment estimate - Air Force (Estimating)+69.8+123.2Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating)-35.3-57.8Addition of Cost Reduction Initiative to current program - Air Force (Estimating)-35.3-57.8Adjust Engineering Change Order percent of tarframe / CFE - Air Force (Estimating)+10.1+19.1Update Material Curve / Slopes - Air Force (Estimating)+20.0+6.2Update Labor Curve / Rates - Air Force (Estimating)+210.2+291.2Update Labor Curve / Rates - Air Force (Estimating)+115.1+196.6(Estimating)-0.1+0.1+0.1Update Labor Curve / Rates - Air Force (Estimating)+210.2+291.2(Estimating)-0.1+0.1+0.1Update Material Curve / Slopes - Air Force (Estimating)+10.1+0.1Up	FY03-FY07 to FY08-FY12 - Navy (Estimating)		
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Change in Non-Recurring Flyaway - Navy (Estimating)+88.5 +139.1 (Estimating)Adjustment Engineering Change Order percent of Airframe / CFE - Navy (Estimating)+16.6 +26.0 (Estimating)Update of Ancillary Equipment estimate - Navy (Estimating)+867.2 +1491.8 (Estimating)Update Material Curve / Slopes - Navy (Estimating)+815.0 +1295.8 Adjustment for Current and Prior Inflation - 	current program - Navy (Estimating)		
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Adjustment Engineering Change Order percent+91.8+164.8of Airframe / CFE - Navy (Estimating)Update of Ancillary Equipment estimate - Navy+16.6+26.0(Estimating)Update Material Curve / Slopes - Navy+867.2+1491.8(Estimating)Update Labor Curve / Rates - Navy (Estimating)+815.0+1295.8Adjustment for Current and Prior Inflation -0.0+0.1Air Force (Estimating)0.0+0.1Update of Ancillary Equipment estimate - Air+69.8+123.2Force (Estimating)Force (Estimating)+10.1+19.1Update of Corrent program - Air Force (Estimating)-35.3-57.8Current program - Air Force (Estimating)-35.3-57.8Adjust Engineering Change Order percent of+22.3+40.1Airframe / CFE - Air Force (Estimating)-46.2-46.2(Estimating)Update Material Curve / Slopes - Air Force+115.1+196.6(Estimating)Update Labor Curve / Rates - Air Force+210.2+2291.2(Estimating)	(Estimating)		
of Airframe / CFE - Navy (Estimating) Update of Ancillary Equipment estimate - Navy +16.6 +26.0 (Estimating) Update Material Curve / Slopes - Navy +867.2 +1491.8 (Estimating) Update Labor Curve / Rates - Navy (Estimating) +815.0 +1295.8 Adjustment for Current and Prior Inflation - 0.0 +0.1 Air Force (Estimating) Update of Ancillary Equipment estimate - Air +69.8 +123.2 Force (Estimating) Change in estimating assumptions due to shift +10.1 +19.1 in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating) Addition of Cost Reduction Initiative to -35.3 -57.8 current program - Air Force (Estimating) Adjust Engineering Change Order percent of +22.3 +40.1 Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Deculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Adjustment Engineering Change Order percent	+91.8	+164.8
Update of Ancillary Equipment estimate - Navy (Estimating)+16.6+26.0Update Material Curve / Slopes - Navy (Estimating)+16.6+26.0Update Material Curve / Slopes - Navy (Estimating)+867.2+1491.8Update Labor Curve / Rates - Navy (Estimating) Adjustment for Current and Prior Inflation - Air Force (Estimating)0.0+0.1Mir Force (Estimating)Update of Ancillary Equipment estimate - Air Force (Estimating)+69.8+123.2Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating)+10.1+19.1Addition of Cost Reduction Initiative to current program - Air Force (Estimating)-35.3-57.8Adjust Engineering Change Order percent of (Estimating)+22.3+40.1Airframe / CFE - Air Force (Estimating)+115.1+196.6(Estimating)Update Material Curve / Slopes - Air Force (Estimating)+210.2+291.2Update Labor Curve / Rates - Air Force (Estimating)+210.2+291.2(Estimating)-0.1+0.1+0.1USOCOM (Support) Change in Initial Spares - USSOCOM (Support)+75.9+128.9Change in Peculiar Support (Airframe, Engine, (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+0.5+0.8Navy (Support) Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, Navy (Support)+32.3+55.8	of Airframe / CFE - Navy (Estimating)		
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Update Material Curve / Subjes - Navy+867.2+1491.8(Estimating)Update Labor Curve / Rates - Navy (Estimating)+815.0+1295.8Adjustment for Current and Prior Inflation - Air Force (Estimating)0.0+0.1Update of Ancillary Equipment estimate - Air Force (Estimating)+69.8+123.2Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating)+10.1+19.1Addition of Cost Reduction Initiative to current program - Air Force (Estimating)-35.3-57.8Adjust Engineering Change Order percent of (Estimating)+22.3+40.1Airframe / CFE - Air Force (Estimating)+115.1+196.6(Estimating)Update Material Curve / Slopes - Air Force (Estimating)+115.1+196.6Update Labor Curve / Rates - Air Force (Estimating)+210.2+291.2Update Labor Curve / Rates - Air Force (Estimating)+10.1+0.1USSOCOM (Support)-55.9+128.9Change in Initial Spares - USSOCOM (Support)+75.9+128.9Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+344.6+600.1Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, Navy (Support)+32.3+55.8	(Estimating) Undato Material Curve / Slopez - Nauv	1967 3	11401 0
Update Labor Curve / Rates - Navy (Estimating)+815.0+1295.8Adjustment for Current and Prior Inflation - Air Force (Estimating)0.0+0.1Update of Ancillary Equipment estimate - Air Force (Estimating)+69.8+123.2Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating)+10.1+19.1Addition of Cost Reduction Initiative to current program - Air Force (Estimating)-35.3-57.8Adjust Engineering Change Order percent of (Estimating)+22.3+40.1Airframe / CFE - Air Force (Estimating)+115.1+196.6(Estimating)Update Material Curve / Slopes - Air Force (Estimating)+210.2+291.2Update Labor Curve / Rates - Air Force (Estimating)+10.1+0.1+0.1USSOCOM (Support)Update Iabor Curve / Rates - Mir Force (Estimating)+108.6+108.6Adjustment for Current and Prior Inflation - 	(Fetimating)	+801.2	+1491.8
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Air Force (Estimating) Update of Ancillary Equipment estimate - Air +69.8 +123.2 Force (Estimating) Change in estimating assumptions due to shift +10.1 +19.1 in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating) Addition of Cost Reduction Initiative to -35.3 -57.8 current program - Air Force (Estimating) Adjust Engineering Change Order percent of +22.3 +40.1 Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force +2.0 +6.2 (Estimating) Update Material Curve / Slopes - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Adjustment for Current and Prior Inflation - +0.1 +0.1 USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) -8.6 -4.9 Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Adjustment for Current and Prior Inflation -	+01010	+1299.0
Update of Ancillary Equipment estimate - Air Force (Estimating) Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating) Addition of Cost Reduction Initiative to current program - Air Force (Estimating) Adjust Engineering Change Order percent of Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force (Estimating) Update Material Curve / Slopes - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Change in Initial Spares - USSOCOM (Support) Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - Navy (Support) Change in Initial Spares - Navy (Support) Adjustment for Current and Prior Inflation - Navy (Support) Change in Initial Spares - Navy (Support) Change in Initial Spares - Navy (Support) Adjustment for Current and Prior Inflation - Navy (Support) Change in Initial Spares - Navy (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Navy (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Augustment for Current and Prior Inflation - Navy (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Half Albor Albo	Air Force (Estimating)	0.0	
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Change in estimating assumptions due to shift in MYP from FY03-FY07 to FY08-FY12 ~ Air Force (Estimating) Addition of Cost Reduction Initiative to current program - Air Force (Estimating) Adjust Engineering Change Order percent of Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force (Estimating) Update Material Curve / Slopes - Air Force (Estimating) Update Labor Curve / Rates - Air Force (Estimating) Adjustment for Current and Prior Inflation - USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) Adjustment for Current and Prior Inflation - Navy (Support) Change in Initial Spares - Navy (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Navy (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Navy (Support) Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Force (Estimating)		
<pre>in MYP from FY03-FY07 to FY08-FY12 - Air Force (Estimating) Addition of Cost Reduction Initiative to -35.3 -57.8 current program - Air Force (Estimating) Adjust Engineering Change Order percent of +22.3 +40.1 Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force +2.0 +6.2 (Estimating) Update Material Curve / Slopes - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Adjustment for Current and Prior Inflation - +0.1 +0.1 USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) +75.9 +128.9 Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8</pre>	Change in estimating assumptions due to shift	+10.1	+19.1
Force (Estimating)Addition of Cost Reduction Initiative to current program - Air Force (Estimating)Adjust Engineering Change Order percent of Airframe / CFE - Air Force (Estimating)Change in Non-Recurring Flyaway - Air Force (Estimating)Update Material Curve / Slopes - Air Force (Estimating)Update Labor Curve / Rates - Air Force (Estimating)Adjustment for Current and Prior Inflation - USSOCOM (Support)Change in Nother Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)Change in Initial Spares - Navy (Support) Adjustment for Current and Prior Inflation - +0.1Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)Adjustment for Current and Prior Inflation - +0.5+0.8 Navy (Support)Change in Initial Spares - Navy (Support) Change in Peculiar Support (Airframe, Engine, Navy (Support)Adjustment for Current and Prior Inflation - +0.5+0.8 Navy (Support)Adjustment for Current and Prior Inflation - +0.5+0.8 Navy (Support)Adjustment for Current and Prior Inflation - +0.5+0.4 Navy (Support)Change in Initial Spares - Navy (Support)-8.6 -4.9 -4.9Change in Peculiar Support (Airframe, Engine, +32.3+32.3+55.8	in MYP from FY03-FY07 to FY08-FY12 ~ Air		
Addition of Cost Reduction Initiative to current program - Air Force (Estimating)-35.3-57.8Adjust Engineering Change Order percent of Airframe / CFE - Air Force (Estimating)+22.3+40.1Airframe / CFE - Air Force (Estimating)+22.3+40.1Change in Non-Recurring Flyaway - Air Force (Estimating)+2.0+6.2Update Material Curve / Slopes - Air Force (Estimating)+115.1+196.6Update Labor Curve / Rates - Air Force (Estimating)+210.2+291.2Adjustment for Current and Prior Inflation - USSOCOM (Support)+0.1+0.1Change in Initial Spares - USSOCOM (Support) Change in Peculiar Support (Airframe, Engine, Avionics) - USSOCOM (Support)+75.9+128.9Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+344.6+600.1Adjustment for Current and Prior Inflation - Navy (Support)+0.5+0.8Adjustment for Current and Prior Inflation - (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)-8.6-4.9Adjustment for Current and Prior Inflation - Navy (Support)-8.6-4.9Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, +32.3+55.8	Force (Estimating)		
current program - Air Force (Estimating) Adjust Engineering Change Order percent of +22.3 +40.1 Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force +2.0 +6.2 (Estimating) Update Material Curve / Slopes - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Adjustment for Current and Prior Inflation - +0.1 +0.1 USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Addition of Cost Reduction Initiative to	-35.3	-57.8
Adjust Engineering Change Order percent of Airframe / CFE - Air Force (Estimating)+22.3+40.1Change in Non-Recurring Flyaway - Air Force (Estimating)+2.0+6.2Update Material Curve / Slopes - Air Force (Estimating)+115.1+196.6Update Labor Curve / Rates - Air Force (Estimating)+210.2+291.2Update Labor Curve / Rates - Air Force (Estimating)+0.1+0.1Adjustment for Current and Prior Inflation - USSOCOM (Support)+75.9+128.9Change in Initial Spares - USSOCOM (Support) Change in Peculiar Support (Airframe, Engine, Avionics) - USSOCOM (Support)+344.6+600.1(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+0.5+0.8Adjustment for Current and Prior Inflation - Navy (Support)+0.5+0.8Change in Initial Spares - Navy (Support) Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, Haging Hermitian Hermi	current program - Air Force (Estimating)		
Airframe / CFE - Air Force (Estimating) Change in Non-Recurring Flyaway - Air Force +2.0 +6.2 (Estimating) Update Material Curve / Slopes - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Adjustment for Current and Prior Inflation - +0.1 +0.1 USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Adjust Engineering Change Order percent of	+22.3	+40.1
Change in Non-Recurring Flyaway - Air Force +2.0 +6.2 (Estimating) Update Material Curve / Slopes - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Adjustment for Current and Prior Inflation - +0.1 +0.1 USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Airframe / CFE - Air Force (Estimating)		
<pre>(Estimating) Update Material Curve / Slopes - Air Force +115.1 +196.6 (Estimating) Update Labor Curve / Rates - Air Force +210.2 +291.2 (Estimating) Adjustment for Current and Prior Inflation - +0.1 +0.1 USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8</pre>	Change in Non-Recurring Flyaway - Air Force	+2.0	+6.2
Update Material Curve / Slopes - Air Force+115.1+198.6(Estimating)Update Labor Curve / Rates - Air Force+210.2+291.2(Estimating)Adjustment for Current and Prior Inflation -+0.1+0.1USSOCOM (Support)Change in Initial Spares - USSOCOM (Support)+75.9+128.9Change in Peculiar Support (Airframe, Engine,+68.1+108.6Avionics) - USSOCOM (Support)Change in Other Weapon Systems Cost+344.6+600.1(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+0.5+0.8Navy (Support)Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine,+32.3+55.8	(Estimating) Undete Material Curve (Sleepe - Nin Ferrer	.115 1	1100 0
Update Labor Curve / Rates - Air Force+210.2+291.2(Estimating)Adjustment for Current and Prior Inflation -+0.1+0.1USSOCOM (Support)USSOCOM (Support)+75.9+128.9Change in Initial Spares - USSOCOM (Support)+75.9+128.9Change in Peculiar Support (Airframe, Engine, +68.1+108.6Avionics) - USSOCOM (Support)+344.6+600.1(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+0.5+0.8Navy (Support)Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, +32.3+55.8+55.8	(Estimating)	+115.1	+190.0
(Estimating)Adjustment for Current and Prior Inflation -+0.1+0.1USSOCOM (Support)Change in Initial Spares - USSOCOM (Support)+75.9+128.9Change in Peculiar Support (Airframe, Engine,+68.1+108.6Avionics) - USSOCOM (Support)Change in Other Weapon Systems Cost+344.6+600.1(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+0.5+0.8Adjustment for Current and Prior Inflation -+0.5+0.8Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine,+32.3+55.8	(Indate Labor Curve / Rates - Air Force	+210 2	±291 2
Adjustment for Current and Prior Inflation -+0.1+0.1USSOCOM (Support)+75.9+128.9Change in Initial Spares - USSOCOM (Support)+75.9+128.9Change in Peculiar Support (Airframe, Engine,+68.1+108.6Avionics) - USSOCOM (Support)+344.6+600.1Change in Other Weapon Systems Cost+344.6+600.1(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)+0.5+0.8Adjustment for Current and Prior Inflation -+0.5+0.8Navy (Support)-8.6-4.9Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine,+32.3+55.8	(Estimating)	1210.2	+631.6
USSOCOM (Support) Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Adjustment for Current and Prior Inflation -	+0.1	+0.1
Change in Initial Spares - USSOCOM (Support) +75.9 +128.9 Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	USSOCOM (Support)		
Change in Peculiar Support (Airframe, Engine, +68.1 +108.6 Avionics) - USSOCOM (Support) Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Change in Initial Spares - USSOCOM (Support)	+75.9	+128.9
Avionics) - USSOCOM (Support)Change in Other Weapon Systems Cost(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support)Adjustment for Current and Prior Inflation -Adjustment for Current and Prior Inflation -+0.5+0.8Navy (Support)Change in Initial Spares - Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, +32.3+55.8	Change in Peculiar Support (Airframe, Engine,	+68.1	+108.6
Change in Other Weapon Systems Cost +344.6 +600.1 (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Avionics) - USSOCOM (Support)		
<pre>(Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8</pre>	Change in Other Weapon Systems Cost	+344.6	+600.1
Other ILS, etc) - USSOCOM (Support) Adjustment for Current and Prior Inflation - +0.5 +0.8 Navy (Support) Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	(Peculiar Training Equipment, Tech Pubs,		
Adjustment for Current and Prior Inflation -+0.5+0.8Navy (Support)-8.6-4.9Change in Peculiar Support (Airframe, Engine, +32.3+55.8	Other ILS, etc) - USSOCOM (Support)		
Change in Initial Spares - Navy (Support) -8.6 -4.9 Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Adjustment for Current and Prior Inflation -	+0.5	+0.8
Change in Peculiar Support (Airframe, Engine, +32.3 +55.8	Navy (Support) Change in Initial Sparse - Namy (Support)	_9 6	4 0
Change in recurran support (Arrivane, Engine, +32.3 +33.8	Change in Initial Spares - Wavy (Support) Change in Peculiar Support (Nirfrance Facing	0.0 - ר רכו	-4.9
Avionics) - Navy (Support)	Avionics) - Navy (Support)	+32.3	T00.0

V-22 (OSPREY), December 31, 2001

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

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1	o. Current Change Explanations		
		(Dollars in Base-Year T	Millions)
	Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - Navy (Support)	+326.4	+553.9
	Adjustment for Current and Prior Inflation - Air Force (Support)	+0.1	+0.1
	Change in Initial Spares - Air Force (Support)	+87.6	+166.8
	Change in Peculiar Support (Airframe, Engine, Avionics) - Air Force (Support)	+176.9	+286.2
	Change in Other Weapon Systems Cost (Peculiar Training Equipment, Tech Pubs, Other ILS, etc) - Air Force (Support)	+109.7	+208.7
	Procurement Subtotal	+4275.1	+7767.3
(3)	MILCON		
	Revised escalation indices - Navy/Air Force/USSOCOM (Economic)	N/A	-0.4
	Increase due to refinement of estimate - USSOCOM (Estimating)	+0.5	+1.3
	Economic adjustment for negative program - Navy (Estimating)	+0.2	+0.1
	MILCON Subtotal	+0,7	+1.0

Note: The September 2001 SAR reflected the FY2001 President's Budget for FY2003 and beyond costs, and the FY2002 President's Budget for FY2002 and prior costs. Consequently, the total costs and quantities did not necessarily reflect current requirements. As a result, the cost variance analysis reported here reflects changes from the previous September 2001 SAR submission to the current program requirements as submitted in the FY2003 President's Budget.

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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	Changes							PAUC	
Init Est									Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
40.18	-4.97	-6.48	+0.830		+0.032		+2.90	-7.69	32.49

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes						PAUC		
Dev Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
32.49	-13.36	+58.09	-6.08	+2.81	+25.08		+1.93	+68.47	100.96

b. Procurement Unit Cost (PUC) History

Initial	SAR_Base	line to	Current	SAR Base	line				
PUC	Changes							PUC	
Init Est									Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
36.64	-4.86	-5.58	+0.653		-0.329		+2.90	-7.22	29.42

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Dev Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.42	-13.06	+55.18	-6.18	+1.27	+12.96		+1.94	+52.11	81.54

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	DEC 1982	DEC 1982	N/A	DEC 1982
Milestone II	MAY 1985	APR 1986	N/A	APR 1986
Milestone III	JUL 1989	N/A	N/A	OCT 2005
IOC	DEC 1991	N/A	N/A	SEP 2004
Total Cost	24467.0	29662.3	N/A	46240.8
Total Quantity	609	913	N/A	458
Prog Acg Unit Cost	40.2	32.5	N/A	101.0

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V-22 (OSPREY), December 31, 2001

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

Initial	ice	
Target	Ceiling	Qtv
\$2650.0	N/A	4
		_
Estimated Pr	ice At Comp	letion
<u>Contractor</u>	Program	<u>Manager</u>
\$3781.2	\$37	67.0
<u>Cost Variance</u>	Schedule V	lariance
\$-49.0	\$-26.	8
\$-61.8	\$-32.	2
\$-12.8	\$-5.	4
	Initial Target \$2650.0 Estimated Pr <u>Contractor</u> \$3781.2 <u>Cost Variance</u> \$-49.0 <u>\$-61.8</u> \$-12.8	Initial Contract Pr <u>Target</u> <u>Ceiling</u> \$2650.0 N/A Estimated Price At Comp <u>Contractor</u> <u>Program</u> \$3781.2 \$37 <u>Cost Variance Schedule V</u> \$-49.0 \$-26. <u>\$-61.8 \$-32.</u> \$-12.8 \$-5.

Explanation of Change:

Cost and Schedule Variance have been negatively impacted by the aircraft being grounded since December 2000 and by the associated cost of efforts to return the aircraft to flight.

V-22 Engine:	Initial (<u>Target</u>	Contract Price <u>Ceiling Otv</u>	
NOLIS ROYCE, INGLANADOLLS, IN NOOO19-95-C-0209, FFP Award: October 11, 1996 Definitized: May 8, 1998	\$19.5	N/A 10	
Current Contract Price <u>Target Ceiling Oty</u> S245.0 N/A 129	Estimated Pr <u>Contractor</u> \$245.0	ice At Completion <u>Program Manage</u> \$245.0	r

Explanation of Change:

None.

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

V-22 (OSPREY), December 31, 2001

15. Contract Information (Cont'd):

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FY98 LRIP	2 (AIRFRAME): PO. Patuwent F	liver MD	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	rice <u>Oty</u>
N0001996C0054	/2, CPIF		\$418.9	N/A	5
Award: April	28, 1997				
Definitized:	April 28, 1997	1			
Current	Contract Pric	e	Estimated P	rice At Comm	pletion
Target	Ceiling	Oty	Contractor	Program	n Manager
\$590.8	N/A	7	\$577.7	\$5	577.0
			Cost Varianc	e Schedule M	<u>Variance</u>
Previous Cumu	lative Varianc	es	\$5.1	\$-4.	. 4
Cumulative Variances To Date (10/31/01)			\$23.1	\$-1.	<u>. 8</u>
Net Chang	6		\$18.0	\$2.	. 6

Explanation of Change:

Cost Variance has continued to improve as the level of effort for Lot 2 has decreased during the operational pause. Schedule Variance has also been positively affected.

Contract Comments: As of October 31, 2001, LRIP Lot 2 is 94% complete. Since LRIP Lot 2 is over 90% complete, this will be the last time it is reported in the SAR.

	Initial	Contract	Price
<u>FY99 LRIP 3 (AIRFRAME):</u>	<u>Target</u>	<u>Ceiling</u>	Otv
Bell-Boeing JPO, Patuxent River MD			
N0001996C0054/3, CPIF	\$555.5	N/A	7
Award: March 27, 1998			
Definitized: March 27, 1998			

Current	Contract Price		Estimated Price	e At Completion
<u>Target</u>	<u>Ceiling</u>	Qty	<u>Contractor</u>	Program Manager
\$550.4	N/A	7	\$556.5	\$558.0
			Cost Variance So	chedule Variance

Previous Cumulative Variances	\$-22.1	\$-8.4
Cumulative Variances To Date (10/31/01)	\$-15.3	\$-8.7
Net Change	\$6.8	\$-0.3

Explanation of Change:

Cost Variance improvement is primarily due to favorable performance in Boeing's material accounts. Schedule Variances decreased slightly primarily due to parts shortages

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V-22 (OSPREY), December 31, 2001

15. Contract Information (Cont'd):

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FY00 LRIP 4 (AIRFRAME): Bell-Boeing JPO, Patuxent River MD N0001999C1090/0, FPI Award: March 31, 1999 Definitized: December 20, 1999		iver MD	Initial (<u>Target</u> (Contract Pr Ceiling	rice <u>Otv</u>
		\$687.0	N/A	N/A 10	
Current <u>Target</u> \$764.3	Contract Pric <u>Ceiling</u> N/A	e <u>Oty</u> 11	Estimated Pri <u>Contractor</u> \$784.8	ice At Comp <u>Program</u> \$7	letion Manager
	,		Cost Variance	Schedule V	/ariance

Previous Cumulative Variances	\$-24.6	\$-14.9
Cumulative Variances To Date (10/31/01)	\$-37.1	\$-14.6
Net Change	\$-12.5	\$0.3

Explanation of Change:

Cost Variance has been negatively impacted by increased cost of composite parts and rate increases. Schedule Variance improved slightly due to the receipt of previously delayed parts from vendors.

Contract Comments: Lot 4 aircraft will continue to be fabricated up through wing/fuselage mate. "Smart Manufacturing" is being implemented to stop fabrication and assembly activities that will be subsequently changed in anticipation of the BLOCK A design incorporation (Safe and Operational MV-22 for the Fleet).

	Initial Contract Price
FY01 LRIP 5 (AIRFRAME):	<u>Target Ceiling Oty</u>
Bell-Boeing JPO, Patuxent River MD N0001993C0183/0, AAC Award: June 20, 2000 Definitized: N/A	\$48.0 N/A 20
Current Contract Price <u>Target Ceiling Otv</u> N/A N/A O	Estimated Price At Completion <u>Contractor</u> <u>Program Manager</u> N/ANN/AN/A
Previous Cumulative Variances Cumulative Variances To Date Net Change	Cost Variance Schedule Variance \$0.0 \$0.0 \$0.0 \$0.0 \$0.0 \$0.0 \$0.0 \$0.0

Explanation of Change:

None.

V-22 (OSPREY), December 31, 2001

15. Contract Information (Cont'd):

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> Contract Comments: In June 2000 an advanced acquisition contract was issued to Bell-Boeing to provide Advance Procurement funding for 20 FY01 V-22 aircraft. As a result of the December 2000 mishap, the FY01 quantities were split between FY01 (9 aircraft) and FY02 (11 aircraft). Definitization of this contract is currently planned for the April 2002 timeframe. As of December 31, 2001, \$256M has been obligated under this contract.

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

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

Appropriation	Prior <u>Years</u> (FY82-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-15)	<u>Total</u>
RDT&E	6944.0	733.1	494.3	834.3	9005.7
Procurement	4506.7	902.4	1490.8	30280.3	37180.2
MILCON	6.6	10.2	3.1	35.0	54.9
O&M	_		-	-	-
Total	11457.3	1645.7	1988.2	31149.6	46240.8

b. Annual Summary -- V-22 OSPREY

Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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				27.9	40.2
2002				69.5	101.7
2003				42.3	62.8
2004				33.6	50.8
2005				23.1	35.6
2006					
2007					
Subtotal				249.9	362.3

V-22 (OSPREY), December 31, 2001

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

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

		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1982				1.5	1.3
1983				37.2	34.4
1984				86.7	83.1
1985				171.5	169.5
1986				516.4	525.1
1987				402.8	421.7
1988				375.0	405.B
1989				239.4	269.9
1990				174.0	204.2
1991				174.5	212.2
1992				605.8	758.0
1993				557.2	713.3
1994				5.7	8.7
1995				339.9	451.8
1996				530.0	716.4
1997				442.6	605.5
1998				353.3	487.5
1999				240.5	335.8
2000				124.1	175.9
2001				151.2	218.0
2002				302.4	442.8
2003				282.7	420.1
2004				240.9	364.3
2005				146.3	225.3
2006				39.8	62.4
2007				28.9	46.2
2008				9.4	15.3
Subtotal				6580.7	8374.5

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

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

		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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					

V-22 (OSPREY), December 31, 2001

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

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

Fiscal Year	Oty	Flyaway FY 1986 Dollars Nonrec	Flyaway FY 1986 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
1992					
1993					
1994	· · · ·		· · ·		
1995					
1996					
1997					
1998	1				
1999					
2000					
2001					
2002				128.8	188.6
2003				7.7	11.4
2004				10.6	16.0
2005				5.5	8.4
2006				3.2	5.0
2007				3.1	5.0
Subtotal	2			191.0	268.9

Note: The FY02 Appropriations Act provided funding for two CV Production Representative Test Vehicles.

Appropriation: 0300 - Procurement, Defense Agencies

		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1999				2.8	4.0
2000				2.5	3.6
2001				5.6	8.2
2002				12.3	18.2
2003				38.8	58.5
2004			35.1	77.2	118.7
2005			46.3	91.0	142.5
2006			59.7	115.8	184.8
2007			44.1	122.7	199.4
2008			66.8	140.5	232.8
2009			65.5	117.6	198.5
2010			64.6	111.0	191.0
2011			65.7	111.1	194.7
2012			64.9	114.2	203.9
2013			65.2	107.5	195.6
2014			64.7	101.3	187.9

V-22 (OSPREY), December 31, 2001

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

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Appropriation: 0300 - Procurement, Defense Agencies

		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2015			13.9	22.5	42.5
Subtotal			656.5	1294.4	2184.8

Quantities for the CV-22 are shown under appropriation 3010. In accordance with the approved program plan, the Air Force is funding the majority of the procurement cost for the CV-22. USSOCOM is funding delta costs above the baseline (MV-22) aircraft for Special Operations Forces (SOF) unique equipment.

Appropriation:	1506	-	Aircraft	Procurement,	Navy
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		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1989				196.7	231.4
1990					
1991					
1992					
1993					
1994					
1995					
1996				30.0	41.1
1997	5	40.3	386.4	513.9	709.4
1998	7	15.7	426.2	507.3	708.7
1999	7	16.5	401.5	482.7	683.5
2000	11	20.4	524.1	686.5	987.4
2001	9	61.4	472.8	692.0	1011.2
2002	9	34.8	427.8	595.8	884.2
2003	11	90.0	534.2	874.7	1320.0
2004	13	38.3	588.9	796.4	1223.9
2005	15	12.4	642.5	796.2	1246.6
2006	20	17.3	840.3	1018.2	1624.3
2007	27	27.7	1100.6	1338.3	2175.7
2008	30	22.6	1044.2	1220.0	2021.0
2009	30	1.1	1018.6	1141.3	1926.5
2010	30	1.1	1003.7	1100.7	1893.4
2011	36	4.5	1191.8	1336.4	2342.4
2012	37	1.9	1210.9	1292.8	2309.0
2013	37	1.9	1231.8	1312.6	2389.0
2014	37	1.9	1243.8	1365.7	2532.9
2015	37	2.6	1262.3	1230.3	2325.0
Subtotal	408	412.4	15552.4	18528.5	30586.6

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

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Vollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1999				15.5	22.0
2000				28.6	41.2
2001		13.2	10.0	37.6	55.0
2002					
2003			_	74.4	112.3
2004	2	12.4	92.7	196.9	302.6
2005	3	- 14.1	134.3	245.3	384.1
2006	4		165.3	207.9	331.7
2007	3		121.2	188.3	306.1
2008	5	10.6	176.9	269.6	446.6
2009	5		172.5	243.7	411.4
2010	5		170.2	231.6	398.3
2011	5	0.9	171.7	224.7	393.8
2012	5		169.6	226.4	404.4
2013	5		172.4	204.2	371.7
2014	5		170.7	197.0	365.3
2015	1		33.2	33.0	62.3
Subtotal	48	51.2	1760.7	2624.7	4408.8

Note: FY01 Aircraft Procurement, Air Force funding was reduced by the FY01 supplemental appropriation, and the CV production quantity was eliminated.

Appropriation: 0500 - Military Construction, Defense Agencies

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				6.9	10.2
2003				1.4	2.1
2004					
2005				0.6	0.9
2006				0.9	1.4
2007				12.1	19.6
Subtotal				22.2	34.7

V-22 (OSPREY), December 31, 2001

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

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Appropriation: 1205 - Military Construction, Navy

		Flyaway	Flyaway		
		FY 1986	FY 1986	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year Ş	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				2.4	4.1
2011					
2012					
2013					
2014					
2015				1.6	3.0
Subtotal				13.3	<u>\$ 20.2</u>

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Otv	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD			656.5	1566.5	2581.8
Nauv	408	412.4	15552.4	25122.5	38981.3
ILCO F	50	51.2	1760.7	2815.7	4677.7
USAr Guand Tatal	458	463.6	17969.6	29504.7	46240.8
Grand Tocal	450				

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17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	<u>Actual</u>
RDT&E	0	0
Procurement	30	10

Percent Total Program Quantities Delivered: 2.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 9622.3

Percent Total Program Expended: 20.8%

Aircraft continue to be fabricated and assembled but are not being delivered as a result of the requirement to modify them to a Block A configuration.

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	18	1%	0.6%
Aircraft Pipeline Rate	0	10%	13%
Total Aircraft in the Inventory	360	48	50
Total Operational Aircraft	323	32	43
Aircraft per Operating Squadron	12(18squad)	16(2squad)	0
Aircraft per Operating Squadron (CONUS		8(3squad)
Aircraft per Operating Squadron (OVERSEAS		7(2squad)
A/C per Training Squadron(FRS)	40	0	0
A/C per Training Squadron (AETC)	0	0	6(lsquad)
Aircraft per Special Squadron	19	0	0
Aircraft per Reserve Squadron	12(4squad)	0	0
Flight Hours per Month	35	35	38
Flight Hours per Year	420	420	456
JP-5 Cost per Gallon (FY99)	\$0.87	\$0.87	\$0.87
JP-5 Cost per Barrel (42 gal)	\$36.54	\$36.54	\$36.54
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 ga l/hr
Flyaway cost (FY94\$)	\$44.9M	\$47.80M	\$59.4M
Airframe Unit Weight (AUW) lbs	29433 lbs	29433	29433
Weight Empty lbs.	33140 lbs	33140	34825
Average Operating Years	42(FY99-FY40)	50(FY13-FY62)	35(FY03-FY37)

Date of estimate: January 2002 There is no antecedent for the V-22 program.

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V-22 (OSPREY), December 31, 2001

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

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b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Thousands)

	V-22 OSPREY Average Annual Cost	N/A
Cost Element	Per Aircraft	
Mission Pay & Allowances	397.7	N/A
Unit Level Consumption	825.7	N/A
Intermediate Maintenance	84.9	N/A
Depot Maintenance	100.1	N/A
Contractor Support	141.7	N/A
Sustaining Support	209.2	N/A
Indirect Costs	235.3	N/A
Total	1994.6	N/A

Total O&S Cost	V-22 OSPREY	N/A
BY\$ (In Millions)	18429.0	N/A
TY\$ (In Millions)	52474.0	N/A

Report Creation Date: 03/27/2002 9:18:37 AM



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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: LHD - 1

AS OF DATE: December 31, 2001

SUBJECT	PAGE
Cover Sheet Information	1
Mission and Description	2
Executive Summary	2
Threshold Breaches	3
Schedule	3
Performance Characteristics	4
Total Program Cost and Quantity	5
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INDEX



- 1. (U) <u>Designation and Nomenclature (Popular Name)</u>: LHD 1 Amphibious Assault Ship
- 2. (U) DoD Component: Navy
- 3. (U) Responsible Office and Telephone Number:

AMPHIBIOUS WARFARE PROGRAM OFFICECAPT. J.R. WILKINSPROGRAM EXECUTIVE OFFICE,Assigned: September 22, 2000EXPEDITIONARY WARFAREDSN 326-0940; COMM (202)781-0940WASHINGTON, DC 20376-WILKINSJR@NAVSEA.NAVY.MIL

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0603564N (Shared) (SUNK) Project 0408 (U) PE 0604567N (Shared) (SUNK) Project 01803, S0857 PROCUREMENT: (U) APPN 1611 ICN 3035 (Navy)

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LHD - 1, December 31, 2001

5. (U) <u>References</u>:

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SAR Baseline (Development Estimate): (U) SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated August 15, 1985.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 24, 2000.

6. (U) Mission and Description:

(U) The ship's primary amphibious mission is to embark, deploy and land elements of a Marine landing force in an assault by helicopters, landing craft amphibious vehicles, and by combinations of these methods. LHD 1 Class has a secondary/convertible mission for sea control and power projection. The LHD is a modification of the LHA Class design, with significant upgrades in combat systems, medical spaces, chemical biological radiological defense, aviation ordnance handling, and landing craft handling capabilities.

7. (U) Executive Summary:

(U) The LHD Program began in FY 1981 as part of an overall program to address impending block obsolescence of the Navy's amphibious lift capability. In June 1981, SECNAV proposed that the LHD have a convertible sea control mission; and, in November, directed that the Program be a modified LHA design.

A sole-source detail design and construction contract was awarded to Ingalls Shipbuilding Incorporated (ISI) in February 1984 for LHD 1. The ship was delivered in May 1989. A competitive contract for LHD 2, with options for LHD 3 and 4 was awarded to ISI in September 1986. The options for LHD 3 and 4 were exercised November 1987 and October 1988, respectively. LHD 2, 3 and 4 were delivered to the Navy July 1992, August 1993 and November 1994, respectively. A competitive contract for the LHD 5, with unevaluated and undefinitized options for LHD 6 and 7, was awarded to ISI in December 1991. LHD 5 was delivered to the Navy in June 1997. The options for LHD 6 and 7 were exercised on a sole source basis on December, 1992 and December, 1995; respectively. LHD 6 was delivered to the Navy in May 1998. LHD 7 was delivered to the Navy in April 2000.

Congress added funds in FY99, FY00, FY01 and authorized incremental funding to accelerate construction of LHD 8 from FY05 to FY02. A contract for detail design of the gas turbine propulsion plant and an all-electric auxiliary system was awarded to Northrop Grumman Shipbuilding Systems, Ingalls Operations (NGSSIO) in July 2000. In addition, long lead time and advanced planning efforts were awarded May 2001 and June 2001; respectively. Construction Contract award negotiations are ongoing with the shipbuilder. Critical Design Review was held and design approved in August 2001.

S. (U) Threshold Breaches:

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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) <u>Schedule</u>:

a. Milestones --

	Developmen	t Approved	Current	
	Estimate (SA	R) Program (APB)	<u>Estimate</u>	
Milestone I	OCT 1981	OCT 1981	OCT 1981	
Milestone II SAIP	JUL 1982	JUL 1982	JUL 1982	
Start Contract Design	AUG 1982	AUG 1982	AUG 1982	
Milestone IIIA Production-Decision	JUN 1983	JUN 1983	JUN 1983	
Award Lead Ship Contract	DEC 1983	FEB 1984	FEB 1984	
Milestone IIIB Production-Decision	JUL 1985	AUG 1985	AUG 1985	
Approve Full-Production (AFP)	AUG 1985	AUG 1985	AUG 1985	
Launch First Ship	AUG 1987	AUG 1987	AUG 1987	
Acceptance Trials (Lead Ship)	FEB 1989	FEB 1989	MAR 1989	
Lead Ship Delivery	MAR 1989	MAR 1989	MAY 1989	
Material Support Date	MAR 1989	MAR 1989	JUL 1989	
Naval Support Date	MAY 1990	MAR 1993	MAR 1993	
IOC	MAY 1990	MAY 1990	NOV 1990	

(U) IOC - Reflects date the lead ship was ready for operational deployment.

b. Current Change Explanations -- None

LHD - 1, December 31, 2001

10. (U) Performance Characteristics:

a. Performance --

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Troops	Development <u>Estimate (SAR)</u> 1873	Ap Progr <u>Obj/T</u> 1873	opro am <u>`hre</u> /	ved (APB) shold 1873	Demon- strated <u>Perf</u> 1894	Current <u>Estimate</u> 1894	
Vehicle Square (ft^2)	22900	22900	1	22900	22900	22900	
Cargo Cube (ft^3)	109000	109000	1	109000	109000	109000	
LCAC	3	3	1	3	3	3	
Length (ft)	840	844	1	844	844	844	
Beam (ft)	106	106	1	106	106	106	
Draft (full load) (ft/inches)	26'	26'8"	1	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	1	Steam	Steam	Steam	
Shaft Horsepower	70000	70000		70000	70000	70000	
No. of Screws	2	2	1	2	2	2	
Medical Facilities	6	6	1	6	6	6	
(operating rooms)						-	
Speed (knots)	22	22	/	22	22	22	_
Endurance at 22 knots (NM)			- ' '			n nand na shiya Na shika shika	
Armament:							
Close in Weapon	3	3	/	3	3	3	
System Self Defense Missile	2	2	/	2	2	2	
System		-	'	-	-	2 -	

b. Current Change Explanations -- None

(U) The 1873 troop estimate was based on actual in place berthing accommodations on LHD 1. The 26/39,400 draft and displacement estimates were figures provided during the design development phase. The 26'8" and 40,533 reflects the full load weight estimate at the completion of the contract design.

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

		Development	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	<u>Program (APB)</u>	<u>Estimate</u>
	Development (RDT&E)	39.9	42.3	42.3
	Procurement	2891.9	7463.7	7195.0
	Sailaway	(2872.5)		(7172.8)
	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 S	2931.8	7506.0	7237.3
	Escalation	1519.2	2746.6	2533.7
	Development (RDT&E)	(3.7)	(5.4)	(5.4)
	Procurement	(1515.5)	(2741.2)	(2528.3)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	4451.0	10252.6	9771.0
b.	(U) Quantity			
	Development (RDT&E)	0	0	0
	Procurement	<u>3</u>	8	8
,	Total	3	8	8

- c. Foreign Military Sales -- None.
- d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

(0) <u>VILLE COPE SUMMERY</u> .	UCR Baseline (JUL 2000 APB)(Current Estimate Dec 2001 SAR)	Percent
a. (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1982 BY\$) (2) Quantity (3) Unit Cost	7506.0 8 938.250	7237.3 8 904.663	-3.58
<pre>b. (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1982 BY\$) (2) Quantity (3) Unit Cost</pre>	7463.7 8 932.962	7195.0 8 899.375	-3.60

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	43.6	4407.4	_	4451.0
Previous Changes:				
Economic	-0.4	-1376.3	-	-1376.7
Quantity	-	+6952.9	-	+6952.9
Schedule	+4.5	-372.9	-	-368,4
Engineering	-	+40.5	-	+40.5
Estimating	-	+553.3	-	+553.3
Other	-	-	. –	-
Support	-	-		
Subtotal	+4.1	+5797.5	-	+5801.6
Current Changes:				
Economic	-	+189.4	-	+189.4
Quantity	-	-	_	-
Schedule	-	-534.1	-	-534.1
Engineering	-	-	-	-
Estimating	-	-136.9	-	-136.9
Other		-	-	-
Support	-	-		
Subtotal	-	-481.6	-	-481.6
Total Changes	+4.1	+5315.9	-	+5320.0
Current Estimate	47.7	9723.3		9771.0

(U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.9	2891.9	-	2931.8
Previous Changes:				
Quantity	-	+4225.6	-	+4225.6
Schedule	+3.4	+97.1	-	+100.5
Engineering		+28.7	-	+28.7
Estimating	-1.0	+217.6	-	+216.6
Other	-	_	-	-
Support		+2.8	-	+2.8
Subtotal	+2.4	+4571.8	_	+4574.2
Current Changes:				
Quantity	-	- 1	-	-
Schedule	-	-189.8	_	-189.8
Engineering	-	-	-	
Estimating	-	-78.9	-	-78.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-268.7		-268.7
Total Changes	+2.4	+4303.1	-	+4305.5
Current Estimate	42.3	7195.0	-	7237.3

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

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b. (U) Current Change Explanations		
(D Ba	ollars in ee-Year 1	Millions)
	De lear	nen rear
(1) <u>Produzement</u> Revised secolation indicas (Feenomic)	N1 / D	+60 0
Revised escalation indices. (Economic)	N/A	100.9
Economic adjustment for negative program change. (Economic)	N/A	+128.5
Acceleration of LHD 8 profile schedule from	0.0	-114.4
FY05 to FY02 with incremental funding (FY02-06) (Schedule)		
Additional cost savings with acceleration of	-189.8	-419.7
LHD 8 profile change from FY05 to FY02 (Schedule)		
Adjustment for Current and Prior Inflation.	-13.4	-23.0
(Estimating)		
FY00 undistributed reduction for LHD 8 Advance	-0.6	-1.2
Procurement (Estimating)		
FY03 Advance Procurement for LHD 9 (Estimating)	+6.1	+11.6
Actual outfitting and post delivery cost on	-5.1	-8.9
completed portion of program (Estimating)		
Revised outfitting and post delivery cost	+7.4	+13.8
estimates for FYD2 and prior (Estimating)		
Reduction based on revised Shipbuilding	-73.3	-129.2
estimate (Estimating)		
Procurement Subtotal	-268.7	-481.6

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

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

Current	SAR Base	eline to	Current	Estimate					
PAUC	Changes								PAUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1483.67	-148.41	-58.18	-112.81	+5.06	+52.05			-262.29	1221.38

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

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1469.13	-148.36	-49.09	-113.38	+5.06	+52.05			-253.72	1215.41

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

C.	(0)	Schedule,	Cost,	and	Quantit	v History
	· - ·					,

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	OCT 1981	N/A	OCT 1981
Milestone II	N/A	JUL 1982	N/A	JUL 1982
Milestone III	N/A	AUG 1985	N/A	AUG 1985
IOC	N/A	MAY 1990	N/A	NOV 1990
Total Cost	N/A	4451.0	N/A	9771.0
Total Quantity	N/A	3	N/A	8
Prog Acq Unit Cost	N/A	1483.7	N/A	1221.4

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

a. Procu	rement		Initial	. Contract Pi	rice
(U) <u>LHD 7</u>	CONSTRUCTION:		<u>Target</u>	<u>Ceiling</u>	Oty
NGSS, Ingall	s Operations, F	ascagoula MS			
N00024-92-C-	2204, FPI	-	\$771.8	\$791.5	1
Award: Decem	ber 28, 1995				
Definitized:	December 28, 1	995			
Curren	t Contract Pric	e	Estimated E	Price At Comp	oletion
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Program	<u>Manager</u>
\$866.0	\$881.8	1	\$901.4	\$8	384.4
			Cost Variand	ce Schedule N	<u>/ariance</u>
Previous Cum	ulative Varianc	es	\$-10.6	\$-35	. 2
Cumulative V	ariances To Dat	e (12/31/01)	\$-44.0	\$-2	. 6
Net Chan	qe		\$-33.4	\$32	. 6

Net Change

Explanation of Change:

(U) Cost Variance: The majority of unfavorable change variance reported by the contractor is primarily identified with inefficiencies achieved in vessel labor and escalation.

Schedule Variance: The majority of favorable change variance reported by the contractor is attributed to receipt of delinquent material and completion of the shipyard schedule (vessel labor).

The PM's Estimated Price at Completion takes the variances into consideration.

(U) Contract Comments: The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total overrun of \$18.3M which would result in a net contractor profit of \$124.6M.

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LHD - 1, December 31, 2001

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

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The current changes from the initial contract price are primarily attributed to: Fuel Oil Compensating Mod to improve stability, Advance Combat Direction System (Block 1), Monorail Train Transfer from Government Furnished Equipment to Contractor Furnished Equipment and other miscellaneous change orders.

The LHD 7 will not be reported in future SAR's as the ship was delivered April 6, 2001 and is over 90% complete.

(U) <u>LHD 8</u> NGSS, Ingall;	Design&Procure	ement: Ascagoula MS	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Otv</u>
N00024-00-C-2 Award: July 2	2217, CPFF 27, 2000	iologolita iio	\$47.2	N/A	1
Definitized:	July 27, 2000				
Current	: Contract Pric	ce	Estimated Pr	ice At Comp	letion
<u>Target</u>	Ceiling	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$325.7	N/A	1	\$327.2	\$3	27.5
			<u>Cost Variance</u>	Schedule V	<u>ariance</u>
Previous Cum	ilative Varianc	es	N/A	N/	A
Cumulative Va	ariances To Dat	e (12/31/01)	\$0.6	<u>\$-15.</u>	6
Net Chang	je		\$0.6	\$-15.	6

Explanation of Change:

(U) Cost Variance: The favorable cost variance is due primarily to efficiencies in program management and engineering effort.

Schedule Variance: The unfavorable schedule variance is primarily due to Ingalls decision to compete major procurement items and negotiations with sub vendors.

The PM's Estimated Price at Completion takes the variances into consideration.

(U) Contract Comments:

Increase in the current target price is primarily due to two contract modifications. The modifications were for procurement of long lead materal and construction material. Construction contract award negotiations are on-going with the shipbuilder.

LHD - 1, December 31, 2001

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

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

Appropriation	Prior <u>Xears</u> (FY81-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Total</u>
RDT&E	47.7	~~	-	-	47.7
Procurement	8590.1	266.8	253.0	613.4	9723.3
MILCON	-	-		-	-
O&M	-	-	-	-	
Total	8637.8	266.8	253.0	613.4	9771.0

b. Annual Summary -- LHD

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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 \$
1981				0.9	0.9
1982				11.0	11.3
1983				17.9	19.2
1984				0.8	0.9
1985				1.8	2.1
1986				0.3	0.4
1987				0.5	0.6
1988				0.7	0.9
1989				2.8	3.7
1990				4.9	6.7
1991				0.7	1.0
Subtotal				42.3	47.7

Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway FY 1982	Sailaway FY 1982	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1982				41.3	45.0
1983				48.4	53.7
1984	1	150.0	1110.4	1159.2	1310.1
1985				34.0	39.2
1986	1		765.2	705.9	832.7
1987				29.7	35.8
1988	1		629.2	608.3	755.4
1989	1		602.5	578.7	740.4
1990				35.2	46.4
1991	1		907.6	872.0	1180.0

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

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Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
		FY 1982	FY 1982	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992				20.4	28.3
1993				240.7	337.5
1994	1		843.0	643.6	924.1
1995				44.0	63.9
1996	1		949.6	864.7	1268.9
1997				8.5	12.6
1998				9.4	14.2
1999				41.2	63.1
2000				232.3	361.6
2001				301.0	477.2
2002	1		1209.2	165.0	266.8
2003			6.1	153.3	253.0
2004				170.0	286.3
2005				117.0	201.2
2006				54.4	95.6
2007				11.4	20.5
2008				5.4	9.8
2009					
2010					
2011					
Subtotal	8	150.0	7022.8	7195.0	9723.3

(U) Sailaway costs in FY03 reflects advance procurement cost for a potential LHD.

		Sailaway	Sailaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty .	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	8	150.0	7022.8	7237.3	9771.0

17. (U) Delivery/Expenditure Information:

_ _

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	7	7

(U) Percent Total Program Quantities Delivered: 87.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7630.1

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

(U) Percent Total Program Expended: 78.1%

18. (U) Operating and Support Costs:

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a. (U) Assumptions and Ground Rules --O&S costs for LHD 1 Class Ships were developed from historical data (VAMOSC) for thirteen classes of amphibious ships and conventional aircraft carriers (1984-2000). Permanent Change of Station (PCS) costs are included as part of mission pay and allowances.

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 (\$51.9M) and for LHD 8 (\$49.9M). Assumed service life is stated as 40 years for ships of the LHD 1 Class. All costs are in FY82 constant dollars. (Cost estimate dated December 2001.)

LHA 1 Class total O&S cost is based on the currently assumed service life of 35 years. Actual decommissioning dates for ships of the LHA 1 Class will likely be driven by delivery to the Fleet of replacement Big Deck Amphibious Assault Ships (starting with LHD 8), based on the requirement to support twelve Amphibious Ready Groups (ARGs).

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

	LHD	LHA 1
	Avg Annual Cost Per	Avg Annual Cost Per
Cost Element	LHD 1	-
Mission Pay & Allowances	25.3	22.0
Unit Level Consumption	5.1	6.2
Intermediate Maintenance	0.7	1.9
Depot Maintenance	14.7	. 16.8
Contractor Support	0.0	0.0
Sustaining Support	3.6	5.7
Indirect Costs	2.6	2.2
Total	52.0	54.8

Total O&S Cost	LHD	LHA 1
BY\$ (In Millions)	16603.9	9597.9
TY\$ (In Millions)	49220.9	15812.5

Report Creation Date: 03/26/2002 11:20:03 AM

A-3 ATIRCM/CMWS

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: ATIRCM/CMWS

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AS OF DATE: December 31, 2001

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- 1. (U) <u>Designation and Nomenclature (Popular Name)</u>: Advanced Threat Infrared Countermeasure/Common Missile Warning System
- 2. (U) DoD Component: Army

Joint Participants: Special Operations Command

 3. (U) <u>Responsible Office and Telephone Number</u>: PM Aviation Electronic Systems Mr. Wes ATTN: SFAE-IEW&S-AES Assigner Redstone Arsenal, Bldg 5681 DSN 897 Huntsville, AL 35898-5000 wesley.

Mr. Wesley F. McElveen Assigned: August 20, 2001 DSN 897-4419; COMM 256-313-4419 wesley.mcelveen@peoavn.redstone.arm y.mil

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 64270A (Shared) Project 2VT, D665 (Shared), DL20 PE 64270F (U) (U) PE 64270N CLEARED AS AMERICED **PROCUREMENT:** APPN 0300 ICN 1160444BB (DCA/DNA) (U) FOR OPEN PUPPICATION (U) APPN 2031 ICN AA0722 (Army) (U) APPN 2031 ICN AA0980 (Army) 144.8 2 7 2022 10(U) APPN 2031 ICN AZ3507 (Army)

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5. (U) References:

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SAR Baseline (Development Estimate): (U) Approved Acquisition Program Baseline dated March 29, 1996.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated April 2, 2001.

6. (U) Mission and Description:

(U) The US Army (USA) operational requirements concept for infrared (IR) countermeasure systems is known as the Suite of Integrated IR 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 Countermeasures (ATIRCM)/Common Missile Warning System (CMWS) program. The ATIRCM/CMWS, a subsystem to a host aircraft, is an integrated ultra violet (UV) missile plume detecting warning system and an IR lamp/laser/expendable countermeasures system. The ATIRCM/CMWS includes an Improved Countermeasure Dispenser (ICMD) capable of loading and employing three or more types of expendables, such as flares, chaff and smoke/aerosol. 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, activating expendables to provide the required degree of protection. SIIRCM(-) is a subset that has been established to meet near term requirements. SIIRCM(-) consists of CMWS, munitions and dispensers. An urgent requirement exists to install the SIIRCM(-) on the MH-47 Special Operations Aircraft (SOA). This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).

7. (U) Executive Summary:

(U) The ATIRCM/CMWS program has experienced some major changes. The USAF and Navy have both withdrawn all TACAIR platforms from the program. The Project Manager (PM) office has responded by updating the appropriate program documentation to reflect the new ATIRCM/CMWS program with the Army only quantities. The Army Acquisition Executive (AAE) has approved a revised APB and Acquisition Strategy Report. The Acquisition Strategy Report was signed on March 20, 2001 and the APB on April 2, 2001.

The prime contractor for ATIRCM/CMWS, Lockheed-Martin Sanders, located in Nashua, NH has been sold to BAE SYSTEMS North America, effective November 27, 2000. The name "Sanders" will no longer be used to describe the operation in Nashua, NH. The proper and correct name is BAE SYSTEMS.

In January 1999 PM ATIRCM/CMWS was renamed Aviation Electronic Systems (AES) Project Manager Office (PMO). With this change, in addition to the ATIRCM/CMWS, came the responsibility of additional programs. The Suite of Integrated Radio Frequency Countermeasures (SIRFC), AN/AVR-2A Laser Detecting Set (LDS), and the Aircraft Survivability Equipment Trainer IV (ASET IV) programs have been brought under the management umbrella of PM AES.

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

On August 20, 2001, a new PM for AES was officially chartered. PM AES provides oversight for two Product Managers. The Product Manager for Infrared Countermeasures (IRCM) is responsible for the ATIRCM/CMWS ACAT IC program and the Product Manager for Radio Frequency Countermeasures is responsible for SIRFC, AVR-2A LDS and the ASET IV. The PM foresees no major setbacks with the changes. As of October 26, 2001, AES PMO now falls under the direction of the Program Executive Office (PEO), Intelligence Electronic Warfare & Sensor (IEW&S).

The FY03 President's Budget (PB) provides continuous funding to SOCOM for ATIRCM/CMWS in FY03-08. There are no significant program issues that would preclude immediate transition into production of SIIRCM (-) systems for SOCOM and completion of development for the ATIRCM. OSD has now determined it is critical to continue development of SIIRCM (-) in support of SOF requirements.

The program has been revised to support SOCOM aircraft only for a total requirement of 103 in FY02-07. The Army added a requirement of an additional six CH-47 helicopters for SOF. This changes the total requirement to 1053 versus 1047 as approved in the current APB. The Army will procure the initial 26 SIIRCM (-) systems in FY02. FY03-08 production funds have been programmed by SOCOM to pay for the balance of the 103 systems required to outfit the Special Operations Force (SOF) aircraft to a full up ATIRCM/CMWS configuration. The Army will procure the remainder of the systems in FY2008-FY2018.

The ATIRCM/CMWS PM Office initiated preliminary planning for a Low Rate Initial Production (LRIP) decision in January 2002. A memorandum announcing an Army Systems Acquisition Review Council (ASARC) for this purpose was signed by the Assistant Secretary of the Army (Acquisition Logistics and Technology) (ASA(ALT)), Deputy for Systems Management and Horizontal Technology Integration on March 6, 2001. Due to the uncertainty of funding and the events following the September 11, 2001 attacks on the country, the ASARC scheduled for January 2002 has been postponed.
ATIRCM/CMWS, December 31, 2001

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	Ňo
Program Acquisition Uni Cost (PAUC)	t No
Average Procurement Uni Cost (APUC)	t No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

The PM's current estimate has slipped for start and completion of Operational Testing (OT) to realign with the new SOF requirements.

Milestone C will occur subsequent to completion of OT. The subsequent Production Contract Award milestone has slipped accordingly.

The PM's current estimate for milestones Organic Support Available and Depot Level Maintenance Support Established have been delayed for seven years. It has now been determined that it is not cost effective for the Army to set up a depot until there is at least 300 fielded systems.

A Program Deviation Report is in process and a revised APB will be submitted when the decisions regarding the restructured program are complete.

9. (U) Schedule:

a. Milestones --

	Development		Appı	Cur	rent		
	Betimat	te (SA	AR	Progra	IM (APB) Bst	imate
DEMVAL Contract Award	SEP	1991		SEP	1991	SEP	1991
Technical Test							
Start	JUL	1994		JUL	1994	JAN	1994
Complete	DEC	1995		DEC	1995	JUN	1994
Milestone I/II	JUN	1995		JUN	1995	JUN	1995
EMD Contract Award	SEP	1995		SEP	1995	SEP	1995
Preliminary Design Review Complete	JUN	1996		JUN	1996	JUN	1996
Critical Design Review Complete	SEP	1996		SEP	1996	FEB	1997
First Prototype Delivery	JUL	1997		JUN	1998	APR	1998
Developmental Testing							

ATIRCM/CMWS, December 31, 2001

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

	Development		App:	roved	Current		
	Estima	te (SAR)	Progra	am (APB)	Est:	imate	
Start	MAY	1998	NOV	2000	NOV	2000	
Complete	FEB	1999	JAN	2002	JAN	2002	
Operational Testing							
Start	JAN	1999	MAR	2002	OCT	2003 (Ch-1)	
Complete	JAN	2000	MAY	2002	DEC	2003 (Ch-1)	
LRIP Decision (LP-U)	N/A		JAN	2002	FEB	2002 (Ch-2)	
Lot I (LP-U) Contract Award	N/A		JAN	2002	MAR	2002 (Ch-2)	
Milestone III	FEB	2000	FEB	2003	JAN	2004 (Ch-2)	
Production Contract Award	APR	2000	MAR	2003	FEB	2004 (Ch-2)	
First Production Delivery (LP-U)	APR	2001	JUL	2003	DEC	2002(Ch-2)	
First Unit Equipped without	NOV	2001	AUG	2003	JAN	2003 (Ch-2)	
Obstacle Avoidance System (LP-U) Initial Operational Capability	(b)(1)		1				
Organic Support Available	FEB	2005	SEP	2006	SEP	2013(Ch-3)	
Depot Level Maintenance Support Established	FEB	2005	SEP	2006	SEP	2013 (Ch-3)	
(U) Acronyms:						10	

(U) Acronyms: DEMVAL - Demonstration and Validation EMD - Engineering, Manufacturing and Development LRIP - Low Rate Initial Production LP-U - Limited Production Urgent

b. Current Change Explanations --(U) (U) Schedule milestones have changed due to the following:

(Ch-1) The PM's current estimate has slipped for start and completion of OT to Oct 03 and Dec 03 respectively to realign with the new SOF requirements.

MILESTONE :	FROM :	TO:
Operational Testing		
Start	OCT 2001	OCT 2003
Complete	MAY 2004	DEC 2003

(Ch-2) The USAF and Navy have both withdrawn all TACAIR platforms from the program. This has changed the total production program quantities as well as slipped major program milestones. The AAE approved a revised APB reflecting the revised program schedule milestones as well as updated cost estimates. Due to current program strategy, LRIP is now changed to LP-U in support of the procurement of SIIRCM(-) in FY02. Milestone C has been delayed until completion of OT. The current estimate for Milestone C is now Jan 04. The subsequent Production Contract Award milestone has slipped accordingly.

MILESTONE :	FROM:	TO:
LRIP (LP-U)		FEB 2002

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

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Lot I (LP-U) Production			MAR	2002
Contract Award				
Milestone III	JUL	2003	JAN	2004
Production Contract Award	AUG	2003	FEB	2004
First Production Delivery (LP-U)	AUG	2004	DEC	2002
First Unit Equipped without	OCT	2003	JAN	2003
Obstacle Avoidance System (LP-U)				

(Ch-3) It is determined that it is not cost effective for the Army to set up a depot until there is approximately 300 fielded systems. The estimated timeframe for this is year 2013.

MILESTONE :	FROM :	TO:		
Organic Support Available	MAR 2006	SEP 2013		
Depot Level Maintenance	MAR 2006	SEP 2013		
Support Established				

10. (U) Performance Characteristics: a. Performance --

	Development Estimate (SAR)	Appr Program Obi/Thr	oved (APB) eshold	Demon- strated Derf	Current	e
pobability (in the aggregate for each type aircraft) of the host aircraft successfully	(0)(1)				NT.	
countering the tier one missiles (Mistral desired) as listed in the CMWS attachment to the SIIRCM ORD (percent)					-	-
ATIRCM/CMWS False Alarm Rate (per flight hour)						AN THEADER
ATIRCM/CMWS Jamming Capability System Weight (1b)	125	139.4 /	139.4	TBD	139.4	(Ch-1)
CMWS Missile Warning Sensor Weight (lbs)	3.5	2.7 /	2.7	TBD	2.7	(Ch-1)
CMWS Processor Weight (1bs)	22	16.24 /	16.24	TBD	16.24	(Ch-1)
CMWS Missile Warning Sensor Size (Length and diameter) (in)	4.25/ 4.75	4.25x5.2/ 5 /	4.25x5.2 5	TBD	4.25/ 5.25	(Ch-1)
CMWS Processor Size (in)	11x9.8x 5.5	9.8x11x5/ .5 /	9.8x11x5 .5	TBD	9.8X11x 5.5	(Ch-1)

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

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

a. (U) Cost	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	516.4	516.0	491.0
Procurement	2112.0	1872.7	1780.6
Recurring Flyaway	(1772.2)		(1500,3)
Nonrecurring Flyaway	(142.6)		(105.8)
Total Flyaway	(1914.8)		(1606.1)
Other Wpn System Costs	(131.0)		(92.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.2)		(81.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	2628.4	2388.7	2271.6
Escalation	733.2	715.2	579.8
Development (RDT&E)	(43.4)	(18.5)	(18.0)
Procurement	(689.8)	(696.7)	(561.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3361.6	3103.9	2851.4
b. (U) Quantity -			
Development (RDT&E)	25	25	25
Procurement	3069	1047	1053
Total	3094	1072	1078

Note: Excludes 15 RDT&E prototypes from the SAR Baseline and 15 from the Current Bstimate that are not considered fully configured.

(U) The unit of measure reflects the number of platforms upon which the ATIRCM/CMWS units will be installed.

LRIP quantity submitted for FY02 approval is 37, although currently funded for 26.

c. (U) Foreign Military Sales -- None.

d. (U) Nuclear Costs --None.

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12. (U) Unit Cost Summary:

				UCR		Cur	rent	
			Base	line		Esti	nate	Percent
		(APR	2001	APB)	(Dec	2001	SAR)	Change
a. (U)	Prog. Acq. Unit Cost (PAUC)							
	(1) Cost (FY 1996 BY\$)		23	88.7		22	71.6	
	(2) Quantity			1072			1078	
	(3) Unit Cost		2	. 228		2	.107	-5.43
b. (U)	Avg. Proc. Unit Cost (APUC)							
	(1) Cost (FY 1996 BY\$)		18'	72.7		17	90.6	
	(2) Quantity		:	1047			1053	
	(3) Unit Cost		1	. 789		1	.691	-5.48

(U) PAUC - Percent change of -5.43 is attributed to revised estimate based fact of life changes to the EMD program. In addition, the loss of RDT&E funding in the PB for the Army and the withdrawal of the Air Force and Navy development funds in FY01-05 further reduces the PAUC.

APUC - Percent change of -5.48 is attributed to a revised estimate which accelerates the production schedule from 2024 to 2018. This acceleration reduces management costs required for the program, therefore reducing the APUC.

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13. (U) Cost Variance Analysis:

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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	-5.5	-162.0	-	-167.5
Quantity		-1090.9	-	-1090.9
Schedule	-	-265.6	-	-265.6
Engineering	+113.0	-	-	+113.0
Estimating	-33.3	+706.2	-	+672.9
Other	-	-	-	-
Support	-	+42.2	-	+42.2
Subtotal	+74.2	-770.1	-	-695.9
Current Changes:				
Economic	+6.6	+15.3	-	+21.9
Quantity	-	-272.0	-	-272.0
Schedule	-	+101.6	-	+101.6
Engineering	-	-	-	-
Estimating	-131.6	+504.2	-	+372.6
Other	-	- 1	-	-
Support	-	-38.4		-38.4
Subtotal	-125.0	+310.7		+185.7
Total Changes	-50.8	-459.4	_	-510.2
Current Estimate	509.0	2342.4	-	2851.4

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	516.4	2112.0	-	2628.4
Previous Changes:				
Quantity		-775.1	-	-775.1
Schedule	-	-245.3	- (-245.3
Engineering	+109.2	-	-	+109.2
Estimating	-21.6	+541.4	-	+519.8
Other	-	~	-	-
Support	- 1	+18.1	-	+18.1
Subtotal	+87.6	-460.9	~	-373.3
Current Changes:				
Quantity	-	-211.9	-	-211.9
Schedule	-	-1.1	-	-1.1
Engineering	-	-	-	-
Estimating	-113.0	+383.3	-	+270.3
Other	-	-	-	-
Support	-	-40.8		-40.8
Subtotal	-113.0	+129.5	-	+16.5
Total Changes	-25.4	-331.4	-	-356.8
Current Estimate	491.0	1780.6	-	2271.6

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

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	b. (U) Current Change Explanations	(Dollars	n Millions)
		Base-Year	Then-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+1.9
	Economic adjustment for negative program change. (Economic)	N/A	+4.7
	Adjustment for Current and Prior Inflation.	-1.6	-1.6
	Fact of life reprogrammings (FY02 & prior)	-1.6	-2.2
	Army elimination of funding for P3I and OT.	-46.6	-55.5
	Air Force/Navy withdrawal from program. (Estimating)	-63.2	-72.3
	RDT&E Subtotal	-113.0	-125.0
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-10.2
	Economic adjustment for negative program change. (Economic)	N/A	+25.5
	Navy quantity decrease of -264 units due to withdrawal from program. (Quantity)	-77.5	-104.2
	Air Force quantity decrease of -362 units	-137.9	-173.0
	A a a a a a a a a a a a a a a a a a a a	4.2 E	15 3
	Army quantity decrease of -71 units	-213 5	-252 2
	(transferred to SOCOM) (Quantity)	-213.3	232.3
	SOCOM transfer of a quantity of 71 from Army (Quantity)	+213.5	+252.3
	Army extension of schedule (OR) (Schedule)	-1.1	+101.6
	Army current and prior inflation (Estimating)	-0.4	-0.4
	Army - addition of AIRCMM flares in FY02 (Ratimating)	+2.0	+2.0
	Army addition of Post Production Software Support (Batimating)	+24.б	+32.6
	Army addition of FY00 sunk costs (Estimating)	+4.8	+5.1
	Army increase in Depot standup costs (Estimating)	+5.7	+10.4
	Army increase cost due to Air Force and Navy withdrawal. (OR) (Estimating)	+114.7	+154.9
	Army increased contractor SEPM estimate (Estimating)	+68.8	+97.6
	Army increased hardware estimate based on actuals (Estimating)	+163.1	+202.0
	Army transfer of support costs to SOCOM (QR) (Support)	-25.5	-30.1

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

•

b. (U) Current Change Explanations		
• •	(Dollars :	in Millions
	Base-Year	Then-Year
SOCOM - transfer of support cost from Army (QR)(Support)	+25.5	+30.1
Deletion of Navy support costs (QR) (Support)	-41.9	-54.3
Deletion of Air Force support costs (QR) (Support)	-26.8	-31.6
Army decrease in Initial Spares estimate (Support)	-5.7	0.0
Army addition of trainers upgrades (Support)	+33.6	+47.5
Procurement Subtotal	+129.5	+310.7

QR = Quantity related changes.

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

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

Current SAR Baseline to Current Estimate

PAUC		Changes							
Dev Est		C							
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.09	-0.135	+0.767	-0.152	+0.105	+0.970		+0.004	+1.56	2.65

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

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Bst	Oth	Spt	Total	
0.913	-0.139	+0.453	-0.156		+1.15		+0.004	+1.31	2.22

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

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	SAR	SAR	SAR		7
Item/Event	Planning	Development	Production	Current	
	Estimate (PE)	Estimate(DE)	Estimate(PdE)	Estimate	
Milestone I	N/A	JUN 1995	N/A	JUN 1995	
Milestone II	N/A	JUN 1995	N/A	JUN 1995	1
Milestone III	N/A	FEB 2000	N/A	JAN 2004	1
(b)(1.					
Total Cost	0.0	3361.6	0.0 1	2851.4	
Total Quantity	0	3094	0	1078	-
Prog Acq Unit Cost	0.0	1.1	0.0	2.6	- TUED

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

a. RDT&E -			Initial	Contract Pr	ice
(U) ATIRC	M/CMWS Black Bo	xes:	Target	Ceiling	Qty
Lockheed San	ders Inc, Nash	ia, NH			
DAAB07-95-C-	D606, CPAF		\$64.8	N/A	40
Award: Septe	mber 27, 1995				
Definitized:	September 27,	1995			
Curren	t Contract Pric	ce	Estimated Pr	ice At Comp	letion
Target	Ceiling	Qty	Contractor	Program	Manager
\$165.9	N/A	57	\$171.8	\$1	71.8
			Cost Variance	Schedule V	ariance
Previous Cum	ulative Variand	es	\$313.0	\$-412.	0
Cumulative V	ariances To Dat	e (12/25/01)	\$-41.0	\$230.	0
Net Chan	ge		\$-354.0	\$642.	ō

Explanation of Change:

(U) The variances are due to late closeout of Contract Data Requirements Lists (CDRLs). The basic EMD contract is complete Feb 02.

ATIRCM/CMWS, December 31, 2001

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

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

Appropriation	Prior <u>Years</u> (FY90-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-18)	Total
RDT&E	468.5	40.5	-	_	509.0
Procurement	21.5	43.4	23.8	2253.7	2342.4
MILCON	-	-	-	-	-
OEM	*	-	-	-	-
Total	490.0	83.9	23.8	2253.7	2851.4

b. Annual Summary -- ATIRCM/CMWS

• . •

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

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				8.8	8.9
1997				16.0	16.4
1998				11.6	12.0
1999				1.5	1.6
Subtotal	9			37.9	38.9

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

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1990				0.7	0.6
1991				3.1	2.8
1992				15.6	14.6
1993				8.3	8.0
1994				7.7	7.5
1995				7.7	7.7
1996				15.6	15.8
1997				20.2	20.7
1998				31.5	32.6
1999		-		37.3	39.0
2000				44.5	47.3
2001				35.4	38.2
2002				36.9	40.5
Subtotal	7			264.5	275.3

16b. (U) 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 \$
1995				21.5	21.4
1996				35.7	36.2
1997				33.9	34.8
1998				22.6	23.4
1999				29.1	30.4
2000				45.8	48.6
Subtotal	9			188.6	194.8

Appropriation: 0300 - Procurement, Defense Agencies

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003	6		18.8	21.2	23.8
2004	2	3.4	35.2	42.3	48.3
2005	19	3.4	41.6	49.9	58.1
2006	22		33.2	36.6	43.4
2007	15		33.9	38.0	45.9
2008	13		44.0	51.0	62.9
Subtotal	77	6.8	206.7	239.0	282.4

(U) Funding line in support of SOF.

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal		Flyaway FY 1996 Dollars	Flyaway FY 1996 Dollars	Total Program	Total Program
Year	Qty	Nonrec	<u>Rec</u>	Base-Year Ş	Then-Year \$
1997		8.8		8.8	9.1
1998		7.0		7.0	7.3
1999					
2000		4.8		4.8	5.1
2001					
2002	26	7.2	29.2	39.3	43.4
2003					
2004					
2005					
2006					
2007					
2008	46	31.0	93.5	140.6	173.3
2009	82	11.9	117.1	148.9	187.0

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

• . - .

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
2010	79	12.8	113.1	147.4	188.6
2011	90	3.7	122.3	146.7	191.3
2012	97	2.3	128.6	145.9	193.9
2013	103	1.7	132.6	145.5	197.0
2014	104	1.6	133.1	145.0	200.0
2015	106	1.6	132.9	144.7	203.4
2016	111	1.5	133.2	144.1	206.4
2017	93	1.6	98.1	106.5	155.5
2018	39	1.5	59.9	66.4	98.7
Subtotal	976	99.0	1293.6	1541.6	2060.0

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Navy	9			37.9	38.9
Army	983	99.0	1293.6	1806.1	2335.3
USAF	9			188.6	194.8
OSD	77	6.8	206.7	239.0	282.4
Grand Total	1078	105.8	1500.3	2271.6	2851.4

17. (U) Delivery/Expenditure Information:

а.

(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): \$ 451.3

(U) Percent Total Program Expended: 15.8%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --Average of twenty-year operational life (FY2004-2038) of 1047 baseline quantity. Baseline quantity assumes system composite configuration for the sum of the airframes. Based on a total ATIRCM system Mean Time Between Mission Affecting Failure (MTBMAF) of 300 hours. No airframe (group-A) operations and support costs are associated with the system (group-B).

ATIRCM/CMWS, December 31, 2001

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

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Unit Level Consumption includes replenishment spares and repair parts. Contractor Support is maintenance of the Software Support Activity (SSA). Sustaining Supports includes system engineering and program management throughout the life of the program.

Source of estimate is the Army Cost Position, approved April 2001.

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

	ATIRCM/CMWS Aircraft Composite	Antecedent System
Cost Element	System	
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.1	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.0	N/A
Indirect Costs	N/A	N/A
Total	0.2	0.0

Total O&S Cost	ATIRCM/CMWS	Antecedent System
BY\$ (In Millions)	197.7	N/A
TY\$ (In Millions)	365.2	N/A

Report Creation Date: 03/27/2002 9:10:36 AM

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SELECTED ACOULSITION REPORT (RCS: DD-AGT(OGA)823) PROGRAM: C-130J Hercules

AS OF DATE: December 31, 2001



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1. Designation and Nomenclature (Popular Name): C-130J Hercules

2. DoD Component: USAF

AF-8 C-1305

3. <u>Responsible Office and Telephone Number</u>:

WR-ALC/LB Robins AFB, GA 31098-1647 Col Gregory M. Postulka 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 0603852F **PROCUREMENT:** APPN 3010 ICN C-130J (Air Force)

5. References:

SAR Baseline (Production Estimate): AFAE Approved Acquisition Program Baseline dated October 25, 1996.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated July 27, 2001.

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C-130J Hercules, December 31, 2001

6. Mission and Description:

The C-130 Hercules is a medium-range, tactical airlift aircraft designed primarily for transport of cargo and personnel within a theater of operations. Variants of the C-130 perform other missions, including close-air support, rescue and recovery, special operations, and weather reconnaissance. Since 1954, over 2,000 C-130s have been delivered to the US Air Force, making it the "workhorse of the Air Force".

The C-130 can carry more than 40,000 pounds of cargo (up to six pallets or a varied number of wheeled vehicles). The cargo area can be quickly adapted to accommodate any combination of passenger, cargo, or aeromedical airlift mission.

The C-130 can deliver personnel, equipment, or supplies either by landing or by various aerial delivery modes. The two primary methods of aerial delivery used for equipment delivery are parachutes pulling the load from the aircraft, and the Container Delivery system which uses the force of gravity to pull the supplies from the aircraft.

Each of the four turboprop engines on the C-130J drives a six-blade, constant-speed, reversible-pitch propeller with feathering capability. The Hercules can operate on as little as 3,000 feet of dirt runway.

7. Executive Summary:

In 1992, Lockheed Martin began a C-130J development program funded by the Company and its supplier team. The C-130J design resulted from applying the latest technology and focusing on the wealth of experience in operating an already successful aircraft. The objective of the C-130J program is to provide a cargo transport superior to earlier C-130s with substantial reduction of life cycle costs. Its upgrades include a modern flight station with modern displays and digital avionics, computerized management of aircraft functions, three-person flight crews (a two person reduction from the previous five-person crew), and improved cargo handling and delivery system. The C-130J will provide performance improvements and improved operations efficiencies.

Many of these improved characteristics were demonstrated during the past year. The C-130J performed well during humanitarian relief and world tour flights. Also, the C-130J set or broke 50 international records in the Class C-1 Turboprop, Group II, Heavy airplanes and STOL divisions.

Last year, a routine flight training mission took a dramatic turn when a Maryland Air National Guard (ANG) crew found themselves at the center of a life-or-death rescue mission. A student pilot in a single engine Piper Tomahawk was lost over the Atlantic Ocean. At a range of 17 miles and using the J-model's sophisticated avionics, Major Kristi Brawley, a pilot with the 135th Airlift Group at Baltimore, began picking up the lost aircraft's transponder. Major Brawley credited the improved Radar and Traffic Alert and Collision Avoidance System aboard the C-130J with enabling them to fly directly to the lost aircraft and to guide the pilot to safety. The 135th began flying the advanced C-130J in 2000. Before then, they flew the C-130E which lacked

C-130J Hercules, December 31, 2001

7. Executive Summary (Cont'd):

the sophisticated avionics that enabled the crew to quickly locate the tiny Tomahawk despite extremely poor visibility. For their efforts, Major Brawley and crew were awarded the Air Force Commendation Medal.

The C-130J program provides a one-for-one replacement of C-130Es and C-130Hs. Qualification Operational Test and Evaluation (QOT&E), starting November 1999, is being accomplished by Air Force Operational Test and Evaluation Center (AFOTEC). The using commands will accomplish Follow-on Test and Evaluation (FOT&E).

The C-130H was used extensively during Desert Shield/Storm, Bosnia, and Afghanistan because of its ability to operate on a short austere airfield. The C-130J is expected to continue this role.

Congress has added aircraft to the Air Force program through the appropriation process. Of the 49 aircraft on contract through FY 2001, 34 were congressionally added, 5 are EC-130Js (ANG), 2 are C-130Js for Firefighters (ANG), 3 are C-130Js for Rhode Island ANG, 10 are WC-130Js (AFRC) which were funded with Air Force funds, and 8 are ANG and 6 are Coast Guard C-130Js which were funded with their appropriations. Additionally, there are 11 USMC KC-130J aircraft on contract.

In 2001, Air Force (6 aircraft) and Navy (7 aircraft) accepted 13 C-130J and derivative aircraft.

Included in the FY 2003 President's Budget is a Multi-Year Procurement proposal for the C-130J program.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	NO
Cost RDT&E	No
Procurement	No
MILCON	No
OGM	No
Program Acquisition Un Cost (PAUC)	it No
Average Procurement Un Cost (APUC)	it No

C-130J Hercules, December 31, 2001

8. Threshold Breaches (Cont'd):

b. Nunn-McCurdy Unit Cost:

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

9. <u>Schedule</u>:

a. Milestones --

2. 111000000	Production	Approved	Current	
	Estimate (SAR)	Program (APB)	<u>Estimate</u>	
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

10. Performance Characteristics:

a. Performance --

		Ap	proved	Demon-	
	Production	Progr	am (APB)	strated	Current
	<u>Estimate (SAR)</u>	<u>Obj/I</u>	<u>hreshold</u>	Perf	<u>Estimate</u>
Cockpit Crew (All Missions)	2	2	/ 2	TBD	2
Maximum Payload (1bs)	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 t	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

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10a. <u>Performance Characteristics (Cont'd)</u>:

		A	pproved	Demon-	
	Production	Prog	ram (APB)	strated	Current
	Estimate (SAR)	Obi/	Threshold	Perf	Estimate
IMC Airdrop	158	158	/ 158	TBD	158
Accuracy - Total					
System Error (It)					
Cruising Speed at 100,000 lbs	342	342	/ 315	361	315
@25,000 ft (KTAS)					
Max Range with	3070	3070	/ 2350	3139	2350
42,764 lbs fuel			1		
5 29,722 lbs			/		
Payload (NM)					
Environmental Factors	-40 -	-40 -	/ -40 -	TBD	-40/+120
- Operational Ambient	t +120	+120	/ +120		
Temperature (deg F)			/		
Sortie Reliability	95.4	95.4	/ 94.2	TBD	94.2
(SR) (%)			/		
Mission Capable Rate	84.0	84.0	/ 81.0	TBD	81.0
(MC) (%)			/		
Mean Repair Time	6.3	6.3	/ 7.4	TBD	7.4
(hrs)			/		
Mean Time Between	4.6	4.6	/ 3.8	TBD	3.8
Repair (MTBR) (hrs)			/		
Mean-Time Between	1.2	1.2	/ 1.0	TBD	1.0
Maintenance			/		
Corrective Actions					
(MTBMC) (hrs)					

Notes:

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1. IMC is Instrument Meteorological Conditions.

2. Demonstrated performances are based on the Performance Compliance Report (LG98ER0352 Rev 1, May 99).

b. Current Change Explanations -- None

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

a. Cost Estimate (SAR) Program (APB) Estima Development (RDT&E) 8.9 9.1 9 Procurement 721.8 12612.2 12612 Fly Away (540.1) (10193) OTHER COSTS (122.2) (1810) Peculiar Support (9.4) (59.1)	t
Development (RDT&E) 8.9 9.1 9 Procurement 721.8 12612.2 12612 Fly Away (540.1) (10193) OTHER COSTS (122.2) (1810) Peculiar Support (9.4) (59 Initial Spares (50.1) (547	te
Procurement 721.8 12612.2 12612 Fly Away (540.1) (10193) OTHER COSTS (122.2) (1810) Peculiar Support (9.4) (59 Initial Spares (50.1) (547	. 4
Fly Away (540.1) (10193 OTHER COSTS (122.2) (1810 Peculiar Support (9.4) (59 Initial Spares (50.1) (547	. 2
OTHER COSTS (122.2) (1810 Peculiar Support (9.4) (59 Initial Spares (50.1) (547	. 5)
Peculiar Support (9.4) (59 Initial Spares (50.1) (547	.9)
Initial Spares (50.1) (547	.9)
	.9)
Construction (MILCON) 0.0 0.0 0	.0
Acquisition OGMO	.0
Total FY 1996 Base-Year \$ 730.7 12621.3 12621	. 6
Escalation 109.0 3423.3 3049	. 6
Development (RDTsE) (0.3) (0.1) (-0	.2)
Procurement (108.7) (3423.2) (3049	.8)
Construction (MILCON) (0.0) (0.0) (0	.0)
Acquisition O_{6M} (0.0) (0.0) (0	.0)
Total Then Year \$ 839.7 16044.6 15671	. 2
b. Quantity	
Development (RDTsE) 0 0	0
Procurement <u>11 168 1</u>	68
Total 11 168 1	68

There was no low rate initial production for the C-130J.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR	Current	
	Baseline	Estimate	Percent
	(JUL 2001 APB) (D	ec 2001 SAR)	Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	12621.3	12621,6	
(2) Quantity	168	160	
(3) Unit Cost	75.127	75.129	0.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	12612.2	12612.2	
(2) Quantity	168	168	
(3) Unit Cost	75.073	75.073	0.00

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	9.2	830.5	-	839.7
Previous Changes:				
Economic	-0.5	-2.7	-	-3.2
Quantity	-	+1247.5	-	+1247.5
Schedule	-	-292.9	-	-292.9
Engineering	+0.4	-	-	+0.4
Estimating	+0.1	+235.9	-	+236.0
Other	-	-	-	-
Support	-	+605.7	-	+605.7
Subtotal	0.0	+1793.5	-	+1793.5
Current Changes:				
Economic	-	+2.3	-	+2.3
Quantity	-	+12163.5	-	+12163.5
Schedule	-	-79.8	-	-79.8
Engineering	-	-	-	-
Estimating	-	-1132.0	-	-1132.0
Other	-	-	-	-
Support	-	+2084.0	-	+2084.0
Subtotal	-	+13038.0	-	+13038.0
Total Changes	0.0	+14831.5	•	+14831.5
Current Estimate	9.2	15662.0	_	15671.2

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

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

	RDTSE	PROC	MILCON	TOTAL
Production Estimate	8.9	721.8	-	730.7
Previous Changes:				
Quantity	-	+1116.4	-	+1116.4
Schedule	-	-239.7	-	-239.7
Engineering	+0.4	-	-	+0.4
Estimating	+0.1	+246.5	-	+246.6
Other	-	-	-	- :
Support	-	+549.8	-	+549.8
Subtotal	+0.5	+1673.0	-	+1673.5
Current Changes:	1			
Quantity		+9414.1	-	+9414.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-883.9	-	-883.9
Other	-	-	-	-
Support	-	+1687.2	-	+1687.2
Subtotal	+	+10217.4	-	+10217.4
Total Changes	+0.5	+11890.4	-	+11890.9
Current Estimate	9.4	12612.2	-	12621.6

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

(1)	Procurement	-	
	Revised escalation indices. (Economic)	N/A	+2.3
	Total Quantity Variance associated with increase of 136 C-130J aircraft from 32 aircraft to 168 aircraft. (QR)(Quantity)	+9414.1	+12163.5
	Acceleration of annual procurement buy profile. New profile follows the approved C-130J roadmap and includes the two aircraft procured in FY 1994. (QR)(Schedule)	0.0	-79.8
	Allocation to estimating as a result of the program increase from 32 aircraft to 168 aircraft. (QR)(Estimating)	-881.3	-1129.4
	Change in Initial Spares associated with the revised acquisition program from 32 aircraft to 168 aircraft. (QR)(Support)	+480.2	+613.9
	Change in Peculiar Support related to the revised acquisition program from 32 aircraft to 168 aircraft. (QR)(Support)	+37.2	+48.3
	Change in OTHER COSTS provides for the logistical support, training, and training devices for a 168 aircraft acquisition program. (QR)(Support)	+1172.4	+1424.4

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C-130J Hercules, December 31, 2001

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

b. Current Change Explanations		
	(Dollars 1 <u>Base-Year</u>	n Millions) <u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	-2.6	-2.6
Adjustment for Current and Prior Inflation. (Support)	-2.6	-2.6
Procurement Subtotal	+10217.4	+13038.0

QR = Quantity related changes.

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

a. Program Acquisition Unit Cost (PAUC) History

WARVIE WIN DENGALLY OF WELVES POUL POUL	Current	SAR	Baseline	to	Current	Estimate
---	---------	-----	----------	----	---------	----------

PAUC	Changes							PAUC	
Prod Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
76.34	-0.005	+8.49	-2.22	+0.002	-5.33		+16.01	+16.94	93.28

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Prod Est	i de la constante de							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
75.50	-0.002	+9.27	-2.22		-5.33		+16.01	+17.73	93.23

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	N/A	839.7	15671.2
Total Quantity	N/A	N/A	11	168
Prog Acg Unit Cost	N/A	N/A	76.3	93.3

C-130J Hercules, December 31, 2001

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

a. Procu <u>C-130J -</u>	rement Production:		Initial <u>Target</u>	l Contract Pr <u>Ceiling</u>	ice <u>Otv</u>
Lockheed Mar F33657-95-C- Award: Novem	tin, Marietta, 2055, FFP ber 6. 1996	GA	\$115.0	N/A	2
Definitized:	November 6, 1	996			
Curren	t Contract Pri	ce	Estimated H	Price At Comp	letion
<u>Target</u>	Ceiling	<u>Oty</u>	Contractor	Program	Manager
\$2024.1	N/A	35	\$2024.1	\$20	24.1

Explanation of Change:

Current contract price and Program Manager's estimated price increased by \$177.7M from \$1846.4M to 2024.1M:

\$121.9M -Procured 2 aircraft
3.9M -Procured ICS spares
33.9M -Logistics Support Requirements
11.6M -WC-130J High Priority Mission Support Kit
4.1M -ICS Support and Depot Repair Services
2.3M - Tech Support Personnel, training, and technical studies

\$177.7M -Total

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

	Initial	Contract	Price
C-130J Production:	<u>Target</u>	<u>Ceiling</u>	Oty
Lockheed Martin, Marietta, GA			
F33657-00-C-0018, FFP	\$734.5	N/A	12
Award: N/A			
Definitized: N/A			
Current Contract Price	Estimated P	rice At Co	moletion

	00000000 1000			o ne vengadade
<u>Target</u>	<u>Ceiling</u>	Oty	Contractor	Program Manager
\$805.4	N/A	12	\$	\$

Explanation of Change:

Contract F33657-00-C-0018 was awarded on December 22, 2000: Since its inception to December 31, 2001, \$805.4M was awarded and obligated:

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15. Contract Information (Cont'd):

- 5.4M Technical representatives support 5.7M Coast Guard study
- 9.6M Other logistical support

\$805.4M - Total

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)

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-19)	<u>Total</u>
RDTSE	9.2	-	-	-	9,2
Procurement	2259.7	137.5	389.5	12875.3	15662.0
MILCON	-	-	-	-	-
OGM	-	-	-	-	-
Total	2268.9	137.5	389.5	12875.3	15671.2

b. Annual Summary -- C-130J

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

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				5.3	5.1
1996				0.4	0.4
1997			<u> </u>		
1998				3.7	3.7
Subtotal				9.4	9.2

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

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1994	2		66.7	66.7	66.8
1995					
1996	5		214.5	246.1	253.5
1997	9		418.1	481.1	500.8
1998	7		330.2	429.1	449.7
1999	5		261.5	487.9	517.2
2000	1		53.6	138.8	149.8
2001	2		174.3	294.5	321.9
2002	5		365.5	123.9	137.5
2003	2		133.9	345.3	389.5
2004	4		222.0	498.0	560.2
2005	6		335.2	595.6	696.9
2006	9		495.0	935.5	1115.1
2007	12		769.5	879.0	1068.0
2008	12		768.0	846.9	1048.5
2009	12		768.0	850.1	1072.0
2010	12		768.0	842.4	1082.5
2011	12		759.3	845.1	1107.1
2012	12		759.3	847.4	1131.3
2013	12		759.3	860.8	1170.7
2014	12		759.3	842.8	1168.1
2015	12		759.3	845.5	1193.8
2016	3		253.0	300.2	432.0
2017				6.5	9.5
2018				6.5	9.7
2019				6.5	9.9
Subtotal	168		10193.5	12612.2	15662.0

Included in the FY 2003 President's Budget is a Multi-Year Procurement proposal for the C-130J program.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	168		10193.5	12621.6	15671.2

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C-130J Hercules, December 31, 2001

17. Delivery/Expenditure Information:

a .	Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT ≨ Ê	0	0
	Procurement	33	33

Percent Total Program Quantities Delivered: 19.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 950.1

Percent Total Program Expended: 6.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The information for Operating and Support (OsS) costs through FY 2046 is based on the May 2000 program office developed estimates for the C-130J life cycle costs:

-Estimates are based on commercial buy prices, as applicable. -O&S costs are based on sustainment of 168 C-130J aircraft through FY 2046.

-Two-level maintenance is planned.

-Interim Contractor Support (ICS) will be required for the first ten years after contract award.

-The depot will be fully activated by the end of the ICS period.

Cost Element	C-130J O&S Cost/Squadron per Year	C-130E, C-130H
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

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

Total O&S Cost	C-130J	C-130E, C-130H
BY\$ (In Millions)	15873.8	N/A
TY\$ (In Millions)	35958.0	N/A

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

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Report Creation Date: 03/26/2002 9:35:42 AM

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SELECTED ACOUISITION REPORT (RCS: DD-AGT(OGA)823) PROGRAM: CVNX

AS OF DATE: December 31, 2001

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Mission and Description	2
Executive Summary	3
Threshold Breaches	4
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Performance Characteristics	6
Total Program Cost and Quantity	8
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INDEX

1. Designation and Nomenclature (Popular Name): Future Aircraft Carrier (CVNX)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

Program Executive Office Aircraft Carriers 614 Sicard Street SE Stop 7007 Washington, DC 20376-7007 CAPT. Dudley Berthold Assigned: January 26, 2001 DSN 326-0443; COMM (202) 781-0443 BertholdDB@navsea.navy.mil

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4. Program Elements/Procurement Line Items: RDT&E: PE 0603512N Project 42208, 42693 PE 0603570N Project 52692 PE 0604567N Project 42301

5. References:

CVNX1

SAR Baseline (Planning Estimate): DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.



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02-C-0629





5. References (Cont'd):

CVNX2

SAR Baseline (Planning Estimate): DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated June 15, 2000.

6. Mission and Description:

The Future Aircraft Carrier (CVNX) is the planned successor to the Nimitz-class aircraft carrier. The Joint Requirements Oversight Council approved Mission Need Statement for the 21st Century Tactical Aviation Sea-Based Platform, M070-88-96 identifies assigned missions as follows:

Provide credible, sustainable, independent forward presence during peace-time without access to land bases;Operate as the cornerstone of a joint and/or allied maritime expeditionary force in response to crises; and Carry the war to the enemy through joint multi-mission offensive operations by: (a) being able to operate and support aircraft in attacks on enemy forces ashore, afloat, or submerged independent of forward-based land facilities, (b) protecting friendly forces from enemy attack through the establishment and maintenance of battle space dominance independent of forward-based land facilities, and (c) engaging in sustained operations in support of the United States and its allies independent of forward-based land facilities.

The CVNX 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 CVNX program meets the defense guidance to accomplish dominant maneuver through crisis stabilization, rapid joint force projection, battlespace control, and decisive combat operations.

CVNX1 is the second ship in an evolutionary acquisition strategy being employed to bring forward a 21st century aircraft carrier design, the CVNX Class. The first ship in this evolutionary strategy is the CVN77. CVN77 is a NIMITZ Class aircraft carrier which will have a new totally Integrated Warfare System with knowledge based decision centers. CVN77 warfare system will employ integrated planar arrays & antennas, and provide for joint interoperability.

6. Mission and Description (Cont'd):

Major systems to be incorporated into CVNX1 include: New Propulsion Plant, Zonal Electrical Distribution Systems, Electromagnetic Aircraft Launch System, Replacement of Auxiliary Steam Systems with Electrical systems, New Emergency Diesel Generators, Reverse Osmosis Desalinators, New Propellers, and the CVN77 Integrated Warfare System.

CVNX2 will receive the CVNX1 upgrades, survivability improvements to meet new threats, restoration of service life allowances, functional rearrangements and the latest technologies to further enhance flight deck operations, including an Electromagnetic Aircraft Recovery System.

7. Executive Summary:

The CVNX program was granted Milestone I approval on June 15, 2000.

In October 2000, Northrop Grumman Newport News (NGNN) was awarded a cost-plus-fixed-fee contract for research and design development engineering services in support of the CVNX. Design efforts supporting whole ship system specifications, design weight estimates, preliminary logistics data, electromagnetic aircraft launching system (EMALS), whole ship design integration, ship hull, mechanical and electrical (HM&E), propulsion plant integration, and preliminary construction planning have commenced.

Completion of the CVNX-1 Systems Requirement Review in April 01 marked a major milestone toward commencement of design activities to support the Milestone B Defense Acquisition Board (DAB) planned for September 02. The level of design efforts at NGNN has ramped up significantly. Total ship integration of the CVNX design in the years leading up to the construction phase in FY07 is a major focus area of the program office.

PB03 slips the original CVNX1 program of record for design start construction and delivery by one year to FY07, and reflects split funding of CVNX construction over FY07 and FY08. The restructured R&D profile identified DoN resources to fund other high priority Navy programs.

This SAR reports on a Development program only, in accordance with Title 10, United States Code, Section 2432, which allows limited reporting for Pre-Milestone B programs.

8. Threshold Breaches:

CVNX1

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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:

Due to the Navy's decision to delay the program one year for resource limitations, start construction has changed from January 2006 to January 2007, and Initial Operational Capability changed from March 2014 to March 2015.

Nunn-McCurdy reporting is not applicable for Pre-Milestone B programs.

8c. Threshold Breaches (Cont'd):

CVNX2

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
06M	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:

CVNX1

a. Milestones --

	Planning	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone I	JUN 2000	JUN 2000	JUN 2000
CVNX1 Early Operational Assessment	FEB 2002	FEB 2002	FEB 2002
Milestone II	APR 2002	APR 2002	SEP 2002(Ch-1)
CVNX1 Start Construction	JAN 2006	JAN 2006	JAN 2007 (Ch-2)
CVNX1 Initial Operational Capability	MAR 2014	MAR 2014	MAR 2015(Ch-2)
Milestone III	MAR 2020	MAR 2020	MAR 2020

b. Current Change Explanations --

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(Ch-1) Milestone B changed from April 2002 to September 2002 to adjudicate impacts to PR03 and realign program to support PB03 submission. Milestone II will be replaced by Milestone B in the next APB.

(Ch-2) Start construction changed from January 2006 to January 2007, and Initial Operational Capability changed from March 2014 to March 2015, due to the Navy's decision to slip the program one year.

9a. Schedule (Cont'd): CVNX2

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	FEB 2002
Milestone II	APR 2002	APR 2002	SEP 2002(Ch-1)
CVNX2 Start Construction	MAR 2011	MAR 2011	MAR 2011
CVNX2 Initial Operational Capability	MAR 2019	MAR 2019	MAR 2019
Milestone III	MAR 2020	MAR 2020	MAR 2020

b. Current Change Explanations --

(Ch-1) Milestone B changed from April 2002 to September 2002 to adjudicate impacts to PR03 and realign program to support PB03 submission. Milestone II will be replaced by Milestone B in the next APB.

10. Performance Characteristics:

CVNX1

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a. Performance ---

u, rorrormanoc					
E	Planning Stimate (SAR)	Ap Progr <u>Obj/T</u>	proved am (APB) <u>hreshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
CVNX1 Interoperability	Note 1	Note 1	/ Note 1	TBD	Note 1
CVNX1 Sustained Sortie	140	140	/ 140	TBD	140
Rate					
CVNX1 Surge Sortie	210	210	/ 210	TBD	210
Rate					
CVNX1 Ship Service	2.5	2.5	/ 2.5	TBD	2.5
Electrical Generating					
Capacity					
CVNX1 Weight Service	7.5	7.5	/ 4.0	TBD	4.0
Life Allowance					
CVNX1 Stability	2.5	2.5	/ 1.5	TBD	1.5
Service Life Allowance					

Note 1 - For additional description regarding interoperability and other performance characteristics, see Table 4.1, Key Performance, page 22, of the Future Aircraft Carrier (CVNX) Operational Requirements Document Ser 522-88-00 dated 12 April 2000.

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10b. <u>Performance Characteristics (Cont'd)</u>: CVNX1

b. Current Change Explanations -- None

CVNX2

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a. Performance --

		Ap	proved	Demon-	
<u>E</u> ,	Planning stimate (SAR)	Progr <u>Obi/T</u>	am (APB) <u>hreshold</u>	strated <u>Perf</u>	Current <u>Estimate</u>
CVNX2 Interoperability	Note 1	Note 1	/ Note 1	TBD	Note l
CVNX2 Sustained Sortie	220	220	/ 160	TBD	160
Rate					
CVNX2 Surge Sortie	310	310	/ 270	TBD	270
Rate					
CVNX2 Ship Service	2.5	2.5	/ 2.5	TBD	2.5
Electrical Generating					
Capacity					
CVNX2 Weight Service	7.5	7.5	/ 5.0	TBD	5.0
Life Allowance					
CVNX2 Stability	2.5	2.5	/ 1.5	TBD	1.5
Service Life Allowance					

Note 1 - For additional description regarding interoperability and other performance charteristics, see Table 4.1, Key Performance, page 22, of the Future Aircraft Carrier (CVNX) Operational Requirements Document Ser 522-88-00 dated 12 April 2000.

b. Current Change Explanations -- None

11. Total Program Cost and Quantity (Dollars in Millions): CVNX1

a.	Cost Development (RDT&E)	Planning <u>Estimate (SAR)</u> 2121.5	Approved <u>Program (APB)</u> 2121.5	Current <u>Estimate</u> 2322.5
	Procurement Total Sailaway	0.0	N/A	0.0
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(Q.O)		
	Initial Spares	(0.0)		
	Construction (MILCON)	0.0	N/A	0.0
	Acquisition O&M	0.0	<u>N/A</u>	0.0
	Total FY 2000 Base-Year	\$ 2121.5	2121.5	2322.5
	Escalation	192.6	192.6	221.8
	Development (RDT&E)	(192.6)	(192.6)	(221.8)
	Procurement	(0.0)	(N/A)	(0.0)
	Construction (MILCON)	(0.0)	(N/A)	(0.0)
	Acquisition O&M	(0,0)	<u>(N/A)</u>	(0.0)
	Total Then Year \$	2314.1	2314.1	2544.3
ь.	Quantity			
	Development (RDT&E)	N/A	N/A	0
	Procurement	<u>_N/A</u>	<u>N/A</u>	0
	Total	N/A	N/A	0

c. Foreign Military Sales -- None.

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d. Nuclear Costs --Nuclear costs will be added at MS B decision (September 2002).
11a. Total Program Cost and Quantity (Cont'd):

CVNX2

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		Planning	Approved	Current
а.	Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	1038.3	1038.3	1033.4
	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	<u>N/A</u>	0.0
	Total FY 2000 Base-Year \$	1038.3	1038.3	1033.4
	Escalation	. 235. 2	235.2	253.5
	Development (RDT&E)	(235.2)	(235.2)	(253.5)
	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	1286.9
ь.	Quantity			
	Development (RDT&E)	N/A	N/A	0
	Procurement	<u>_N/A</u>	N/A	0
	Total	N/A	N/A	0

c. Foreign Military Sales -- None.

d. Nuclear Costs --Nuclear costs will be added at MS B decision (September 2002).

12. Unit Cost Summary:

CVNX1

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

CVNX2

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

13. Cost Variance Analysis: CVNX1

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2314.1	-	-	2314.1
Previous Changes:				
Economic	-	-	- 1	-
Quantity	-	-	-	
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating		-	-	-
Other	-	-	-	-
Support	-	-	~	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-2.6	-	-	-2.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+232.8		-	+232.8
Other	-	-	-	-
Support	-		-	-
Subtotal	+230.2	-	-	+230.2
Total Changes	+230.2	-	-	+230.2
Current Estimate	2544.3	-	-	2544.3

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13a. <u>Cost Variance Analysis (Cont'd)</u>: CVNX1

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2121.5	-	-	2121.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	_	-
Support	_	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity		-	-	-
Schedule	-	-	-	-
Engineering	-	_	-	-
Estimating	+201.0	-	-	+201.0
Other		-	-	- 1
Support	-	-	-	-
Subtotal	+201.0	_	-	+201.0
Total Changes	+201.0	-	-	+201.0
Current Estimate	2322.5	-	-	2322.5

b. Current Change Explanations --

		(Dollars : <u>Base-Year</u>	in Millions) <u>Then-Year</u>
(1)	RDTAP		
	Revised escalation indices. (Economic)	N/A	-2.6
	Adjustment for current and prior inflation (Estimating)	+0.9	-2.1
	Addition of Advanced Nuclear Power Systems (Estimating)	+12.0	+14.9
	Revised estimate for CVNX Total Ship Integration (Estimating)	+20.2	+27.9
	POM 02 plus-up to fully fund CVNX1 (Estimating)) +85.3	+103.0
	FY01 Congressional additions for CVNX Product Model (Estimating)	+7.7	+8.0
	Design of Main Turbine Generator shifted from SCN to RDT&E. (Estimating)	+70.4	+75.9
	Miscellaneous adjustments (Estimating)	+4.5	+5.2
	RDT&E Subtotal	+201.0	+230.2

13. Cost Variance Analysis (Cont'd):

CVNX2

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1273.5	-		1273.5
Previous Changes:			_	
Economic	-	_	-	-
Quantity	-		-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	- 1
Other		-	-	-
Support	-	-		_
Subtotal	_	-		
Current Changes:				
Economic	-5.9	-		-5.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.3		-	+19.3
Other	-	-	-	-
Support	-	-	_	-
Subtotal	+13.4	~**	-	+13.4
Total Changes	+13.4	-	-	+13.4
Current Estimate	1286.9	-	-	1286.9

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13a. <u>Cost Variance Analysis (Cont'd)</u>: CVNX2

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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	-	-	-	-
Other	-	-	-	-
Support	-		-	_
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.9	-	-	-4.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.9	_		-4.9
Total Changes	-4.9	_	-	-4.9
Current Estimate	1033.4	-	-	1033.4

b. Current Change Explanations --

(Dollars	in Millions)
<u>Base-Year</u>	<u>Then-Year</u>

		<u> pase-lear</u>	THEIL TEAT
(1) <u>R</u> R A	Revised escalation indices. (Economic) Adjustment for current and prior inflation	N/A +6.7	-5.9 +7.0
R	(Estimating) Revised program estimate (Estimating)	-11.6	+12.3
	RDT&E Subtotal	-4.9	+13.4

CVNX, December 31, 2001

14. <u>Unit Cost and Other History</u> (Then-Year Dollars in Millions): CVNX1

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
ltem/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	JUN 2000	N/A	N/A	JUN 2000
Milestone II	APR 2002	N/A	N/A	SEP 2002
Milestone III	MAR 2020	N/A	N/A	MAR 2020
IOC	MAR 2014	N/A	N/A	MAR 2014
Total Cost	2314.1	N/A	N/A	2544.3
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

Not applicable for Pre-Milestone B programs.

CVNX2

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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.

14c. Unit Cost and Other History (Cont'd): CVNX2

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c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	JUN 2000	N/A	N/A	JUN 2000
Milestone II	APR 2002	N/A	N/A	SEP 2002
Milestone III	MAR 2020	N/A	N/A	MAR 2020
IOC	MAR 2019	N/A	N/A	MAR 2019
Total Cost	1273.5	N/A	N/A	1286.9
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

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

a. RDT&E		Initial	Contract	Price
CVNX1_IPPD:		<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
NGNN, Newport News, VA				
N0024-00-C-2108, CPIF		\$161.3	\$161.3	0
Award: October 12, 2000				
Definitized: January 14, 2002				
Current Contract Price		Estimated Pr	rice At Co	mpletion
<u>Target</u> <u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Progr	<u>ram Manager</u>
\$161.3 \$161.3	0	\$148.1		\$148.1
		Cost Variance	<u>Schedul</u>	<u>Variance</u>
Previous Cumulative Variances		N/A		N/A
Cumulative Variances To Date		<u>N/A</u>		N/A
Net Change		N/A		N/A

Explanation of Change:

Program Office anticipates variance explanations will be provided by July 2002.

CVNX, December 31, 2001

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

Total Program

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

Appropriation	Prior <u>Years</u> (FY01-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	<u>Total</u>
RDT&E	537.7	291.5	266.0	2736.0	3831.2
Procurement		-	-	-	_
MILCON	_		-	-	-
O&M	-	-	-	-	-
Total	537.7	291.5	266.0	2736.0	3831.2

CVNX1

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

Appropriation	Prior <u>Years</u> (FYO1-O1)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-14)	<u>Total</u>
RDT&E	537.7	286.5	260.5	1459.6	2544.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-		-	-
Total	537.7	286.5	260.5	1459.6	2544.3

CVNX2

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

Appropriation	Prior <u>Years</u>	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	<u>Total</u>
RDT&E	-	5.0	5.5	1276.4	1286.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	5.0	5.5	1276.4	1286.9

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

b. Annual Summary -- CVNX1

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

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998				46.9	46.1
1999				83.6	83.3
2000				175.9	177.8
2001				224.2	230.5
2002				274.3	286.5
2003				245.8	260.5
2004				225.4	243.1
2005				215.4	236.6
2006				169.9	190.2
2007				153.2	174.7
2008				139.6	162.2
2009				93.3	110.5
2010				80.0	96.6
2011				67.3	82.8
2012				48.1	60.3
2013				42.2	53.9
2014				37.4	48.7
Subtotal				2322.5	2544.3

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total				2322.5	2544.3

b. Annual Summary -- CVNX2

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

Fiscal Year	Oty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				4.8	5.0
2003				5.2	5.5
2004				9.1	9.8
2005				10.0	11.0
2006				10.5	11.8
2007				15.1	17.2
2008				6.4	7.4
2009				112.2	132.9
2010				139.9	168.8

16b. Program Funding Summary (Cont'd): CVNX2

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

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2011				156.6	192.6
2012				173.7	217.7
2013				176.0	224.8
2014				110.3	143.5
2015				53.1	70.4
2016				37.1	50.1
2017				13.4	18.4
Subtotal				1033.4	1286.9

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
1	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total				1033.4	1286.9

17. Delivery/Expenditure Information:

CVNX1

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a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 422.1

Percent Total Program Expended: 16.6%

CVNX2

- a. Deliveries To Date None.
 Percent Total Program Quantities Delivered: N/A
- b. Total Expenditures To Date (In Millions of Dollars): \$ 0.0 Percent Total Program Expended: 0.0%

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18. Operating and Support Costs: CVNX1

Not applicable for Pre-Milestone B programs.

CVNX2

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Not applicable for Pre-Milestone B programs.

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: STANDARD MISSILE-2

AS OF DATE: December 31, 2001

SUBJECT	PAGE	
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Executive Summary	3	
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1. (U) Designation and Nomenclature (Popular Name): STANDARD Missile-2 MEDIUM RANGE/EXTENDED RANGE

3. (U) Responsible Office and Telephone Number: PMS422 CAPT C.M. BOURNE PEO THEATER SURFACE COMBATANTS Assigned: December 23, 1998 2341 JEFFERSON DAVIS HIGHWAY DSN ; COMM (703) 872-3500 ARLINGTON, VA 22202 BOURNECM@NAVSEA.NAVY.MIL

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0603318N Project U01632 PE 0604366N Project K00439 (U) **PROCUREMENT:** (U) APPN 1507 ICN 2234 (Navy) MILCON: (U) PE 0702096N それもはなかり。 A NAME OF A DESCRIPTION ANTENDEN 1. A.



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^{2. (}U) DoD Component: Navy

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STANDARD MISSILE-2, December 31, 2001

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 July 10, 1996.

SM-2 BLK IV

SAR Baseline (Development Estimate): (U) NAE Approved Acquisition Program Baseline (APB) dated November 20, 1990.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated August 4, 1999.

6. (U) Mission and Description:

(U) The STANDARD Missile Medium Range (SM-2 MR) and Extended Range (SM-2 ER) are solid propellant, tail controlled surface-to-air missiles with mid-course guidance, semi-active homing guidance and home-on jam capability. The SM-2 Block I ER missile was produced in FY 76 thru FY 83. The SM-2 Block I MR missile was produced in FY 80 thru FY 83. Both missiles incorporated command guidance, inertial reference system and monopulse receiver to improve range, accuracy and electronic countermeasure (ECM) resistance over the SM-1 missile.

(U) Block II SM-2 is a variation of Block I SM-2. Block II Medium Range (MR) and Extended Range (ER) Missiles incorporate increased kinematics, new conventional warhead, improved fuzing, and improved guidance to provide enhanced capability against high flying, steep diving anti-ship missiles (ASMs). Due to the addition of a MK-104 Dual Thrust Rocket Motor, Block II MR missile range is double that of Block I MR missiles and approximates range of Block II ER missiles. The SM-2 Block II ER was deployed on all TERRIER Guided Missile Cruisers and Destroyers prior to their decommissioning. The SM-2 Block II MR is deployed on AEGIS CG-47/51 Cruisers and AEGIS DDG-51 Destroyers.

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 (1)

(b)(1) SM-2 Block IIIA is essentially a Block III Missile with (b)(1) (b)(1) coupled with (b)(1) throughout the envelope. A moving target indicator (MTL) is also incorporated in the fuze design to permit engagement of SM-2 Block IIIB Missile Homing Improvement Program (MHIP) encompasses improvements to the Block IIIA for continued evolution in SM guidance capability with incorporation of a dual mode Infrared/RF guidance system.

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STANDARD MISSILE-2, December 31, 2001

6. Mission and Description (Cont'd):

These versions of STANDARD Missile will be employed on ships capable of firing SM-2 Block III. The SM-2 Block III missile achieved IOC in August, 1990. The SM-2 Block IIIA Missile achieved IOC in January, 1994. The SM-2 Block IIIB Missile achieved IOC in October 1997.

(U) STANDARD Missile-2 Block IV will provide dramatic increases in performance for AEGIS/VLS ships. Block IV incorporates a new separable booster with thrust vector control, a new guidance section, all digital autopilot, and the ordnance section and dual thrust rocket motor of Block IIIA. The Block IV missile will be capable of supporting the entire SPY 1B/D envelope and will have improved capability at very high altitudes and at large crossranges. Block IV will also retain the low altitude performance of Block III/IIIA. SM-2 Block IV achieved IOC August 30, 1999 in USS O'KANE (DDG-77). FY99 was the final procurement year for the Block IV variant.

7. (U) Executive Summary:

(U) The STANDARD Missile-2 Block I (RIM-67), Extended Range Development program was initiated in August 1976. The Block II is an improved missile with capability to counter high speed, higher altitude anti-ship missiles in an advanced ECM environment.

(U) The STANDARD Missile-2, Medium Range, Block II (RIM/66H) is a derivative of the STANDARD Missile-2, Block II Extended Range that incorporated a new rocket motor and a modified airframe for compatibility with the vertical launcher system.

(U) Approval for production of the Block III, which includes a guidance section upgrade to increase capability against low altitude targets, was received May 12, 1988 by the Navy Acquisition Review Board. The Block III achieved IOC in August 1990. The Block IIIA which includes an upgraded ordnance section, completed OPEVAL in August 1991 with eleven out of twelve successful firings and achieved IOC in January, 1994 with the missile loadout of USS Vicksburg (CG 69).

(U) The SM-2 Block IIIB TEMP was approved by OUSD(A&T) on April 26, 1994. The APB for the SM-2 Block I/II/III/A/B was approved on June 28, 1994. On October 21, 1994, the first fully successful test flight of the SM-2 Block IIIB occurred. In July, 1994 the first at-sea firings of SM-2 Block IV were conducted, with 4 of the 5 flights successful. The unsuccessful mission was repeated on October 5, 1994 and was a success. The TEMP for the SM-2 Block IV was approved by OUSD(A&T) on August 2, 1994. The SM-2 Block IV GTV series was completed in November, 1994 with 7 of 8 flights successful. On October 6, 1994, DT/IOT&E was completed for SM-2 Block IV onboard USS Lake Erie (CG 70) with 4 of 6 flights successful. The SM-2 Block IV ARB was held on January 9, 1995 and the program was certified to proceed to the NPDM.

(U) On June 15, 1995, the SM-2 Block IIIB completed its initial phase of flight testing at WSMR, with the successful intercept of a Vandal target simulating the prime threat. On May 1, 1995 the SM-2 Block IV received DAB approval for

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

LRIP. The APB for the SM-2 Block IV was approved on May 4, 1995.

(U) On October 16, 1995, the SM-2 Block IIIB received approval to proceed to LRIP. The APB for the SM-2 Block I/II/III/A/B was approved on October 31, 1995. On November 20, 1995 the ADM was signed. The at-sea DT for the SM-2 Block IIIB was successfully completed on December 8, 1995.

(U) The SM-2 Block IIIB at-sea OPEVAL was successfully completed on April 15, 1996, and full rate production was approved at a MSIII NPDM on July 15, 1996. The SM-2 Block IIIB ADM was signed September 19, 1996. SM-2 Block IIIB IOC was achieved on October 21, 1997. The APB for the SM-2 Block Block I/II/III/A/B was approved on July 10, 1996. The APB for the SM-2 Block IV was approved on August 4, 1999 revising the schedule for IOC.

(U) On January 16, 1997, Raytheon entered into definitive agreements with Hughes Electronics Corporation (parent of Hughes Missile Systems Company) to bring about the merger of the Hughes Electronics defense operation and Raytheon. On December 17, 1997 Raytheon completed its merger with Hughes to create Raytheon Systems Company (RSC).

(U) SM-2 Block IV achieved First Production Delivery in November 1998. IOC was achieved August 30, 1999 in USS O'KANE (DDG-77). Two successful engineering tests were held December 14 and 16, 1999 at the Pacific Missile Range Facility, Barking Sands, Hawaii. The SM-2 Block IV performed flawlessly in all phases against stringent manuevering targets.

(U) As of December 31, 2001 SM-2 Block IV has delivered 96 of 160 planned production rounds. It is anticipated that there will be cost increases to the SM-2 Block IIIB and Block IV programs due to the cancellation of the SM-2 Block IVA program (Program cancelled per USD (AT&L) Memo dtd 14 Dec 01).

8. (U) Threshold Breaches:

STANDARD MISSILE-2, December 31, 2001

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

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
0&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) <u>Schedule</u>:

SM-2 BLK I\II\III\A\B

a. Milestones ---

	Produ	uction	Appı	oved	Curr	rent
<u>Es</u>	timat	<u>te (SAR)</u>	Progra	m (APB)	<u>Esti</u>	<u>mate</u>
BLOCK II MR						
First Flt Test (development test)	FEB	1983	FEB	1983	FEB	1903
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
FOTGE USS VINCENNES CG-49	NOV	1985	NOV	1985	NOV	1985
Lot 3 ALP	APR	1986	APR	1986	APR	1986
Milestone IIIE(AFP)	DEC	1984	DEC	1986	DEC	1986
BLOCK II ER						
FOT&E Vertical Launch Cruiser CG 54	DEC	1986	N/A		APR	1988
USS Antietam (Blk II MR)						
OPEVAL Complete	MAR	1983	MAR	1983	MAR	1983
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	1 FEB	1984	FEB	1984	FEB	1984
Lot 3 Approval for Limited Production	1 MAR	1985	MAR	1985	MAR	1985
FOTLE USS MAHAN DDG 42	MAR	1985	MAR	1985	MAR	1985
Lot 4 Approval for Limited Production	APR	1986	APR	1986	MAY	1986
Milectone IIIE (AFD)	DEC	1084	DEC	1984	DEC	1996
EVER (ICC Scott DDC 005 (B)k IT ED)	DEC	1096	NT / N	1 20 4	DEC	1000
FOIGE USS SCOLE DDG 995 (BIK II EK)	DEC	1900	19/A		DEC	1 20 3
Milestone II	TUN	1005	TIN	1005	TITAL	1005
Milestone II Deslig Design Deview	JUN	1005	TTN	1005	TIN	1005
Prelim Design Review	JUN	1985	JUN	1985	JUN	1982
Critical Design Review	JUN	1980	JUN	1980	JUN	1980
Developmental Test		1007	000	1005		
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
TOC	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	עטע	1994
Deterobletter test (month)	520		010			

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9a. (U) <u>Schedule (Cont'd)</u>: SM-2 BLK I\II\III\A\B

	Production Estimate (SAR)	Approved Program (APB)	Current <u>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 IIIB	SEP 1993	N/A	N/A
Milestone III (Full Rate Production) N/A	JUN 1996	JUL 1996

b. Current Change Explanations -- None

SM-2 BLK IV

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a. Milestones --

	Development	Approved	Current
	Estimate (SAR) Program (APB)	<u>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 Productio	on DEC 1990	N/A	N/A
Operational Test	SEP 1991	JUL 1994	OCT 1994
Milestone IIIB (Full Production)	DEC 1991	N/A	N/A
LRIP Program Decision	N/A	JAN 1995	MAY 1995
First Production Delivery	FEB 1993	OCT 1998	NOV 1998
Milestone III (Full Rate Production)	N/A	TBD	TBD
IOC	MAR 1993	SEP 1999	AUG 1999

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

SM-2 BLK I\II\111\A\B

a. Performance --



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STANDARD MISSILE-2, December 31, 2001

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

SM-2 BLK I\II\III\A\B



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STANDARD MISSILE-2, December 31, 2001

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

SM-2 BLK I/II/III/A/B



(U) Changes in demonstrated performance figures reflect latest reliability analyses.

b. Current Change Explanations -- None

SM-2 BLK IV

a. Performance --



(U) Changes in demonstrated performance figures reflect latest reliability analyses.

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10b. (U) <u>Performance Characteristics (Cont'd)</u>: SM-2 BLK IV

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b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions): SM-2 BLK I\II\III\A\B

	Production	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
Development (RDT&E)	648.4	770.6	786.7
Procurement	5923.2	6432.1	6749.7
AUR Hardware	(4510.5)		(4680.7)
Other Flyaway	(500.0)		(993.8)
Total Flyaway	(5010.5)		(5674.5)
Non-recurring Support	: (388.9)		(530.1)
Fleet Support	(330.9)		(377.2)
Total Other Wpn Sys	(719.8)		(907.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(167.9)
Construction (MILCON)	0.0	34.0	34.2
Acquisition O&M	0.0	0,0	0.0
Total FY 1984 Base-Year S	6571.6	7236.7	7570.6
Escalation	1481.2	1536,0	1596.5
Development (RDT&E)	(53.2)	(86.6)	(82.8)
Procurement	(1428.0)	(1440.6)	(1505.1)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Acquisition O&M	(0.0)	<u>(0.0)</u>	(0.0)
Total Then Year \$	8052.8	8772.7	9167.1
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	<u>10778</u>	<u>11504</u>	11505
Total	10778	11504	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 quantites procured.

c. (U) Foreign Military Sales --

Commitments to date are: In FY88, Canada procured 22 SM-2 Block II missiles for \$8.5M. In FY89, Canada procured 74 SM-2 Block IIs for \$34.3M, and Japan 41 SM-2 Block IIs for \$15.8M. In FY92, Canada procured 10 SM-2 Block IIIs for \$5.6M, and Japan 85 SM-2 Block II and 19 Block III missiles for \$67.8M. In FY94, Japan purchased 22 SM-2 Block II and 65 Block III missiles for \$58.8M. In FY96, Canada ordered 21 SM-2 Block III missiles for \$11.9M, and Japan 87 Block III missiles for \$58.4M. In FY97, Canada ordered 12 SM-2 Block IIIA missiles and Japan ordered 26 SM-2 Block III missiles. In FY98 Canada ordered 10 SM-2 Block IIIA and Japan ordered 5 SM-2 Block III missiles. In FY99,

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11c. (U) Total Program Cost and Quantity (Cont'd): SM-2 BLK I\II\III\A\B

Japan procured 16 SM-2 Block III missiles. In FY00, Japan procured 16 SM-2 Block III missiles, The Netherlands procured 24 SM-2 Block IIIA missiles, Spain procured 35 SM-2 Block IIIA missiles and Germany procured 14 SM-2 Block IIIA missiles. In FY01, Japan procured 16 SM-2 Block IIIA missiles and South Korea procured 32 SM-2 Block IIIA missiles. In FY02, South Korea anticipates procuring 64 SM-2 Block IIIA missiles.

d. Nuclear Costs -- None.

SM-2 BLK IV

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		Development	Approved	Current
a. (U)	Cost	Estimate (SAR)	Program (APB)	Estimate
Dev	elopment (RDT&E)	283.9	319.8	320.0
Pro	curement	1914.6	338.1	349.2
	AUR Hardware	(1551.7)		(212.7)
	Other Flyaway	(207.0)		(63.2)
Т	otal Flyaway	(1758.7)		(275.9)
	Fleet Support	(60.1)		(19.8)
	Non-Recurring Support	(66.8)		(28.2)
Т	otal Other Wpn Sys	(126.9)		(48.0)
P	eculiar Support	(0.0)		(0.0)
I	nitial Spares	(29.0)		(25.3)
Con	struction (MILCON)	0.0	0.0	0.0
Acq	uisition O&M	0.0	0.0	0.0
Tot	al FY 1984 Base-Year \$	2198.5	657.9	669.2
Esc	alation	815.9	231.1	238.7
D	evelopment (RDT&E)	(56.2)	(72.1)	(71.9)
Р	rocurement	(759.7)	(159.0)	(166.8)
C	onstruction (MILCON)	(0.0)	(0.0)	(0.0)
A	cquisition O&M	(0.0)	(0.0)	(0.0)
Tot	al Then Year \$	3014.4	889.0	907.9
b. (U)	Quantity			
Deve	lopment (RDT&E)	0	0	0
Proc	urement	3000	162	160
Tota	1	3000	162	160

(U) Note: At the LRIP Program Decision (4 May 95), a quantity of 106 was approved with a provision for additional quantities should the program not transition to the SM-2 Block IVA as planned. ASN (RD&A) Memo dtd 17 Oct 97 authorizes procurement of additional SM-2 Block IV LRIP Missiles to a maximum quantity of 180.

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

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	UCR	Current	
	Baseline	Estimate	Percent
	(JUL 1996 APR)	(Dec 2001 SAR)	Change
- (II) Prog Acg Unit Cost (PAUC)	1000 1000 Int D1	<u>1960 2001 01101</u>	<u> </u>
(1) Cost (FY 1984 BYS)	7236 7	7570 6	
(1) COSC (EI 1904 BIQ) (2) Our-bibu	11504	11505	
(2) Quantity	11304	11303	14 61
(3) UNIT COST		0.000	74.01
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1984 BY\$)	6432.1	6749.7	
(2) Quantity	11504	11505	
(3) Unit Cost	0.559	0.587	+5.01
SM-2 BLK IV	11.6 m	a	
	UCR	Current	
	Baseline	• Estimate	Percent
	(JUL 1996 APB)	(Dec 2001 SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1984 BY\$)	657.9	669.2	
(2) Quantity	162	160	
(3) Unit Cost	4.061	4.183	+3.00
- (II) Ave Proc (Init Cost (APIIC)			
D. (U) AVG. FICC. UNIT COSt (AFOC)	338 1	349 2	
(1) COST (11 1204 R15)	162	160	
(2) Quantity	2 02	2 192	L/ 55
(3) Unit Cost	2.00/	2.102	T4.JJ

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13. (U) Cost Variance Analysis:

SM-2 BLK I\II\III\A\B

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	701.6	7351.2	-	8052.8
Previous Changes:				
Economic	-34.2	-922.7	+1.6	-955.3
Quantity	-	+271.6	-	+271.6
Schedule	- 1	+591.0	-	+591.0
Engineering	+5.1	+202.1	-	+207.2
Estimating	+189.4	+264.7	+41.2	+495.3
Other	-	~	-	-
Support	-	+94.5	-	+94.5
Subtotal	+160.3	+501.2	+42.8	+704.3
Current Changes:				
Economic	+0.1	-0.3	~	-0.2
Quantity	-	-	-	-
Schedule	-	-19.0	-	-19.0
Engineering	-	- 1	- 1	-
Estimating	+7.5	+384.3	-	+391.8
Other		-	-	-
Support	-	+37.4	-	+37.4
Subtotal	+7.6	+402.4	-	+410.0
Total Changes	+167.9	+903.6	+42.8	+1114.3
Current Estimate	869.5	8254.8	42.8	9167.1

(U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	648.4	5923.2	*-	6571.6
Previous Changes:				
Quantity	-	+289.6	-	+289.6
Schedule	-	+108.7	-	+108.7
Engineering	+16.1	+161.7	-	+177.8
Estimating	+117.2	-121.9	+34.2	+29.5
Other	-	_	-	-
Support	-	+140.8	-	+140.8
Subtotal	+133.3	+578.9	+34.2	+746.4
Current Changes:				
Quantity	-	-	-	-
Schedule			-	-
Engineering	-	-	-	-
Estimating	+5.0	+225.9	-	+230.9
Other	-	-	-	-
Support	-	+21.7		+21.7
Subtotal	+5.0	+247.6	-	+252.6
Total Changes	+138.3	+826.5	+34.2	+999.0
Current Estimate	786.7	6749.7	34.2	7570.6

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13b. (U) <u>Cost Variance Analysis (Cont'd)</u>: SM-2 BLK I\II\III\A\B

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b. (U) Current Change Explanations --

		(Dollars i <u>Base-Year</u>	n Millions) <u>Then-Year</u>
(1)	RDTSE		
	Revised escalation indices. (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	Increase to address SM-2 Block I/II/III/A/B Anti-Air Warfare (AAW) improvements (Estimating)	+5.1	+7.6
	RDT&E Subtotal	+5.0	+7.6
(2)	Procurement	NI / 2	- 0 2
	Revised escalation indices. (Economic)	N/A	-0.3
	(Schedule)	. 0.0	-19.0
	Adjustment for Current and Prior Inflation.	-1.3	-1.8
	Increase in Hardware due to realignment of canister procurement responsibility to STANDARD Missile program (Estimating)	+25.2	+42.5
	Net increase of Procurement Support allocated to Block I/II/III/A/B due to cancellation of	+44.2	+71.8
	Net increase due to revised estimates for hardware components based on actual contract awards and projected impact of cancellation of SM-2 Block IVA program (Estimating)	+157.8	~271.8
	Adjustment for Current and Prior Inflation.	-0.8	-0.8
	Reduction in Block IIIB Initial Spares allocation to reflect requirement to support other STANDARD Missile variants (Support)	-21.4	-33.6
	Change in Non-recurring Support due to reallocation of costs to Block I/II/III/A/B as a result of SM-2 Block IVA program cancellation (Support)	+27.9	+45.5
	Change in Fleet Support due to reallocation of costs to Block I/II/III/A/B as a result o SM-2 Block IVA program cancellation (Support	+16.0 f)	+26.3
	Procurement Subtotal	+247.6	+402.4

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	- 1	+127.7	-	+127.7
Estimating	+50.7	-170.2	-	-119.5
Other	- 1	-	_	-
Support	-	-140.3	-	-140.3
Subtotal	+51.8	-2206.4		-2154.6
Current Changes:				
Economic	-	+0.8		+0.8
Quantity	-	-	-	***
Schedule		-	-	-
Engineering	-	_	-	-
Estimating	-	+21.6	- ,	+21.6
Other	-	- 1	-	-
Support	-	+25.7	-	+25.7
Subtotal		+48.1	-	+48.1
Total Changes	+51.8	-2158.3	-	-2106.5
Current Estimate	391.9	516.0	_	907.9

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(Dollars in Millions) Base-Year Then-Year

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

SM-2 BLK IV

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(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	+1.1	_	-4.0
Other	-	-	-	-
Support	~	~98.6	-	-98.6
Subtotal	+36.1	-1595.5	-	-1559.4
Current Changes:				
Quantity	-	-	-	-
Schedule		-	-	-
Engineering	-	-	-	-
Estimating	-	+14.1	-	+14.1
Other	-	-	-	-
Support		+16.0	-	+16.0
Subtotal	-	+30.1	-	+30.1
Total Changes	+36.1	-1565.4	-	-1529.3
Current Estimate	320.0	349.2	-	669.2

b. (U) Current Change Explanations --

(1)	Procurement		
	Revised escalation indices. (Economic)	N/A	+0.8
	Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.7
	Increase in Hardware due to cost growth on FY95/96 Block IV LRIP contract. (Estimating)	+7.5	+11.5
	Increase to support ongoing Block IV production line requirements (Estimating)	+7.0	+10.8
	Adjustment for Current and Prior Inflation. (Support)	-0.1	-0.1
	Change in Initial Spares due to reallocation caused by cancellation of SM-2 Block IVA program (Support)	+16.0	+25.7
	Change in Non-Recurring Support (Support)	+0.1	+0.1
	Procurement Subtotal	+30.1	+48.1

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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
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PAUC		Changes							
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.747	-0.083	-0.023	+0.050	+0.018	+0.077	=-	+0.011	+0.050	0.797

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

Current SAR Baseline to Current Estimate

PUC		Changes							
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.682	-0.080	-0.020	+0.050	+0.018	+0.056		+0.011	+0.035	0.717

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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/S	JUL 1996
IOC	N/A	N/A	JUN 1993	OCT 1997
Total Cost	N/A	N/A	8052.8	9167.1
Total Quantity	N/A	N/A	10778	11505
Prog Acg Unit Cost	<u>N/A</u>	N/A	0.8	0.8

(U) Milestone events and IOC Current Estimate dates reflect SM-2 Block IIIB. Cost and quantity figures reflect SM-2 Block I/II/III/A/B combined.

SM-2 BLK IV

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

Current SAR Baseline to Current Estimate

PAUC		Changes							
Dev Est									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.00	-0.058	-1.16	+6.42	+0.798	-0.612		-0.716	+4.67	5.67

14b. (U) <u>Unit Cost and Other History (Cont'd)</u>: SM-2 BLK IV

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

Current	SAR	Baseline	to	Current	Estimate

PUC	Changes								PUC
Dev Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.891	-0.065	-3.17	+6.42	+0.798	-0.929	~-	-0.716	+2.33	3.23

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	AUG 1986	N/A	AUG 1986
Milestone III	N/A	N/A	N/A	TBD
IOC	N/A	MAR 1993	N/A	AUG 1999
Total Cost	N/A	3014.4	N/A	907.9
Total Quantity	N/A	3000	<u>N/A</u>	160
Prog Acg Unit Cost	N/A	1.0	N/A	5.7

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

a. Procurement --

(U) <u>SM-2 B</u>	LK IV FY95-98	LRIP:	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
Standard Miss N00024-96-C-5 Award: March	ile Company, M 337, CPAF/FPIF 3, 1996	ciean VA	\$126.7	N/A	45
Definitized:	April 11, 1997				
Current <u>Target</u> \$293.0	Contract Pric <u>Ceiling</u> N/A	e <u>Oty</u> 117	Estimated P <u>Contractor</u> \$297.3	rice At Comp <u>Program</u> \$2	letion <u>Manager</u> 197.3

Previous Cumulative Variances Cumulative Variances To Date (11/30/01) Net Change

Cost	Variance	Schedule Variance
	\$-1.0	\$-1.3
	\$-5.0	\$-0.6
	\$-4.0	\$0.7

Explanation of Change:

(U) Total quantity includes FY95/96/97/98 procurements.

(U) Changes in cost and schedule variances are due to delays in deliveries of Thrust Vector Assemblies (TVA's) from Raytheon's vendor.

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

(U) <u>SM2 BLK</u> Standard Missi N00024-97-C-53 Award: April 4 Definitized: N	<u>IIIB AUR:</u> le Company, 53, FPAF , 1997 /A	McLean VA	Initial <u>Target</u> \$85.9	Contract Pr <u>Ceiling</u> N/A	ice <u>Oty</u> 80
Current	Contract Pri	ce	Estimated P.	rice At Comp	oletion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	<u>Program</u>	<u>Manager</u>
\$105.7	\$105.7	148	\$105.7	\$1	105.7

Explanation of Change:

None.

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

(U) Contract Comments: Contract is over 90% delivered and will no longer be reported in the SAR.

		Initial	Contract Pr	ice
(U) <u>SM-2 BLK IV AUR:</u>		Target	<u>Ceiling</u>	<u>Otv</u>
RAYTHEON (RSC), TUCSON, AZ				_
N00024-99-C-5373, FPAF		\$43.4	\$43.4	43
Award: April 16, 1999				
Definitized: April 21, 2000				
Current Contract Price		Estimated P	rice At Comp	letion
<u>Target Ceiling</u>	Otv	Contractor	Program	Manager
\$44.1 \$44.1	43	\$44.1	Ş	44.1

Explanation of Change:

(U) Contract price includes only USN All Up Rounds.

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

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

		Initial	Contract P	rice
(U) <u>SM-2 BLK IIIB AUR:</u> BAYTHEON (BSC) TUCSON A2		Target	<u>Ceiling</u>	Oty
N00024-99-C-5373, FPAF Award: April 16, 1999		\$45.8	\$45.8	71
Definitized: April 21, 2000				
Current Contract Price Target <u>Ceiling</u>	Otv 71	Estimated P <u>Contractor</u> S45 8	rice At Com <u>Progra</u>	pletion <u>m Manager</u> \$45 9
\$45.6 \$45.6	/ 1	Q13.0		993.0

Explanation of Change:

(U) Contract price includes only USN All Up Rounds.

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

(U) <u>SM-2 Bl</u>	ock IIIB AUR:		Initia <u>Target</u>	1 Contract Pi <u>Ceiling</u>	rice <u>Oty</u>
Raytheon (RSC), Tucson, AZ N00024-00-C-5399, FFP/PI Award: May 9, 2000 Definitized: N/A		\$112.2	\$112.2	75	
Current <u>Target</u> \$241.1	Contract Price <u>Ceiling</u> \$241.1	<u>Oty</u> 150	Estimated <u>Contractor</u> \$241.1	Price At Comp <u>Program</u> \$3	pletion <u>Manager</u> 241.1

Explanation of Change:

(U) This is a new SM-2 Block IIIB procurement contract.

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

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

Total Program

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

Appropriation	Prior <u>Years</u> (FY76-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Total</u>
RDT&E	1239.4	14.0	1.3	6.7	1261.4
Procurement	7169.5	168.3	168.2	1264.8	8770.8
MILCON	42.8	-	-	-	42.8
OEM	-		-	-	
Total	8451.7	182.3	169.5	1271.5	10075.0

SM-2 BLK I\II\III\A\B

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

Appropriation	Prior <u>Years</u> (FY76-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Total</u>
RDT&E	847.5	14.0	1.3	6.7	869.5
Procurement	6675.2	162.4	162.5	1254.7	8254.8
MILCON	42.8	-	-		42.8
0&M	-	-	-	_	-
Total	7565.5	176.4	163.8	1261.4	9167.1

SM-2 BLK IV

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

Appropriation	Prior <u>Years</u> (FY87-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-06)	<u>Total</u>
RDT&E	391.9	_	-	-	391.9
Procurement	494.3	5.9	5.7	10.1	516.0
MILCON	-	-	-	-	
O&M	-	-	_	-	
Total	886.2	5.9	5.7	10.1	907.9

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

b. Annual Summary -- SM-2 BLK I\II\III\A\B

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

		Flyaway	Flyaway		
		FY 1984	FY 1984	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1982				324.1	305.0
1983				23.6	23.2
1984				17.0	17.3
1985				27.8	29.2
1986				56.8	61.4
1987				40.2	44.7
1988				27.3	31.4
1989				49.6	59.5
1990				47.3	59.0
1991				37.1	48.0
1992				27.6	36.7
1993				24.3	33.0
1994				38.5	53.3
1995				9.3	13.2
1996				14.3	20.6
1997				6.3	9.2
1998				0.3	0.5
1999				0.8	1.2
2000				0.4	0.6
2001				0.3	0.5
2002				9.0	14.0
2003				0.8	1.3
2004				0.7	1.2
2005				0.7	1.1
2006				0.8	1.4
2007				0.9	1.5
2008				0.9	1.5
Subtotal				786.7	869.5

(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	Otv	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
197T					
1977	36		62.2	73.9	42.9

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16b. (U) <u>Program Funding Summary (Cont'd)</u>: SM-2 BLK I\II\III\A\B

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Appropriation: 1507 - Weapons Procurement, Navy

		Flvaway	Flvaway		
		FY 1984	FY 1984	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Otv	Nonrec	Rec	Base-Year \$	Then-Year S
1978	40		66.5	74.2	48.2
1979	40		57.1	66.1	47.3
1980	85		67.7	82.1	64.7
1981	345		156.2	198.2	174.3
1982	495		230.3	287.2	274.3
1983	500		294.1	399.5	403.5
1984	490		311.9	385.5	405.1
1985	730		394.4	443.5	479.7
1986	1271		589.2	659.9	738.4
1987	1194		471.2	583.2	676.2
1988	1310		414.2	472.7	569.6
1989	1310		435.7	474.7	594.4
1990	710		264.5	304.5	394.5
1991	405		185.8	228.4	303.4
1992	330		151.7	194.4	264.8
1993	330		162.7	180.3	250.1
1994	202		125.0	157.5	222.7
1995	160		92.3	113.9	163.6
1996					
1997	80		54.4	70.0	102.8
1998	68		64.2	76.0	113.1
1999	71		45.0	65.7	99.1
2000	75		37.3	59.4	91.0
2001	75		52.6	66.2	103.1
2002	96		81.9		162.4
2003	93		81.2	101.1	162.5
2004	139		106.0	126.3	206.8
2005	139		104.7	125.1	208.7
2006	209		141.9	176.1	299.4
2007	236		154.2	175.0	303.2
2008	219		130.4	134.0	236.6
Subtotal	11505		5674.5	6749.7	8254.8

Appropriation: 1205 - Military Construction, Navy

Fiscal	054	Flyaway FY 1984 Dollars	Flyaway FY 1984 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
1989	Q¢Y	Nonrec		23.6	29.3
1990				10.6	13.5
Subtotal				34.2	42.8

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

SM-2 BLK I\II\III\A\B

		Elyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	11505		5674.5	7570.6	9167.1

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	<u> </u>
1994				6.5	9.0
1995				0.6	0.8
Subtotal				320.0	391.9

Appropriation: 1507 - Weapons Procurement, Navy

		Flyaway	Flyaway		
		FY 1984	FY 1984	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995	28		59.3	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		39.8	56.8	85.6
2000				9.3	14.3
2001				5.1	7.9
2002				3.7	5.9
2003				3.5	5.7
2004				3.0	4.9
2005				1.8	3.0
2006				1.3	2.2
Subtotal	160		275.9	349.2	516.0

STANDARD MISSILE-2, December 31, 2001

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

SM-2 BLK IV

			Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
	_	Qty	Nonrec	Rec	Base-Year \$	Then-Year Ş
Grand	Total	160		275.9	669.2	907.9

17. (U) Delivery/Expenditure Information:

SM-2 BLK I\II\III\A\B

a. (U)

Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	10224	10140

(U) Percent Total Program Quantities Delivered: 88.1%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7282
 - (U) Percent Total Program Expended: 79.4%

SM-2 BLK IV

а.

(U)	Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT & E	0	0
	Procurement	97	96

(U) Percent Total Program Quantities Delivered: 60.0%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 688.5
 - (U) Percent Total Program Expended: 75.8%

18. (U) Operating and Support Costs: SM-2 BLK I\II\III\A\B

a. 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 Antceedent System.

Computation is based on an inventory objective of (b)(1) M-2 BLK I/II/III/A/B missiles at the end of the FY 2009 funded delivery period. Operations & support cost estimate as of Feb 2002.

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STANDARD MISSILE-2, December 31, 2001

18a. (Cont'd): SM-2 BLK I\II\III\A\B

NOTE: Other (2.7) = Other Direct Support (2.2) = Disposal (@ 24 years)

b. Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

	SM-2 BLK I\II\III\A\B Avg Annual Cost Per	Avg Annual Cost Per Missile
Cost Element	Missil 1	
Mission Pay & Allowances	(b)(1)	0.0
Unit Level Consumption	and the second second	0.0
Intermediate Maintenance		0.0
Depot Maintenance		0.0
Contractor Support		0.0
Sustaining Support		N/A
Indirect Costs		N/A
Other		N/A
Other	•	N/A
Overhaul/Rework		N/A
Total		(b)(1)

Total O&S Cost	SM-2 BLK I\II\III\A\B	Avg Annual Cost Per
BY\$ (In Millions)	498.9	0.2
TY\$ (In Millions)	667.2	0.2

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.

Computation is based on an inventory objective of $\binom{b}{1}_{M-2}$ BLK IV missiles at the end of the FY 2009 funded delivery period. Operations and support cost estimate as of Feb 2002.

Note: Other (.02) = Other direct support; Other (.02) = Disposal (@ 24 years)

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*** STANDARD MISSILE-2, December 31, 2001

18b. (U) Operating and Support Costs (Cont'd): SM-2 BLK IV

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b. 🔪 Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

	SM-2 BLK IV Avg Annual Cost Per	Avg Annual Cost Per Missile
Cost Element	<u>Mi</u> ssi <u>l</u> e	
Mission Pay & Allowances	(b)(1)	(0)(1)
Unit Level Consumption	(0)(-)	
Intermediate Maintenance		
Depot Maintenance		
Contractor Support		
Sustaining Support		
Indirect Costs		
Overhaul/Rework		
Other		
Total		

Total O&S Cost	SM-2_BLK IV	Avg Annual Cost Per
BY\$ (In Millions)	4.6	0.1
TY\$ (In Millions)	7.4	0.1

Report Creation Date: 03/27/2002 12:58:02 PM

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A) 823) PROGRAM: GBS

AS OF DATE: December 31, 2001

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1. Designation and Momenclature (Popular Name): Global Broadcast Service (GBS)

2. DoD Component: USAF

AF-11 GBS

3. <u>Responsible Office and Telephone Number</u>:

SMC/MC 2420 Vela Way, Suite 1467-A8 Los Angeles AFB, CA 90245-4659 SES Christine Anderson Assigned: January 8, 2001 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
PROCUREMENT:
 APPN 1810 ICN 33109N (Navy) (Shared)
 APPN 3080 ICN 33601F (Air Force) (Shared)
 APPN 1109 ICN 463300 (Navy) (Shared)
 APPN 2035 ICN BC4120 (Army) (Shared)

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CONGRESSIONAL

PE 0603840F is the PE for GBS Phase II from FY02 and beyond.

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DIRECTURATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

02-C-06/5

5. References:

SAR Baseline (Development Estimate): DAE Approved Acquisition Program Baseline (APB) dated November 14, 1997.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated November 14, 1997.

6. Mission and Description:

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 GBS System is currently broadcasting from Wahiawa, HI, Norfolk, VA, and Sigonella, Italy. GBS is providing video/audio broadcast service, web broadcast service, file transfer service, and serial stream service to operational units worldwide. To satisfy broadcast mission requirements of Operation Enduring Freedom (OEF), the GBS Joint Program Office (JPO) and the Defense Information Systems Agency (DISA) accelerated activation of the new "Black Cell" broadcast service for secure transmission of full motion exploitation quality Unmanned Aerial Vehicle (UAV) video. GBS is currently providing "Black Cell" broadcast service in support of OEF. In addition, 11 transponders are currently providing an average of 20 Mbps of information to 17 Receive-Suites in support of OEF.

During November 2001 GBS commenced broadcast operations to support Joint Task Forces (JTF) in EUCOM and CENTCOM Areas Of Responsibility (AORs). On November 9, 2001 the Bosnia Command and Control Augmentation (BC2A) mission transitioned from Joint Broadcast System (JBS) to the GBS Norfolk Satellite Broadcast Manager (SBM).

7. Executive Summary (Cont'd):

Major accomplishments since the last SAR include the USS Providence successfully receiving the GBS broadcast while at sea. The USS Theodore Roosevelt (CVN-71) and USS Bataan became the first US Navy surface combatant ships to deploy with GBS Phase II on September 19, 2001.

Fielding of Receive Suites began in the CENTCOM, EUCOM, and PACOM AORs. Fielding was 100% complete for the CENTCOM and EUCOM sites and 86% complete for PACOM sites. All Phase I GBS Receive Suites in Korea have been removed and replaced with GBS Phase II Receive Suites. All of the Receive Suites received video, voice and data transmissions from the Norfolk and Sigonella broadcast sites. By the end of December 2001, there were 99 Fixed and Transportable Ground Receive Suites (GRS) and six Sub-Surface Receive Suites (SSRS) installed worldwide.

Theater Injection Point (TIP) Government Developmental Test, conducted by the 46th Test Squadron with Air Force Operational Test and Evaluation Center (AFOTEC)/Combined Test Force (CTF) participation, was completed mid-October 2001. All test objectives were accomplished and a test report from 46th Test Squadron was completed in December 2001. The GBS CTF will conduct Development Test (DT)/Operational Test (OT) #3 starting in February 2002 to evaluate remaining Operational Requirements Document (ORD) threshold requirements which were unavailable during DT/OT #2.

GBS Build 3.0 System Development was completed by Raytheon in mid 2001. GBS Build 3.0 Site Acceptance Testing (SAT) was accomplished in July 2001 at Norfolk VA / Sigonella Italy (UFO-9, UFO-10, Ku) and September 2001 at Wahiawa HI (UFO-8). This IOC 1 system increment will essentially be complete at the conclusion of additional test events to occur during March 2002. AF Space Command is planning to declare IOC 1 by March 2002.

A June 27, 2000 Joint Requirements Oversight Council (JROC) Memo directed an incremental Initial Operational Capability (IOC) strategy in place of the previous IOC policy. A revised Acquisition Program Baseline (APB) with IOC 1, IOC 2, and IOC 3 schedule deliverables to reflect this strategy is in process. In May 2001, a JROC Memo was released that approved a limited-scope ORD update and provided guidance for a final update to the GBS Phase II ORD, resolving open issues from the JROC Memo. The ORD was aligned with the evolutionary acquisition strategy.

The MILSATCOM Joint Program Office (MJPO) is evaluating options for modifying the program to be able to take full advantage of commercial-off-the-shelf (COTS) products that have been developed since the start of GBS in 1997, and therefore be better sustained and evolved over time.

GBS, December 31, 2001

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

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

b. Nunn-McCurdy Unit Cost:

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

c. Explanation of Breach:

SCHEDULE BREACH EXPLANATION: The GBS program advised the Defense Acquisition Executive of a breach to the schedule in a Program Deviation Report submitted in March 1999. A revised Acquisition Program Baseline (APB) is in process.

PROCUREMENT COST BREACH EXPLANATION: The original Acquisition Program Baseline (APB) procurement funding was limited to that required to achieve Milestone III rather than that required for the total program. This report reflects the total program procurement through FY07.

9. Schedule:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone II (DAE)	DEC 1997	DEC 1997	NOV 1997
System Available for Operational Use	JUN 1999	JUN 1999	MAR 2002(Ch-1)
Initial Operational Capability (IOC)	DEC 1999	DEC 1999	MAR 2002(Ch-1)
Milestone III	DEC 1999	DEC 1999	OCT 2002(Ch-1)

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b. Current Change Explanations ---(Ch-1): This change reflects the latest estimates for the program milestones as follows: -----

	FROM:	10:
System Available for Operational Use	SEP 2001	MAR 2002
Initial Operational Capability (IOC)	SEP 2001	MAR 2002
Milestone III	JUN 2002	OCT 2002

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9b. Schedule (Cont'd):

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10. Performance Characteristics:

a. Performance --

a. rerionance		N		
System Coverage	Development Estimate (SAR) 65 deg South to 65 deg North	Approved Program (APB) <u>Obj/Threshold</u> 65 deg / 65 deg South to/ South to 65 deg / 65 deg North / North	Demon- strated <u>Perf</u> 65 deg South to 65 deg North	Current Estimate 65 deg South to 65 deg North
Spot Be ams	Two 500nm steer- able, one 2000 nm steer- able	Two / Two 500nm / 500nm steer- / steer- able, / able, one / One 2000 nm / 2000 nm steer- / steer- able / able	Two 500nm steer- able, One 2000 nm steer- able	Two 500nm steer- able, One 2000 nm steer- able
Simultaneous Uplinks	One PIP and up to 3 TIPs simultan eously	One PIP / One PIP and up / and one to 3 / TIP TIPs / simultan/ eously /	TBD	One PIP and one TIP
Security	Pass unclass- ified to TS/SCI traffic	Pass / Pass unclass-/ unclass- ified to/ ified to TS/SCI / TS/SCI traffic / traffic	Pass unclassi fied to TS/SCI traffic	Pass unclass- ified to TS/SCI traffic
Receive Frequency Band	1 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 Commerci 1	20.2-21. 2 GHz UFO GBS and 11.7 to 12.2 GHz Ku Commerci 1
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	Video and data over 2000nm and 500nm beams to FGRT and SRT	2000nm: FGRT, TGRT and SRT 500nm: FGRT, TGRT, SRT and

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10a. Performance Characteristics (Cont'd):

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	Development Estimate (SAR)	Appı Program <u>Obi/Th</u> ı	coved a (APB) <u>ceshold</u> ' SSRT	Demon- strated <u>Perf</u>	Current <u>Estimate</u> SSRT
Pointing of Steerable Spot Beam Antenna	Frequent	Frequent	' Frequent	Frequent pointing to support ship movement s in PACOM/AC M/EUCOM	Frequent
Steerable Antenna Tasking	SBM Primary means	SBM / Primary / Means /	/ SBM / Primary / Means	Less than one minute to accompli h full range movement	SBM Primary Means
ACRONYMS :					
ART -Airborne Rece FGRT -Fixed Ground GBS -Global Broadd	vive Suite Termi Receive Suite T	nal erminal			

GBS	-Global Broadcast Service
PIP	-Primary Injection Point
SBM	-Satellite Broadcast Manager
SRT	-Shipboard Receive Suite Terminal
SSRT	-Sub-surface (submarine) Receive Suite Terminal
TGRT	-Transportable Ground Receive Suite Terminal
TIP	-Theater Injection Point
UFO	-UHF Follow-on Satellite

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	397.5	397.5	372.9
	Procurement	53.9	53.9	225.6
	Flyaway	(48.5)		(213.7)
	Nonrecurring Flyaway			(3.8)
	Total Flyaway	(48.5)		(217.5)
	Other Wpn System Costs	(4.3)		(4.6)
	Peculiar Support	(0.0)		(1,1)
	Initial Spares	(1.1)		(2,4)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1997 Base-Year \$	451.4	451.4	598.5
	Escalation	45.7	45.7	47.2
	Development (RDT&E)	(41.7)	(41.7)	(20.5)
	Procurement	(4.0)	(4.0)	(26.7)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	_ (0.0)	(0.0)	(0.0)
	Total Then Year \$	497.1	497.1	. 645.7
b.	Quantity			
1	Development (RDT&E)	221	221	136
1	Procurement	125	125	612
,	Total	346	346	748

For the current estimate, the Development Quantity of 136 includes 106 Fixed and Transportable Ground Receive Suites (GRS), 27 Shipboard Receive Suites (SRS) and 3 Primary Injection Points (PIPs); the Procurement Quantity of 612 includes 607 Fixed and Transportable GRS and SRS and 5 Theater Injection Points (TIPs) through FY07.

A Low Rate Initial Production (LRIP) quantity of up to 500 receive suites and 140 shipboard antennas was approved at Milestone II by the Defense Acquisition Executive (DAE). The LRIP quantity exceeds 10% of the total program quantities to provide production representative articles for operational test and evaluation. This quantity will also permit an orderly increase in the fielding (production) rate sufficient to lead to a full-rate fielding (production) of the receive suite hardware. On August 9, 2000, the DAE extended the program's authority to procure LRIP quantities up to Milestone III.

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:

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a. Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1997 BY\$)	UCR Baseline (NOV 1997 APB)(De 451.4	Current Estimate 2001 SAR) 598.5	Percent <u>Change</u>
(3) Unit Cost	1.305	0.800	-38.70
b. Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1997 BY\$) (2) Quantity (3) Unit Cost	53.9 125 0.431	225.6 612 0.369	-14.39

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	-20.1	-0.8	-	-20.9
Quantity	-2.7	+48.5	-	+45.8
Schedule	_	+27.9	-	+27.9
Engineering	+4.6	- 1	-	+4.6
Estimating	-3.8	-36.9	-	-40.7
Other	-	-	-	-
Support	-	+0.5	-	+0.5
Subtotal	-22.0	+39.2	-	+17.2
Current Changes:				
Economic	+5.5	+1.5	-	+7.0
Quantity	-	+111.9	-	+111.9
Schedule		-	-	-
Engineering	-	-	-	-
Estimating	-29.3	+39.5	_	+10.2
Other		_	-	-
Support	-	+2.3	-	+2.3
Subtotal	-23.8	+155.2		+131.4
Total Changes	-45.8	+194.4	-	+148.6
Current Estimate	393.4	252.3	-	645.7

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

Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	397.5	53.9	-	451.4
Previous Changes:				
Quantity	-2.6	+46.0	-	+43.4
Schedule	-	+24.5	-	+24.5
Engineering	+4.3	-	-	+4.3
Estimating	-6.2	-33.8	-	-40.0
Other	-	-	-	-
Support	-	+0.4		+0.4
Subtotal	-4.5	+37.1	-	+32.6
Current Changes:				
Quantity	. –	+97.2	-	+97.2
Schedule	-	-	-	-
Engineering		-	-	
Estimating	-20.1	+35.7	-	+15.6
Other		-	-	-
Support		+2.3	-	+2.3
Subtotal	-20.1	+134.6		+114.5
Total Changes	-24.6	+171.7	-	+147.1
Current Estimate	372.9	225.6		598.5

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

(1)	RDTSE Rouis d'accolotion (Economic)	21/2	.17
	Revised escalation indices. (Economic)	N/A	TT . /
	Economic adjustment for negative program change. (Economic)	N/A	+3.8
	Adjustment for Current and Prior Inflation. (Estimating)	-0.7	-0.8
	Additional funding for GBS to replace Joint Broadcast Service (JBS) mission for EUCOM. (Estimating)	+2.0	+2.4
	Additional funding for software Build 3.0, which enabled immediate file Delivery Service asymetric networking, serial stream service and completion of webcast. (Estimating)	+4.3	+5.2
	Transfer of TOA to Navy for GBS shipboard and subsurface installations (Estimating)	-8.4	-10.5
	Reduction in program requirements (Estimating)	-5.4	-7.1
	Transfer of CONUS Satellite lease Cost from RDT&E to O&M in FY09 to FY12 (Estimating)	-11.9	-18.5
	RDT&E Subtotal	-20.1	-23.8
(2)	<u>Procurement</u> Revsed escalation indices (Economic)	N/A	+2.1

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

b. Current Change Explanations		
(E	Dollars in ase-Year T	Millions) hen-Year
Adjustment for current and prior inflation (Economic)	N/A	-0.6
Army: Increase in quantity of 49 from 170 to 219 (Quantity)	+27.1	+32.1
Navy: Increase in quantity of 75 from 93 to 168 (Quantity)	+39.2	+43.1
Navy: Revised estimate for installation and integration costs (Estimating)	+35.7	+39.5
Air Force: Increase in quantity of 81 from 41 to 122 (Quantity)	+13.1	+16.5
Marine Corp: Addition of 103 units (Quantity)	+17.8	+20.2
Change in support costs (Support)	+2.3	+2.3
Procurement Subtotal	+134.6	+155.2

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC		Changes							
Dev Est									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.44	-0.019	-0.560	+0.037	+0.006	-0.041		+0.004	-0.573	0.863

b. Procurement Unit Cost (PUC) History

Current	SAR	Baseline	to	Current	Estimate

PUC	Changes							PUC	
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.463	+0.001	-0.107	+0.046		+0.004		+0.005	-0.051	0.412

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

c. Schedule, Cost, and Quantity History

ļ	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	OCT 2002
IOC	N/A	DEC 1999	N/A	MAR 2002
Total Cost	N/A	497.1	N/A	645.7
Total Quantity	N/A	346	N/A	748
Prog Acq Unit Cost	N/A	1.4	N/A	0.9

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

a. RDT&E			Initial Contract Price				
<u>Terminals</u>	<u>.</u>		<u>Target</u>	<u>Ceiling</u>	Otv		
Raytheon Syst	tems, Reston, N	/A					
F04701-97-C-0	0044, CPAF		\$84.8	N/A	221		
Award: Novemb	per 17, 1997						
Definitized:	November 17, 1	1997					
Current	t Contract Prio	ce	Estimated Pr	rice At Comp	letion		
Target	Ceiling	Oty	Contractor	Program	Manager		
\$184.1	N/A	219	\$193.5	\$1	93.5		
			Cost Variance	<u>Schedule V</u>	ariance		
Previous Cum	alative Variand	ces	\$0.0	\$-0.	2		
Cumulative Va	ariances To Dat	e (12/31/01)	50.4	<u> </u>	4		
Net Chang	je		\$0.4	\$-1.	2		

Explanation of Change:

The primary cause of the net change in cumulative schedule variance is the delays caused by the prime contractor's continuing efforts to analyze and resolve the software and hardware problems in the Ground Receive Terminals (GRTs).

Contract Comments:

The increase from initial target cost to current target cost resulted from the addition of the Theater Injection Point, delays experienced in development of the third Primary Injection Point (PIP) site in Sigonella, hardware redesign and software integration delays experienced by the prime contractor, and exercised options for production, Satellite Broadcast Manager (SBM) operations, and depot support.

The current contract quantity of 219 is based on 10 RDT&E first generation

15. Contract Information (Cont'd):

(IIE) Air Force receive suites (RS), 27 RDT&E IIE Shipboard RS, 96 RDT&E JPO-funded Air Force RS, 5 procurement Air Force RS, 52 procurement Navy RS, 22 procurement Army RS, 2 procurement DIA RS, 3 RDT&E PIPs, and 2 procurement Army TIPs.

Contract Performance against the Over Target Baseline (OTB) improved in the last six months due primarily to the incremental build approach (OTB was approved during the Integrated Baseline Review (IBR) in October 2000). The cumulative cost variance through December 2001 is a positive \$365.1K. Cumulative schedule variance is currently -\$1.4M, up from a low of -\$3.2M in August 2001.

This contract is funded with RDT&E, Procurement and Operations and Support funds by the Air Force, Army and Navy.

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

Prior	Budget	Budget	Balance 7

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

Appropriation	Prior <u>Years</u> (FY96-01)	Budget Year (FY02)	Year (FY03)	Complete (FY04-12)	<u>Total</u>
RDT&E	259.1	34.5	22.6	77.2	393.4
Procurement	56.4	29.0	32.5	134.4	252.3
MILCON	-	-	-	-	~
O&M	÷	-	-	-	~
Total	315.5	63.5	55.1	211.6	645.7

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				32.2	34.5
2003				20.7	22.6
2004				15.3	17.0
2005				13.6	15.5
2006				17.9	20.8

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

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

Fiscal		Flyaway FY 1997 Dollars	Flyaway FY 1997 Dollars	Total Program	Total Program
Year	QCY	Nonrec	Rec	Base-Year 5	Then-Year \$
2007				5.8	6.9
2008				5.4	6.5
2009				2.1	2.6
2010				2.1	2.6
2011				2.1	2.7
2012				2.0	2.6
Subtotal	136			372.9	393.4

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Oty	Flyaway Fy 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	52		9.3	9.3	10.6
2005	51		9.2	9.2	10.6
Subtotal	103		18.5	18.5	21.2

Appropriation: 1810 - Other Procurement, Navy

		Flyaway	Flyaway		
		FY 1997	FY 1997	Total	Total
Fiscal	1	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997	14		2.6	2.6	2.6
1998	7		1.3	1.3	1.3
1999	22		_3.5	3.5	3.6
2000	8		1.0	1.0	1.1
2001	13		11.5	11.5	12.3
2002	16		13.3	13.3	14.4
2003	19		18.7	18.7	20.6
2004	38		20.9	20.9	23.6
2005		1.0		1.0	1.1
2006	31		15.7	15.7	18.5
Subtotal	168	1.0	88.5	89.5	99.1

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Oty	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

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

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	15		8.9	10.4	10.9
2001	4		3.7	3.9	4.2
2002	20		6.0	6.4	7.0
2003	7		9.1	10.3	11.4
2004	40		8.6	8.9	10.1
2005	40		8.4	8.7	10.1
2006	42		8.4	8.7	10.3
2007	42		8.4	8.7	10.5
Subtotal	219	_ 2.1	68.5	78.7	87.6

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		2.6	2.6	2.8
2001	13		4.2	4.2	4.5
2002	23		6.9	6.9	7.6
2003		0.4		0.4	0.5
2004	13		7.0	7.0	8.0
2005	45		12.1	12.1	14.2
2006	23		5.4	5.4	6.4
2007		0.3		0.3	0.4
Subtotal	122	0.7	38.2	38.9	44.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
USAF	258	0.7	38.2	411.8	437.8
Navy	271	1.0	107.0	108.0	120.3
Army	219	2.1	68.5	78.7	87.6
Grand Total	748	3.8	213.7	598.5	645.7

17. Delivery/Expenditure Information:

a.	Deliveries To Date	Plan	<u>Actual</u>
	RDT&E	136	131
	Procurement	193	57

Percent Total Program Quantities Delivered: 25.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 282.4

Percent Total Program Expended: 43.7%

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 Reparables (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 2002. From the estimate an avarage annual cost was calculated for the system by cost element. Some of the cost elements listed in the table encompass more than one task. Unit Level Consumption encompasses all Petroleum, Oil and Lubricants costs for the TIPs, DLR costs for service specific RS and TIP units and transportation costs for sending defective repairs back to the depot. Contractor Support encompasses all the operating costs and DLR costs for the life of the TS as well as DLR costs for RSs covered under Contractor Logistics Support prior to transitioning over to Government Organic Support. Sustaining Support encompasses sustaining engineering support costs, hardware technology obsolescence for all GBS assets, CONUS Ku satellite lease cost and software maintenance.

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

	Global Broadcast Service Avg Annual Cost	Antecedent N/A
Cost Element	per System	
Mission Pay & Allowances	0.9	N/A
Unit Level Consumption	8.3	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	11.1	N/A
Sustaining Support	8.8	N/A
Indirect Costs	0.1	N/A

GBS, December 31, 2001

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

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

	Global Broadcast Service	Antecedent
	Avg Annual Cost	N/A
Cost Element	per System	
	N/A	N/A
Total	29.2	N/A

Total O&S Cost	Global Broadcast Servic	e Antecedent
BYS (In Millions)	449.2	N/A
TY\$ (In Millions)	361.4	N/A

Report Creation Date: 03/29/2002 2:37:32 PM

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SELECTED ACOUISITION REPORT (RCS: DD-AGT(OGA)823) PROGRAM: NPOESS

AS OF DATE: December 31, 2001

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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 1450

8455 Colesville Road Silver Spring, MD 20910-3320 SES Mr John Cunningham Assigned: November 1, 1999 DSN N/A; COMM 301-427-2070, x168 john.d.cunningham@noaa.gov

4. Program Elements/Procurement Line Items: RDT&E: PE 0603434 F

NPOESS is a Presidentially directed Tri-agency program composed of Department of Defense (DoD), Department of Commerce (DOC) and National Aeronautics and Space Administration (NASA) personnel. Per the Tri-agency Memorandum of Agreement (MOA), funding is provided jointly by the Department of Defense (DoD), through the Air Force, and the Department of Commerce (DOC), through the National Oceanic and Atmospheric Administration (NOAA). Currently, the DoD funds NPOESS with RDT&E via PE 0603434F.

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

DAP/PAD

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5. <u>References</u>:

<u>SAR Baseline (Planning Estimate)</u>: DAE Approved Acquisition Program Baseline (APB) dated April 19, 1999.

<u>Approved Program</u>: Approved Acquisition Program Baseline (APB) dated April 19, 1999.

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:

A smaller European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) satellite will carry existing sensors rather than the new, larger National Polar-orbiting Operational Satellite System (NPOESS) instruments previously planned. Therefore, to prevent breaching various Key Performance Parameters (KPPs), the program office will populate the third NPOESS orbital plane with a United States satellite configured with the Visible Infrared Imager Radiometer Suite (VIIRS) and the Conical Microwave Imager Sounder (CMIS) sensors. Concurrence with the Integrated Program Office (IPO) plan by the NPOESS Executive Committee (EXCOM) on June 14, 2000 adds one additional NPOESS satellite and launch with costs partially offset by the deletion of payloads already planned for EUMETSAT's Meteorological Operational Program (METOP) - 3 and METOP-4 satellites. The estimated cost of the proposed adjustments were incorporated in the President's FY2002 budget request.

In January 2001, the Department of Defense (DoD) directed addition of Interoperability as a KPP. The National Oceanic and Atmospheric Administration (NOAA), the National Aeronautic and Space Administration (NASA), the United States Air Force, the United States Navy, and the United States Army, in support of this new KPP, approved a Memorandum of Agreement (MOA) for responsibilities relative to field terminal upgrades. This KPP was included in the latest version of Integrated Operational Requirements Document (IORD-II). Coordination of the IORD-II is complete and it was validated by the Joint Agency Requirements Council (JARC) in December 2001.

In preparation for an Engineering and Manufacturing Development (EMD) / Production milestone decision the Joint Agency Requirements Group (JARG) finalized the update of NPOESS requirements. Due to extensive review, the completion took five months longer than planned. The EMD Request for Proposal (RFP) release, initiation of the Life Cycle Cost Estimate (LCCE) update, and the final release of the Technical Requirements Document (TRD) were delayed.

7. Executive Summary (Cont'd):

These delays forced the IPO to reschedule the milestone decision from February 2002 to August 2002. Consequently, the IPO exercised a priced extension option on the Program Definition and Risk Reduction (PDRR) contracts to continue development until the milestone decision. Draft RFPs were sent to industry for comment and the Undersecretary of the Air Force has approved release of the final RFP on February 14, 2002. Source selection will begin with the receipt of the proposals on March 15, 2002. The LCCE was updated and reviewed by senior cost advisors and the Cost Analysis Agency. The IPO is on schedule for an August 2002 milestone decision.

Since the December 1999 Selected Acquisition Report (SAR), the IPO has awarded two major Detailed Design and Fabrication contracts for critical risk reduction instrument in accordance with the Phase I acquisition strategy. On November 20, 2000, the NPOESS IPO awarded the Visible Infrared Imager Radiometer Suite (VIIRS) contract totaling approximately \$298 million, including options, to Raytheon Company, Santa Barbara Remote Sensing Group of Santa Barbara, CA. The contract effort could ultimately produce up to eight VIIRS units that will use advanced radiometric technologies at high spatial resolution to accurately image and measure atmospheric, oceanic, and terrestrial parameters. On July 30, 2001, the NPOESS IPO awarded the Conical Microwave Imager Sounder (CMIS) contract totaling approximately \$298 million, including options, to Boeing Satellite System Inc, El Segundo, CA. The contract effort could ultimately produce up to 6 CMIS units that will use advanced microwave technologies to accurately image, profile, and measure atmospheric, oceanic, and terrestrial parameters. The more accurate VIIRS and CMIS measurements are expected to yield significant improvements in the accuracy of short-to-long range weather forecasts and long-term climate predictions.

This is a pre-Milestone B (formally Milestone II) SAR which reflects development funds only in accordance with Title 10 USC 2432. The Acquisition Program Baseline will be updated at Milestone B to reflect the new acquisition model.

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. <u>Schedule</u>:

a. Milestones --

	Planning	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone I	MAR 1997	MAR 1997	MAR 1997
Payload Contract Awards	JUL 1997	JUL 1997	JUL 1997
Pre-Total System Performance	MAY 1999	NOV 2000	DEC 1999
Responsibility (pre-TSPR)			
Contract Award			
Milestone II	SEP 2000	N/A	N/A
Milestone II/III	N/A	FEB 2002	AUG 2002(Ch-1)
Total System Responsibility (TSPR)	OCT 2000	MAR 2002	AUG 2002(Ch-1)
Contract Award			
Initial Operational Capability (IOC)	DEC 2010	JUL 2011	JUL 2011
Milestone III	DEC 2011	N/A	N/A
Foliow-on Decision	N/A	OCT 2013	OCT 2013

The tri-agency NPOESS Memorandum of Agreement (MOA) established the NPOESS Executive Committee (EXCOM) as the Program approval authority. The NPOESS APB Memorandum was signed by the last of the three EXCOM members on April 19, 1999. This new APB redesignated Milestone II as Milestone II/III. In April 2001, the Acquisition Strategy Panel (ASP) acknowledged that the Milestone Decision would be for approval to begin both EMD and Production. Subsequently, the Undersecretary of the Air Force approved a new strategy establishing Milestone B as the next milestone decision for System Demonstration and Development. The Acquisition Program Baseline will be updated at the next milestone decision to reflect the new acquisition model.

NPOESS, December 31, 2001

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9a. <u>Schedule (Cont'd)</u>:

b. Current Change Explanations --

(Ch-1) The Joint Agency Requirements Group (JARG) final review of the updated NPOESS requirements took longer than planned. As a result the EMD Request for Proposal (RFP) release, initiation of the Life Cycle Cost Estimate (LCCE) update, and the final release of the Technical Requirements Document (TRD) were delayed. The milestone decision was moved from February 2002 to August 2002 and TSPR award from March 2002 to August 2002.

10. Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
Key EDR Parameters Atmospheric Verti- cal Moisture Profile				
Measurement Accuracy (Clear: Surface - 600mb)	+/- 10%	+/- 10% / +/- 20% DOC / DOC +/- 25% / +/- 25% DoD / DoD	TBD	+/- 20% DOC, +/-25% DoD
Measurement Accuracy (Cloudy: Surface - 600mb) Atmospheric Verti- cal Temperature Profile	+/- 10%	+/- 10% / +/- 20% DOC / DOC +/- 10% / +/- 25% DOD / DOD	TBD	+/- 20% DOC, +/- 25% DOD
Measurement Accuracy (Clear: Surface - 300mb)	+/- 0.5K	+/- 0.5K/ +/- 1.6K / per 1 km / layer	TB D	+/~ 1.0K per l km layer
Measurement Accuracy (Cloudy: Surface 700mb)	+/- 0.5K	+/- 0.5K/ +/- 2.5K / per 1 km / layer	THD	+/- 2.5K per 1 km layer
Imagery Horizontal Resolution				
Global at Nadir	.65 km	.65 km / 1.0 km	TBD	1.0 km

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10a. Performance Characteristics (Cont'd):

.

		Approved	Demon-	
	Planning	Program (APB)	strated	Current
	Estimate (SAR)	Obi/Threshold	Perf	Estimate
Regional at Nadir	0.1 km	0.1 km / 0.4 km	TBD	0.4 km
Refresh Visible				
and IR bands				
Average Revisit	l hour	l hour / 4 hours	TBD	4 hours
Time		/ or less		or less
Maximum Revisit	1 hour	1 hour / 6 hours / or less	TBD	6 hours or less
Sea Surface		,		01 4000
Temperature				
Horizontal				
Resolution				
Regional at Nadir	0.25 km	0.25 km / 1.0 km	TBD	1.0 km
Measurement	+/-0.1	+/-0.1 / +/-0.5	TBD	+/- 0.5
Accuracy	deg C	deg C / deg C		°C
Sea Surface Winds	greater	greater / greater	TBD	greater
(Speed)	of +/-	of +/- / of +/-		of +/- 2
	l m/s or	1 m/s or/ 2 m/s or		m/s or
	+/-10%	+/-10% / +/- 20%		+/- 20%
Soil Moisture	Surface	Surface / Surface	TBD	Surface
(Surface) Sensing	to -80cm	to -80cm/ (skin		(skin
Depth		/ layer:		layer:
				-0.1cm)
Key System Parameters				
Data Access	Select.	Select. / Select.	TBD	Select
	denial	denial / denial		denial
	of all	of all / of all		of all
	U.S.	U.S. / U.S.		U.S.
	data	data / data		environm
	(ARGOS	(ARGOS / (ARGOS		ental
	and	and / and		data
	SARSAT	SARSAT / SARSAT		(ARGOS
	ex-	ex- /ex-		and
	cepted)	cepted) / cepted)		SARSAT
				excepted
)

Performance Characteristics Footnotes:

Performance Characteristics are per the NPOESS Integrated Operational Requirements Document (IORD) dated March 28, 1996.

Imagery Horizontal Resolution Global at Nadir: Low resolution mode for real time transmission plus a full orbit of stored data.

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10a. Performance Characteristics (Cont'd):

Imagery Horizontal Resolution Regional at Nadir and Sea Surface Temperature Horizontal Resolution Regional at Nadir: High resolution mode for real time transmission plus 1/2 orbit of selected stored data.

Imagery Refresh Visible and IR Bands Average Revisit Time: At least 75% of revisit time will be 4 hours or less.

NOTE: NPOESS IORD-II was validated December 2001. The following are changes which will be updated in the APB at the next milestone:

Interoperability KPP was added. The objective is 100% of top level Information Exchange Requirements (IERs). The threshold is 100% of the top level IERs designated critical.

The Global and Regional Imagery Products throughout the IORD were eliminated in IORD-II because the ground processing can use the basic imagery cell size to build these products.

The term "Measurement Accuracy" has been changed to "Measurement Uncertainty - Clear".

Changed "Sea Surface Winds (Speed)" to "Global Sea Surface Winds" because the product is a global predictive model.

Acronyms: C - Celsius EDR - Environmental Data Record K - Kelvin km - kilometer m/s - meters per second mb - millibars

b. Current Change Explanations -- None

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

		Planning	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	4314.2	4182.3	4554.0
	Procurement	0.0	N/A	0.0
	Flyaway	(0.0)		(0.0)
	Total Other Wpn sys			(0.0)
	Total Flyaway	(0.0)		(0.0)
	Other Wpn System Cost	(0.0)		(0.0)
	Peculiar Support	(0.0)		
	Initial Spares	(0.0)		
	Construction (MILCON)	0.0	N/A	0.0
	Acquisition OsM	0.0	N/A	0.0
	Total FY 1996 Base-Year \$	4314.2	4182.3	4554.0
	Escalation	1014.8	747.0	812.5
	Development (RDT&E)	(1014.8)	(747.0)	(812.5)
	Procurement	(0.0)	(N/A)	(0.0)
	Construction (MILCON)	(0.0)	(N/A)	(0.0)
	Acquisition OAM	(0, 0)	(N/A)	(0.0)
	Total Then Year \$	5329.0	4929.3	5366.5

Cost Footnotes:

The numbers listed above are total NPOESS satellites and ground activities, launch vehicles, Government Program Office support, IPO share of NASA/IPO NPOESS Preparatory Program, and installation of dual capable antennas at Fairbanks, Alaska. Development cost and quantities include the amount that will be transferred to procurement when the APB is updated at the next milestone. Milestone B will be the next milestone decision. The Acquisition Program Baseline will be updated at that time to reflect the new acquisition model. 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.

b. Quantity --

Development	(RDT&E)	5	5	6
Procurement		0	<u>_N/A</u>	0
Total		5	5	6

Development quantities include amounts that will be transferred to Procurement when the APB is updated at the next milestone. Satellites 3-6 will be funded with Procurement.

A smaller European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) satellite will carry existing sensors rather than the new, larger National Polar-orbiting Operational Satellite System(NPOESS)

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NPOESS, December 31, 2001

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

instruments previously planned. Therefore, to prevent breaching various Key Performance Parameters (KPPs), the program office will populate the third NPOESS orbital plane with a United States satellite configured with the Visible Infrared Imager Radiometer Suite (VIIRS) and the Conical Microwave Imager Sounder (CMIS) sensors. Concurrence with the Integrated Program Office (IPO) plan by the NPOESS Executive Committee (EXCOM) on June 14, 2000 adds one additional NPOESS satellite and launch with costs partially offset by the deletion of payloads already planned for EUMETSAT's Meteorological Operational Program (METOP) - 3 and METOP-4 satellites. The estimated cost of the proposed adjustments were incorporated in the President's FY2002 budget request.

c. Foreign Military Sales -- None.

- d. Nuclear Costs -- None.
- 12. Unit Cost Summary:

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

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	5329.0	-	-	5329.0
Previous Changes:				
Economic	-354.2	-	-	-354.2
Quantity	-	~ 1	-	-
Schedule	+153.5	-	•	+153.5
Engineering	-67.1	-	-	-67.1
Estimating	+284.4	-	-	+284.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+16.6	•	-	+16.6
Current Changes:				
Economic	+36.2	-	-	+36.2
Quantity	+235.2	-	-	+235.2
Schedule	-36.1	-	-	-36.1
Engineering	-195.3	-	-	-195.3
Estimating	-19.1	-	-	-19.1
Other	-	-	-	-
Support	- [-	-	-
Subtotal	+20.9	-	-	+20.9
Total Changes	+37.5	*	-	+37.5
Current Estimate	5366.5	-	-	5366.5

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	4314.2	-	-	4314.2
Previous Changes:				
Quantity		-	-	-
Schedule	+51.7	-	-	+51.7
Engineering	-60.8	-	-	-60.8
Estimating	+240.5	-	-	+240.5
Other		-	-	-
Support	-	-		-
Subtotal	+231.4	-	-	+231.4
Current Changes:				
Quantity	+191.6	-	-	+191.6
Schedule	-25.4	-	-	-25.4
Engineering	-140.5	-	-	~140.5
Estimating	-17.3	-	-	-17.3
Other	-	-	-	-
Support		-	-	-
Subtotal	+8.4	-	~	+8.4
Total Changes	+239.8	-	-	+239.8
Current Estimate	4554.0	-	-	4554.0

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

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	b. Current Change Explanations		
		(Dollars in <u>Base-Year</u> T	Millions) hen-Year
(1)	RDRAE		
	Revised escalation indices. (Economic)	N/A	+16.5
	Economic adjustment for negative program change. (Economic)	N/A	+19.7
	Additional satellite due to EUMETSAT decision.	+191.6	+235.2
	 Integration, Launch vehicle, Spacecraft (Quantity) 		
	Adjustments for launch vehicle schedule and procurement schedule. (Schedule)	-25.4	-36.1
	Deletion of sensors no longer required due to EUMETSAT decision. (Engineering)	-140.5	-195.3
	Adjustment for current and prior inflation. (Estimating)	-5.0	-5.4
	Adjustments for reduction in Budget Authority. (Estimating)	-12.3	-13.7
	RDT&E Subtotal	+8.4	+20.9

14. 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.

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
-	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	MAR 1997	N/A	N/A	MAR 1997
Milestone II	SEP 2000	N/A	N/A	AUG 2002
Milestone III	DEC 2011	N/A	N/A	AUG 2002
IOC	DEC 2010	N/A	N/A	JUL 2011
Total Cost	5329.0	N/A	N/A	5366.5
Total Quantity	5	N/A	N/A	6
Prog Acg Unit Cost	1065.8	N/A	N/A	894.4

c. Schedule, Cost, and Quantity History

Unit cost report above is based only on RDT&E cost.

NPOESS, December 31, 2001

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

a. RDT&E NPOESS-OM	PS:		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
Ball Aerospa F04701-99-C- Award: May 1	ce & Tech, Boul 0044, CPAF 4, 1999	lder, CO	\$63.1	N/A	2
Definitized:	May 14, 1999				
Curren	t Contract Pric	ce	Estimated P	rice At Comp	letion
Target	Ceiling	Oty	Contractor	Program	Manager
\$63.1	N/A	2	\$63.1	\$	67.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.2	\$-0.3
Cumulative Variances To Date (12/31/01)	\$-0.9	\$-2.6
Net Change	\$-1.1	\$-2.3

Explanation of Change:

The Ozone Mapping and Profiler Suite (OMPS) program continues to experience an unfavorable cumulative cost variance. Work associated with the Nadir Sensor and Environmental Data Record (EDR) algorithms continue to be a driver. The System Program Director has met with the Ball president to discuss our concerns related to the unfavorable cost variances.

The schedule problems on the critical path continue to be the Charged Coupled Device (CCD) Package Assembly and the Nadir Focal Plane Assembly. The contractor and subs are investigating potential mods to improve producibility in the future. The contractor is reporting that the delivery of the first flight unit will meet current schedule.

The contractor has claimed that both the cost variance and the schedule variance have ben adversely effected by the General Instrument Interface Document (GIID) Engineering Change Proposal (ECP). The GIID was developed by the IPO to standardize interfaces and other critical compatibilitics between each sensor and the spacecraft. The IPO will be negotiating this ECP in February 2002 and will reassess the estimate at complete at that time.

	Initial	Contract Pr	rice
NPOESS-Cris:	Target	<u>Ceiling</u>	OLY
ITT Industries, Ft. Wayne, IN			
F04701-99-C-0061, CPAF	\$74.1	N/A	4
Award: August 30, 1999			
Definitized: August 30, 1999			
Current Contract Price	Estimated Pr	ice At Comp	letion
Target Ceiling Oty	Contractor	Program	Manager

15. Contract Information (Cont'd):

\$84.2	N/A	4	\$1 12.4	\$120.6
			<u>Cost Variance</u>	Schedule_Variance
Previous Cumula	tive Variance	\$0.0	\$-0.5	
Cumulative Vari	ances To Date	(01/28/02)	\$-12.8	\$-0.4
Net Change			\$-12.8	\$0.1

Explanation of Change:

The contractor's cost variance is driven by two subcontracts which account for approximately 40% of the variance. The first is work associated with the scene selection module. Extra design resources have been employed to comply with power, mass, and resonant frequency requirements. ITT has assigned an in-plant system engineer/program manager as a liaison to this subcontractor. The second driver is the loss of synergy that was expected from the subcontractor's work on a now cancelled classified program. The contractor's original baseline anticipated significant synergy. A new estimate at complete (EAC) is being developed for the associated work.

The contractor's current EAC is an unadjusted baseline plus the estimate to complete based on current performance. It is not a detailed analysis which takes into consideration any cost reductions or operating practice initiatives they are developing. In addition, a General Instrument Interface Document (GIID) Engineering Change Proposal (ECP) has also been negotiated with ITT and will be incorporated in the next report. The GIID was developed by the Integrated Program Office (IPO) to standardize interfaces and other critical compatibilities between each sensor and the spacecraft. Neither the IPO's nor the current PM's Estimated Cost account for the changes in the GIID ECP. A new EAC will be developed with the delivery of the new baseline.

Senior IPO leadership has met several times with senior officials at ITT to discuss the continuing downward variance trends. ITT has developed various approaches to eliminate our concerns. They have assigned a new program manager to focus on containing the subcontracts cost growth, developed cost reduction initiatives, and are developing changes in their operating practices. While these items may help, the IPO remains concerned and has asked for a meeting with ITT to be briefed on their recovery strategy. We have also insisted that this be a key topic at the next Program Management Review.

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NPOESS, December 31, 2001

15. Contract Information (Cont'd):

			Initial	Contract Pr	ice
NPOESS-VII	RS:		Target	Ceiling	Oty
Raytheon, SBR	S, Goleta, CA				
F04701-01-C-0	500, CPAF		\$153.3	N/A	3
Award: Novemb	er 20, 2000			-	
Definitized:	November 20, 2	2000			
Current	Contract Pric	ce	Estimated Pr	ice At Comp	letion
<u>Target</u>	Ceiling	Oty	Contractor	Program	Manager
\$155.1	N/A	3	\$155.1	\$1	74.3
			<u>Cost Variance</u>	Schedule V	ariance
Previous Cumu	lative Varianc	ces	\$0.0	ŞO.	0
Cumulative Variances To Date (12/23/01)			5-4.4	5-4.	8
Net Chang	e		\$-4.4	\$-4.	8

Explanation of Change:

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

The cost variance has continued to get worse during the last year. The Subsystem Design WBS element continues to be a driver. Per the contractor, contributing factors include: plan was exceeded, some milestones not in plan, requirements are challenging, requirements omitted from original baseline, costs exceeded plan, underestimated complexity, additional work, and requirements and costs associated with the GIID. The contractor admits that there are unrecoverable costs and that they have significant management reserve to cover.

The schedule analysis includes the impacts of the General Instrument Interface Document (GIID) Engineering Change Proposal (ECP). The IEEE 1394a (a high performance serial bus which will interface with the satellite's on board processors) is the most critical item on the critical path and its schedule margin increased from 59 to 71 days with the incorporation of the GIID ECP.

The GIID ECP, which has been negotiated, was developed by the IPO to standardize interfaces and other critical compatibilities between each sensor and the spacecraft. Neither the IPO's nor the current PM's Estimated Cost account for the changes in the GIID ECP. A new Estimate at Complete will be developed with the delivery of the new baseline.

The System Program Director (SPD) has discussed his concerns about the variances with the Raytheon divisional Vice President and General Manager. The Raytheon divisional Vice President conducted an in-house review during January 2002 and will report the results to the SPD in March 2002.

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15. Contract Information (Cont'd):

NPOESS-CM	[S: Lite Systems, L	ng Angeles CA	Initial (<u>Target (</u>	Contract Pr. Ceiling	ice <u>Oty</u>
F04701-01-C-(Award: Septer Definitized:	N/A	by mayeres on	\$156.2	N/A	2
Current	Contract Price	2	Estimated Pri	ce At Comp	letion
Target	Ceiling	Oty	Contractor	Program	Manager
\$156.2	N/A	2	\$156.2	\$1	56.2
			Cost Variance	Schedule_V	ariance
Previous Cum	lative Variance	38	\$0.0	\$0.	0
Cumulative Va	iriances To Date	e	\$0.0	\$0.	0
Net Chano	je		\$0.0	\$0.	0

Explanation of Change:

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

Cost reports were expected to be provided from the contractor by this quarter. However, the delay in contract award due to a protest by the unsuccessful offeror, subsequently withdrawn, and efforts to rebaseline the schedule, have delayed the publishing of reliable reports. The contractor has completed the latest rebaseline and we expect the first Cost Performance Report in March 2002. An Integrated Baseline Review of the new baseline is scheduled for April 2002.

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

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

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-18)	<u>Total</u>
RDT&E	547.0	313.2	474.4	4031.9	5366.5
Procurement	-	-	-	-	-
MILCON	-	•	-	-	-
OeH	-	-	-	-	-
Total	547.0	313.2	474.4	4031.9	5366.5

Program Funding Summary Footnotes:

The numbers listed above are total NPOESS satellites and ground activities, launch vehicles, Government Program Office support, IPO share of NASA/IPO NPOESS Preparatory Program, and installation of dual

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16. Program Funding Summary (Cont'd): Weather Satellite System

capable antennas at Fairbanks, Alaska. Development cost and quantities include the amount that will be transferred to procurement when the APB is updated at the next milestone. Milestone B will be the next milestone decision. The Acquisition Program Baseline will be updated at that time to reflect the new acquisition model. 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.

b. Annual Summary -- Weather Satellite System

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

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				24.5	25.2
1996				27.2	27.9
1997				54.8	56.3
1998				63.1	65.2
1999				107.2	112.0
2000				109.5	116.2
2001				133.6	144.2
2002				285.8	313.2
2003				426.6	474.4
2004				538.8	609.4
2005				502.3	579.1
2006				481.7	567.0
2007				481.2	579.4
2008				354.8	436.0
2009				312.2	391.2
2010				202.4	258.3
2011				106.3	138.0
2012				38.1	50.1
2013				98.8	133.3
2014				28.9	39.5
2015				90.9	127.5
2016				26.6	37.7
2017				39.1	56.6
2018				19.6	28.8
Subtotal	6			4554.0	5366.5

The numbers listed above are total NPOESS satellites and ground activities, launch vehicles, Government Program Office support, IPO share of NASA/IPO NPOESS Preparatory Program, and installation of dual capable antennas at Fairbanks, Alaska. Development cost and quantities include the amount that will be transferred to procurement when the APB is updated at the next milestone. Milestone B will be the next milestone decision. The Acquisition Program Baseline will be updated at that time to

NPOESS, December 31, 2001

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

reflect the new acquisition model. 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			4554.0	5366.5

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	Actual
RDTGE	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 494.9

Percent Total Program Expended: 9.2%

Total expenditures includes \$235.8M of DOC obligations.

18. Operating and Support Costs:

Not applicable for Pre-Milestone B programs.

Report Creation Date: 03/29/2002 8:31:16 AM

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: T45TS

AS OF DATE: December 31, 2001

SUBJECT	
Cover Sheet Information	
Mission and Description	
Executive Summary	
Threshold Breaches	
Schedule	
Performance Characteristics	
Total Program Cost and Quantity	
Unit Cost Summary	
Cost Variance Analysis	
Unit Cost and Other History	
Contract Information	
Program Funding Summary	
Delivery/Expenditure Information	
Operating and Support Costs	

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 <u>Designation and Nomenclature (Popular Name)</u>: T45TS - Naval Undergraduate Jet Flight Training System (GOSHAWK)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PEOASWASM (PMA-273) PATUXENT RIVER, MD 20670-1547 CAPT D. C. Wooten Assigned: August 2, 2000 DSN 757-5203; COMM 301-757-5203 WootenDC@NAVAIR.NAVY.MIL

4. Program Elements/Procurement Line Items: RDT&E: PE 0603208N Project H1142 PROCUREMENT: APPN 1506 ICN 0016/0017 (Navy) MILCON:

PE 080579

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nerations

62.C-0630
T45TS, December 31, 2001

5. <u>References</u>:

SAR Baseline (Production Estimate): DAE Approved Acquisition Program Baseline dated January 19, 1995.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated March 2, 1999.

6. Mission and Description:

The T45TS is the Navy's strike pilot training system designed to replace both the T-2C and TA-4J and to produce 309 Strike and 46 E2/C2 pilots each year through FY 2035 at two sites, NAS Kingsville and NAS Meridian. The system includes: 234 production aircraft (of two type/model/series: the T-45A, equipped with an analog cockpit; and T-45C, equipped with the "Cockpit-21" digital cockpit and avionics suite); 17 simulators; academic material, training aids, & equipment; a computer based Training Integration System (TIS) at both NAS Kingsville and NAS Meridian to achieve total system efficiencies; and contractor logistics support of all system elements.

The T-45 is a derivative of the British Aerospace Hawk that has been adapted to provide the capability for carrier catapult take-offs and arrested landings. The simulator suite includes both Instrument Flight Trainers (IFT) and Operational Flight Trainers (OFT). Academics include textbook materials, classroom aids, and a computer-assisted instruction (CAI) system. The TIS utilizes existing hardware and software to provide scheduling and tracking of training events in order to achieve required training efficiency. Contractor Logistics Support (CLS) has been structured to provide for competition of maintenance support services to ensure that the system is supported in the most cost effective manner. The system is currently up and operating at both NAS Kingsville (T-45A) and NAS Meridian (T-45C). More than 1,000 Naval Aviators have been winged after completing flight training in the T-45 GOSHAWK.

7. Executive Summary:

Development of the T45TS was initiated in 1975 when the Navy perceived that both the T-2B/C and TA-4J aircraft should be replaced, beginning approximately in the mid 1980's, because of age and attrition. After extensive program strategy reviews the program was approved by SECNAV after a DNSARC on August 31, 1984. The subsequent DSARC review resulted in DOD approval on September 24, 1984.

The first production T-45A was delivered to Naval Air Station (NAS) Kingsville, Texas in December 1991. The first T-45TS trained aviators were winged on October 5, 1994. A total of 83 production T-45A aircraft were procured, two of which were converted to T-45C configuration.

T-45C aircraft which have an updated "glass" cockpit (Cockpit 21) began entering the fleet in 1998.

During 2001, 14 T-45 aircraft were manufactured and delivered to NAS Meridian,

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7. Executive Summary (Cont'd):

with the 15th production aircraft being delivered to NAS Patuxent River for brake release testing. As of December 31, 2001 there are 74 T-45A aircraft (and one T-45C aircraft awaiting crash damage repair) at NAS Kingsville and 57 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 Boeing/Rolls Royce production quality issues.

The FY02 production contract authorizing the buy of long lead items was awarded to Boeing on July 31, 2001. It is expected to be definitized by March 30, 2002.

The FY01 Engine Production contract with Rolls Royce was definitized on 16 November 2000. This was the eighth and final option year on the original contract that procures engines and supplies them as GFE to the T-45 program. A new base contract for advance acquisition items was awarded to Rolls Royce in September 2001 for FY02 production. This contract will be definitized in early calendar year 2002 and is intended to have an additional two option years. As of December 2001, Rolls Royce was meeting all contractual delivery schedules.

A government/industry team continues working to establish an achievable road map to ensure the T45TS will provide effective and efficient jet pilot training through 2035. The team is concentrating on keeping pace with the evolving Operational Advisory Group (OAG) requirements and capabilities of both the fleet replacement squadrons and primary flight trainer systems. Obsolescence avoidance, increasing airframe life, O&S cost reduction and avionics advances are considered top priorities.

During 2000 the program successfully completed 38,968 flight hours at NAS Kingsville and 24,446 flight hours at NAS Meridian. As of December 2000, the Training command had flown over 318,009 T-45A flight hours and 66,465 T-45C flight hours for a total of 384,474 total flight hours.

In 1999 the 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 FY03 President's Budget reflects a total of 181 aircraft.

The T45TS program was selected for Commercial Operations & Support Savings Initiative (COSSI) funding for implementation of two Commercial Technology Insertion programs. The avionics IPT was awarded \$6.9 million to develop a Commercially based Mission Display Processor, expanded to incorporate future processing and memory requirements and avoid current parts obsolescence, and \$3.6M for a commercially based airborne data recorder to enhance engine fatigue life tracking. These contracts were awarded to Boeing in September 1999 and

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7. Executive Summary (Cont'd):

May 2001. The Engine IPT was awarded \$1.3 million for life enhancement of the T45's F405 engine compressor drum. The engine COSSI program contract with Rolls Royce was signed on June 22, 1999.

8. Threshold Breaches:

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
0&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. <u>Schedule</u>:

a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
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	SEP 1987	SEP 1987	SEP 1987
(APP)			
T45A First Flight	MAR 1988	MAR 1988	APR 1988
Pilot Lot II FY 89	DEC 1989	DEC 1989	DEC 1989

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9a. Schedule (Cont'd):

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NOV 1991 AUG 1993 DEC 1993 NOV 1992 JAN 1995 OCT 1999	APR 1992 NOV 1993 APR 1994 APR 1993 JAN 1995 OCT 1999
OCT 1999	OCT 1999
	NOV 1991 AUG 1993 DEC 1993 NOV 1992 JAN 1995 OCT 1999

b. Current Change Explanations --N/A

10. Performance Characteristics: a. Performance --

A. LCIIOLMANOC					
	Production Estimate (SAR)	A <u>r</u> Prog <u>Obj/</u>	pproved ram (APB) <u>Threshold</u>	Demon- strated <u>Perf</u>	Current <u>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 (sideslij excursion approach configuration)(deg	4 P)	4	/ 6	6	6
Roll Off at Stall (approach configuration) (deg)	<30	<30	/ 30	15-20	15-20
"G" Excursion Speed Brake Extension (Gs)	.25	.25	/ .40	. 35	.35

10a. Performance Characteristics (Cont'd):

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	Dueduetien	Ap	pro	ved	Demon-	0
F	Production	Progr	am	(APB)	Strated	Current
<u>n</u> an thudden 1	AE		nre /	25	an	<u>Astimate</u>
Longitudinal	. 4 0	.40	/	.25	. 30	. 50
Stability (stick						
free damping ratio						
10,000 ft & .86						
IMN)						
Simulator	104	1.04	,	155	165	165
Total Time Lag Error	124	124	/	100	155	155
(ms)						
Digital						
Computational						
System			F /	1 0 / 2 0	4 0 / 2 0	4 0 / 2 0
Main Memory with	4.0/2./5	4.0/2./	57	4.0/2.0	4.0/2.0	4.0/2.0
spare (MB)		10.05	,	10 07	-16 67	-16 67
Processing Capacity	16.05	16.05	/	10.0/	<10.07	<10.07
(ms)		•	,		0.16	0.00
Visual System	2.0	2.0	/	1.5	2.16	2.16
Luminance (ft-1)						
Academics						<i></i>
Memory/Spare (K/MB)	640/80	640/80	1	640/40	640 / 80	640 / 80
Terminal Response	<3	<3	/	3	<3	<3
Time (sec avg)						
Training Integration						
System						1.0.0
Memory (RAM) (MB)	256	256		192	192	192
I/Os per second	210	210	/	75	75	75
Terminal Response	<3	<3	1	3	<3	<3
Time (sec avg)						
Aircraft						
Speed						
Max Level Flt	.84	.84	1	.83	.845	.845
(Mach)						
Approach (kts)	125	125		125	124.4	124.4
Sustain G's @ 15,000	3.4	3.4	1	3.2	3.3	3.3
ft						
Mean Flight Hours	3.2	3.2	/	2.0	3.2	3.2
Between Failure						
(MFHBF)		_				0 00
Direct Maintenance	10	10	/	10	8.33	8.33
Man Hours/Flight						
Hour (DMMH/FH)						
Availability (%)	85	85	- 7	75	76	76
Simulator						
Availability (%)			_			
Instrument Flight	95	95	/	80	90	90
Trainer (IFT)						~~
Operational Flight	95	95	/	80	90	90
Trainer (OFT)						

10a. Performance Characteristics (Cont'd):

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	Production Estimate (SAR)	Prog Obj/	pproved (APB) (Threshold	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Academics Computer Aided Instruction (CAI) System Availability (% Sched)	95 Y	95	/ 85	100	100
Training Integration System (TIS)					
Availability (% Sched)	95	95	/ 85	85	100
Pilot Training Rate	450	N/A	/ N/A	N/A	N/A

b. Current Change Explanations -- None

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

		Production	Approved	Current
a.	Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	898.9	1086.0	1054.6
	Procurement	4595.2	5707.9	4615.7
	Airframe/CFE	(2738.5)		(2853.0)
	Engines	(184.3)		(228.8)
	GFÉ	(137.8)		(144.0)
	Change Allowance/ECO	(62.6)		(29.1)
	Nonrecurring flyaway	(198.6)		(204.1)
	Total Flyaway	(3321.8)		(3459.0)
	Training Equipment	(337.1)		(233.8)
	Other	(651.3)		. (678.4)
	Total Other Wpn Sys	(988.4)		(912.2)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(285.0)		(244.5)
	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	5704.2
	Escalation	71.4	62.1	-134.6
	Development (RDT&E)	(-167.1)	(-186.8)	(-174.7)
	Procurement	(241.4)	(251.8)	(42.9)
	Construction (MILCON)	(-2.9)	(-2.9)	(-2.8)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	5599.5	6890.0	5569.6

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

b. Quantity --

.

Development	(RDT&E)	2	2	2
Procurement		174	234	181
Total		176	236	183

The percentage of LRIP units has adjusted proportionately to the total quantity aircraft reduction (300 to 181). The original program planned 48 LRIP (FY89/90) units or 16% of 300 total. Due to delays in completing development, OSD directed procurement of 60 LRIP units (FY89 thru FY94). Subsequent adjustments have lead to the current 181 aircraft and the resulting present 33% ratio to the total (181).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

<u>VIIL VOL DUMMELY</u> .	UCR Baseline	Current Estimate	Percent
a. Prog. Acg. Unit Cost (PAUC)	MAR 1999 APO TDEC	2001 <u>SARI</u>	Change
(1) Cost (FY 1995 BY\$)(2) Quantity(3) Unit Cost	6827.9 236 28.932	5704.2 183 31.170	+7.74
<pre>b. Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1995 BY\$) (2) Quantity (3) Unit Cost</pre>	5707.9 234 24.393	4615.7 181 25.501	+4.54

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	+3.0	+0.1	+8.6
Quantity	-	-166.4	-	-166.4
Schedule	-	-176.5	-	-176.5
Engineering	-19.6	+39.2	-	+19.6
Estimating	+162.2	+24.2	-0.1	+186.3
Other	-		-	-
Support	-	-229.0	-	-229.0
Subtotal	+148.1	-505.5	+0.0	-357.4
Current Changes:				
Economic	-	+5.9	-	+5.9
Quantity	-	+230.0	-	+230.0
Schedule	-	+25.1	-	+25.1
Engineering	-	+3.9		+3.9
Estimating	-	-4.8	-	-4.8
Other	-	-	-	-
Support	-	+67.4	-	+67.4
Subtotal	-	+327.5	-	+327.5
Total Changes	+148.1	-178.0	+0.0	-29.9
Current Estimate	879.9	4658.6	31.1	5569.6

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	898.9	4595.2	34.0	5528.1
Previous Changes:				
Quantity	-	-83.4	-	-83.4
Schedule	_	-88.4	-	-88.4
Engineering	-20.3	+48.8	-	+28.5
Estimating	+176.0	+38.2	-0.1	+214.1
Other	-	-	-	-
Support	-	-175.7	-	-175.7
Subtotal	+155.7	-260.5	-0.1	-104.9
Current Changes:				
Quantity	-	+201.0	-	+201.0
Schedule	-	+22.5	-	+22.5
Engineering	-	+3.0	-	+3.0
Estimating	-	-4.5	-	-4.5
Other		-	-	
Support	-	+59.0	-	+59.0
Subtotal	-	+281.0	-	+281.0
Total Changes	+155.7	+20.5	-0.1	+176.1
Current Estimate	1054.6	4615.7	33.9	5704.2

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

• •

b. Current Change Explanations ---

		(Dollars : <u>Base-Year</u>	in Millions) <u>Then-Year</u>
(1)	Procurement		
	Revised escalation indices. (Economic)	N/A	+5.9
	Total Quantity Variance associated with increase of 12 units.	+204.0	+233,3
	Quantity increase of 12 (from 169 to 181 T45 aircraft). (Quantity)	+201.0	+230.0
	Acceleration of annual procurement buy profile, (OR) (Schedule)	0.0	-0.6
	Allocation to engineering resulting from quantity change. (OR) (Engineering)	+3.0	+3.9
	Additional Schedule Variance due to	+22.5	+25.7
	slower than plannned procurements. (Schedule)	- 	
	Adjustment for Current and Prior Inflation. (Estimating)	-4.5	-4.8
	Adjustment for Current and Prior Inflation. (Support)	-1.1	-1.1
	Change in Initial Spares due to additional aircraft. (QR) (Support)	+17.7	+20.2
	Change in Training Equipment. Congressionally directed addition of one simulator in FY02. (Support)	+6.9	+8.0
	Change in Other logistics related elements, (Support)	+35.5	+40.3
•	Procurement Subtotal	+281.0	+327.5

QR = Quantity related changes.

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

a. Program Acquisition Unit Cost (PAUC) History

Carrent on Daberine to Carrent Dermato	
PAUC Changes	PAUC
Prod Est	Cur Est
Econ Qty Sch Eng Est Oth Spt Total	
31.82 +0.079 -0.869 -0.827 +0.128 +0.9920.883 -1.38	30.43

Current SAR Baseline to Current Estimate

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								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.80	+0.049	-0.723	-0.836	+0.238	+0.107		-0.893	-2.06	25.74

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	5569.6
Total Quantity	304	N/A	176	183
Prog Acg Unit Cost	18.0	N/A	31.8	30.4

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

a. Procurement --

T45TS GFE ENG FY94-01:	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Oty</u>
N00019-93-C-0100, FFP Award: November 30, 1993 Definitized: March 23, 1995	\$2.7	N/A	12
Current Contract Price	Estimated P	rice At Co	mpletion

001 2011-	001162000 1220	~		,
<u>Target</u>	<u>Ceilina</u>	Oty	Contractor	Program Manager
\$224.3	N/A	118	\$224.3	\$224.3

Explanation of Change:

None.

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

Contract Comments:

T45TS, December 31, 2001

15. Contract Information (Cont'd):

The Program Manager's Price at Completion reflects the total contract estimate for the GFE engines for the eight (8) option years.

The Basic contract was awarded to Rolls Royce (Nov 93) and contains eight options, FY94 through FY01.

The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Acquisition contract prior to definitization.

The Current Target Price increase (\$57.8M) from \$166.5M to \$224.3M reflects the definitization of the FY00 GFE engine option and the award of the FY01 GFE engine option (final option year).

Total funding and quantities reflect GFE engines for the option years FY94 thru FY01, plus the price of modules, and spare engines awarded to date.

The estimated price at completion increase (26.4M) reflects the award of the FY01 GFE engine option.

<u>T45TS FY98</u>	PROD:		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Otv</u>
MCDONNELL DOUGLAS, ST. LOUIS, MO N00019-97-C-0059, FFP Award: September 15, 1997			\$23.2	N/A 15	
Definitized:	December 10, 1	1997			
Current	Contract Pric	ce	Estimated Pr	rice At Comp	letion
<u>Target</u>	Ceiling	Oty	Contractor	Program	<u>Manager</u>
5257.5	N/A	15	2221.3	52	201.0

Explanation of Change:

None.

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

Contract Comments: Initial target price is for long lead material. The balance of the funding was awarded the following year.

This will be the last report for this contract. Contract is more than 90% complete.

T45TS, December 31, 2001

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15. Contract Information (Cont'd):

T45TS FV99	-00 PROD-		Initial Target	Contract Pr	ice Otv
MCDONNELL DOU	GLAS CORP, ST.	LOUIS MO	<u>IGINGU</u>	Veriting	VLV
N00019-98-C-0	114, FFP		\$3.1	N/A	15
Award: Septem	ber 24, 1998				
Definitized:	February 16, 1	1999			
Current	Contract Pric	ce	Estimated P	rice At Comp	letion
Target	<u>Ceiling</u>	Oty	<u>Contractor</u>	Program	Manager
\$512.6	N/A	30	\$512.6	\$5	12.6

Explanation of Change:

None.

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

Contract Comments: Initial target price is for long lead material. The balance of the funding was awarded the following year.

The increase in Current Target Price of (\$22.4M) from \$490.2M to \$512.2M is due to ECP-219 Frame 16 Lateral Link, Phase V Engine surge testing, ECP-216 Arrestor Beam Backup Structure and ECP-133 Speed Brake.

The contract provides four (4) option years (FY00 through FY03 production). The FY00 option quantity of 15 aircraft option was awarded in September 1999, and price was definitized in December 1999.

	Initial (Contract P	rice
T45TS GFE ENG FY02-04:	Target (Ceiling	Otv
ROLLS ROYCE, PLC, BRISTOL, UK			
N0001901C0290, FFP	\$2.1	N/A	6
Award: November 30, 1993			
Definitized: March 23, 1995			
Current Contract Price	Estimated Pri	ice At Com	pletion
<u>Target Ceiling Oty</u>	<u>Contractor</u>	Progra	m Manager

00230110				e ne eene eene
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program Manag
\$12.6	N/A	6	\$14.5	\$14.5

Explanation of Change:

None.

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

T45TS, December 31, 2001

15. Contract Information (Cont'd):

Contract Comments: Initial target price is for long lead material. The balance of the funding was awarded the following year.

The basic FY02 contract was awarded to Rolls Royce (Sep 01) and contains two option years, FY03 and FY04. Options include T45Ts GFE aircraft engines, modules and spare engines.

Contract delivery total quanity of 6 is through FY02 planned procurement.

Estimated price at completion reflects the not to exceed price of the FY02 advance acquisition contract that will be definitization in Spring 2002 2002.

	Initial	Contract Pr	rice
T45TS FY01 PROD:	<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
MCDONNELL DOUGLAS CORP, ST LOUIS MO			
N0001900C0184, FFP	\$5.2	N/A	14
Award: September 1, 2000			
Definitized: March 1, 2001			
			1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0

Current	CONLIACT FILCE		ESCIMALED FIICE	VC COmbrecton
Target	<u>Ceilina</u>	<u>Oty</u>	Contractor	Program Manager
\$241.1	N/A	14	\$241.1	\$241.1

Explanation of Change:

None.

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

Contract Comments: Initial target price is for long lead material. The balance of the funding was awarded the following year.

The Current Target Price of \$241.1 includes Ground Handling Improvement Phase III effort, Spares, three spare wings, technical publications non-recurring effort, ECP-229 Forward Flaps Quardrant Handles, and ECP-236 Bleed Air Pipe.

The FY01 quantity of 14 T-45 aircraft was awarded in Sep 00 and the price was definitized on 01 March 2001. First aircraft delivery is scheduled for Oct 02.

15. Contract Information (Cont'd):

			Initial	Contract Pr	ice
<u>T45TS FY02</u>	PRODUCTION:		Target	<u>Ceiling</u>	<u>Oty</u>
MCDONNELL DOU	GLAS, ST LOUIS	, MO			
N0001901C0267	, FFP		\$2.9	N/A	6
Award: July 7	, 2001				
Definitized:	N/A				
Current	Contract Pric	e	Estimated F	rice At Comp	letion
Target	<u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Program	Manager
\$17.7	N/A	6	\$17.7	ę	17.7

Explanation of Change:

None.

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

Contract Comments: The Current Target Price of \$17.7 reflects Long Lead funding, Flight Test program, and ILS. Contract definitization is planned for Spring 2002. Contract Price will be revised in accordance with definitized pricing.

The FY02 quantity is 6 aircraft, and the aircraft price is not yet definitized.

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

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

Appropriation	Prior <u>Years</u> (FY80-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u>	<u>Total</u>
RDT&E	879.9	-	-	-	879.9
Procurement	4232.7	191.9	234.0	~	4658.6
MILCON	31 .1	-	-	-	31.1
O&M	-	-		-	_
Total	5143.7	191.9	234.0	-	5569.6

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

b. Annual Summary -- T45TS

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

1		Flyaway	Fiyaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1980			7.1	7.1	4.2
1981			2.5	2.5	1.6
1982			7.3	7.3	4.9
1983			11.1	11.1	7.8
1984			32.3	32.3	23.6
1985			89.6	89.6	67.5
1986			156.6	156.6	121.4
1987			178.6	178.6	142.5
1988			120.5	120.5	99.4
1989			106.0	106.0	91.1
1990			216.6	216.6	193.8
1991			15.6	15.6	14.5
1992			50.3	50.3	48.0
1993			30.4	30.4	29.7
1994			28.1	28.1	27.9
1995			0.6	0.6	0.6
1996			1.3	1.3	1.3
1997			0.1	0.1	0.1
Subtotal	2		1054.6	1054.6	879.9

Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$_	Then-Year \$
1987				78.8	65.1
1988	12	55.9	274.4	481.3	414.9
1989	24	9.1	428.9	418.6	375.3
1990		17.8		137.1	127.2
1991		39.9		159.5	152.2
1992	12	25.9	220.3	367.3	358.3
1993	12	8.3	225.2	281.7	279.9
1994	12	8.2	247.6	316.2	320.1
1995	12	5.2	219.1	257.2	264.5
1996	12	2.3	206.8	306.6	319.8
1997	12	3.5	203.9	284.3	299.1
1998	15	5.4	237.3	277.8	295,8
1999	15	2.5	237.7	289.0	311.9
2000	15		245.8	308.8	338.5
2001	14	10.6	224.0	278.4	310.1
2002	6	7.4	127.5	169.7	191.9

T45TS, December 31, 2001

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

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Otv	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
2003	8	2.1	156.4	203.4	234.0
Subtotal	181	204.1	3254.9	4615.7	4658.6

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).

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	183	204.1	4309.5	5704.2	5569.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	141	142

Percent Total Program Quantities Delivered: 78.7%

b. Total Expenditures To Date (In Millions of Dollars): \$ 5006

Percent Total Program Expended: 89.9%

T-45 deliveries accepted through the "As Of" date Dec 31 2001 are through the 142nd aircraft (A142).

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --The concept of operations of the T45TS is for total contractor logistic support (CLS), where the Navy provides the appropriate operational military personnel and flightline consumables, and the remainder is a turn key contractor operation.

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 181 T-45 aircraft the program will have difficulty attaining the Chief of Naval Operations (OPNAV) anticipated pilot training rate (PTR) of 309 Strike and 46 E2/C2 pilots (for a total of 355) by FY 2007. The 355 per year PTR level assumes: 124 aircraft are required to fly approximately 720 flight hours per year. The steady state quantity of flight hours is approximately 90,000 hours per year (contingent upon the retirement of the T-2C aircraft starting in FY 2007).

O&S cost elements include: Mission Personnel, Unit-Level Consumption, Contractor Logistics Support (CLS), Sustaining Support and Indirect Support. In section b costs, Mission Personnel costs include the costs for pay and allowances for enlisted personnel and officers. Contractor personnel involved in the maintenance of the T-45 are not included in Mission Personnel, but within the CLS portion of the O&S.

Unit-Level Consumption costs include the cost for Petroleum, Oil & Lubricants (POL) required for peacetime operations, and Training Ordnance costs. The 18 equivalent (46 @ 37% of syllabus) PTR for E2/C2 aircraft have no ordnance requirements, and therefore are not included in the estimate.

CLS costs include the following elements: the costs for Aircraft Maintenance; Ground Training System (GTS Maintenance, Replenishment Spares, ROR, Simulator Maintenance, and Operations Costs); Training Support Center Maintenance; Program & Administrative Mgt; Off Site Repair (Engine Depot ROR, Aircraft ROR, SE ROR, and Airframe Rework); Detachment Support; Travel & Per Diem; and other Direct Charges. Sustaining Support Costs include the costs for modification kits needed to achieve acceptable levels of safety, overcome mission capability deficiencies, and reliability, and reduce maintenance costs. Support Equipment Replacement is performed by the contractor, and is included in CLS under ROR. Sustaining Engineering Support, Software Maintenance, and Simulator Operations costs are also included in the cost for CLS.

Indirect costs include the following: 1) Pipeline training costs for all instructor pilots that are assigned to the T-45 during their first tour; and 2) Installation Support costs. Installation Support Costs include costs for personnel and infrastructure at the host installation where training is performed.

Date of estimate: December 27, 2001.

The T-45A/C was designed to replace the T-2C, and TA-4J aircraft. The Average

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

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Annual Cost Per Steady State reflects the current T-45A/C aircraft estimate. The cost of antecedent (T-2C, and TA-4J) systems were not available.

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

	T45TS	Avg Annual Cost Per
	T-45/YEAR	Steady State
Cost Element		
Mission Pay & Allowances	127.5	N/A
Unit Level Consumption	149.0	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	995.8	N/A
Sustaining Support	57.2	N/A
Indirect Costs	206.8	N/A
Total	1536.3	N/A

Total O&S Cost	T45TS	Avg Annual Cost Per
BY\$ (In Millions)	1204.9	N/A
TY\$ (In Millions)	1536.3	N/A

Report Creation Date: 03/26/2002 12:28:45 PM

AF-18 MM III PRP

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: Minuteman III PRP

AS OF DATE: December 31, 2001

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1. (U) <u>Designation and Nomenclature (Popular Name)</u>: Minuteman III Propulsion Replacement Program (MM III PRP)

2. (U) DoD Component: USAF

 3. (U) Responsible Office and Telephone Number:

 OO-ALC/LMP
 Capt Tom Rock

 6031 Gum Lane
 Assigned: May 1, 2001

 Hill AFB, UT 84056-5826
 DSN 775-5541; COMM (801)775-5541

 Thomas.Rock.jr@hill.af.mil

4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0604851F
 PROCUREMENT:
 (U) APPN 3020 ICN LGM30G (Air Force)

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Minuteman III PRP, December 31, 2001

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5. (U) References:

SAR Baseline (Production Estimate):

(U) Acquisition Decision Memorandum dated June 30, 1994, Subject: Milestone II

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated September 10, 2001.

6. (U) Mission and Description:

(U) The Propulsion Replacement Program (PRP) extends the life, maintains the performance, and improves the reliability of the Minuteman (MM) III operational force by replacing the solid propulsion systems now in the force are projected to begin aging out in 2002 and must be replaced in order to support current force planning. The PRP will be executed in two phases, Technology Insertion (TI) and Remanufacture. During the TI phase, new materials and manufacturing processes were qualified to replace unavailable or environmentally prohibited materials. Additionally, known failure modes and design weaknesses were corrected by incrementally inserting and qualifying current rocket motor technologies. The PRP reuses existing components to the greatest extent possible. During remanufacture, the solid rocket motors and interstage hardware and ordnance are being recycled from the force and remanufactured at a rate up to eight motors per month during the period FY 2000 through FY 2008.

Software changes were incorporated because of material changes incorporated in stage manufacturing. Because both the stage 2 liquid injection thrust vector control injectant and stage 3 motor case must be replaced, the missile control dynamics, mass properties, and propulsion characterization programs must also be modified to ensure a controlled flight.

7. (U) Executive Summary:

(U) All Low Rate Initial Production (LRIP) I deliveries (9) and 9 of the 33 LRIP II deliveries have been made.

With the successful Milestone III approval, the first Full Rate Production (FRP 1) option was exercised. Procurement of materials and parts will dominate this effort until Jun 02 when actual production will begin. The FRP 1 quantity buy has been reduced from 86 to 85 boosters due to a decrease in Air Force Space Command's flight test requirements. The Propulsion Replacement Program (PRP) will produce a total of 606 versus 607 boosters. The savings from this reduction are incorporated into the PEO approved execution year solution to offset program cost growth.

The program's focus is on controlling the increased program costs that are above and beyond the ATK Thiokol rate and Ammonium Perchlorate (AP) price increases which are being addressed as part of the normal Air Force corporate processes. Rework and engineering needed to resolve anomalies and process minor waivers to ensure high quality motors is being addressed through several quality initiatives at ATK Thiokol and Pratt & Whitney. The cost assessment

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

will remain yellow until these initiatives are realized and concrete data is available.

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) <u>Schedule</u>:

a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	<u>Program (APB)</u>	<u>Estimate</u>
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	

(U) ACRONYMNS:

CDR- Critical Design Review DT&E- Developmental Test and Evaluation IOC- Initial Operational Capability IOT&E- Initial Operational Test and Evaluation

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Minuteman III PRP, December 31, 2001

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

LRIP- Low Rate Initial Production PCA- Physical Configuration Audit PDR- Preliminary Design Review

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

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

b. Current Change Explanations -- None

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

	Production	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	336.8	336.8	307.8
Procurement	1750.0	1750.0	1631.5
Flyaway	(1632.4)		(1536.5)
Other Wpn System Costs	(117.6)		(95.0)
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	1939.3
Escalation	514.0	514.0	332.2
Development (RDT&E)	(30.5)	(30.5)	(20.5)
Procurement	(483.5)	(483.5)	(311.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	_ (0.0)	(0.0)	(0.0)
Total Then Year \$	2600.8	2600.8	2271.5
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	607	607	606
Total	607	607	606

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

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	UCR	Current	
	Baseline	Estimate	Percent
	(SEP 2001 APB) (Dec	2001 SAR)	Change
a. (U) Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	2086.8	1939.3	
(2) Quantity	607	606	
(3) Unit Cost	3.438	3.200	-6.92
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	1750.0	1631.5	
(2) Quantity	607	606	
(3) Unit Cost	2.883	2.692	-6.63

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		-	-7.2
Quantity		-	-	-
Schedule	-		-	+
Engineering	-	-	-	-
Estimating	-31.9	-57.9	-	-89.8
Other	_	-	-	-
Support	-	-	-	-
Subtotal	-39.1	-57.9	-	-97.0
Current Changes:				
Economic	-	-19.0	-	~19.0
Quantity	-	-2.1	-	-2.1
Schedule	-	-21.0	-	-21.0
Engineering	- →	-	-	-
Estimating	+0.1	-190.3	-	-190.2
Other		-	-	+
Support		-	-	
Subtotal	+0.1	-232.4	-	-232.3
Total Changes	-39.0	-290.3	-	-329.3
Current Estimate	328.3	1943.2		2271.5

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(Dollars in Millions)

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	336.8	1750.0	~	2086.8
Previous Changes:				
Quantity	-	-	-	_
Schedule	-	-	-	-
Engineering	-	- 1	-	-
Estimating	-29.1	+38.0	-	+8.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-29.1	+38.0	-	+8.9
Current Changes:				
Quantity	-	-1.6	-	-1.6
Schedule	-	-15.5	-	-15.5
Engineering	-	-	-	-
Estimating	+0.1	-139.4	-	-139.3
Other	-		-	-
Support			-	
Subtotal	+0.1	-156.5	-	-156.4
Total Changes	-29.0	-118.5	-	-147.5
Current Estimate	307.8	1631.5		1939.3

b. (U) Current Change Explanations --

		Base-Year	Then-Year
(1)	<u>RDT&E</u> Adjustment for current and prior inflation (Estimating)	+0.1	+0.1
	RDT&E Subtotal	+0.1	+0.1
(2)	Procurement Revised escalation indices (Economic) Economic Adjustment for negative program change (Economic) Quantity reduction of 1 booster from 607 to 606 boosters due to a decrease in Air Force Space Command flight test requirements (Ouantity)	N/A N/A -1.6	-16.4 -2.6 -2.1
	Acceleration of annual procurement buy	-15.5	-21.0
	Revised estimate to reflect the program's return to original baseline schedule, which eliminated the requirement to reopen the sole source contract (Estimating)	-139.4	-190.3
	Procurement Subtotal	~156.5	-232.4

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\$104.7

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

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

Current SAR Baseline to Current Estimate

PAUC	Changes						PAUC		
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.28	-0.043	+0.004	-0.035		-0.462			-0.536	3.75

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

Current SAR Baseline to Current Estimate

\$105.2

PUC	Changes						PUC		
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.68	-0.031	+0.003	-0.035		-0.410			-0.473	3.21

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

N/A

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	N/A
Total Cost	N/A	2819.3	2600.8	2271.5
Total Quantity	N/A	607	607	606
Prog Acq Unit Cost	N/A	4.6	4.3	3.8

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

0

a. RDT&E (U) <u>MMIII PRP:</u> TRW Space & Missile Div. Fairfey VA	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
F42610-98-C-0001, CPAF Award: December 22, 1997 Definitized: December 22, 1997	\$103.2	N/A	0
Current Contract Price	Estimated Pr	ice At Com	letion Manager

\$104.7

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

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$-1.7	\$0.0
Cumulative Variances To Date (11/30/01)	<u>\$-1.6</u>	<u>\$0.0</u>
Net Change	\$0.1	\$0.0

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Explanation of Change:

(U) The variance change results from completion of MM III Stage 3 motor disposal.

This Contract is over 90% complete, this will be the last time it will be reported in the SAR.

(U) MMIII PRP LRIP/FRP: TPW Space & Missile Div Fairfay VA	Initial <u>Target</u>	Contract Pr Ceiling	rice <u>Otv</u>
F42600-98-C-0001, CPAF/FPIF	\$412.8	N/A	127
Definitized: December 22, 1997			
Current Contract Price	Estimated Pr	ice At Com	pletion
<u>Target Ceiling Oty</u>	Contractor	Program	n <u>Manager</u>
\$417.6 N/A 127	\$432.0	\$4	432.0
	Cost Variance	Schedule V	Variance
Previous Cumulative Variances	\$-10.7	\$-4	.1
Cumulative Variances To Date (11/30/01)	<u>S-18.7</u>	<u> </u>	.5

Explanation of Change:

Net Change

(U) Three options on the procurement contract are exercised: LRIP 1, LRIP 2, and FRP 1.

\$-8.0

S-1.4

LRIP 1 is 99.9% complete with only a few administrative tasks remaining.

LRIP 2 is 55.4% complete and is projecting a (\$14.357M) cost overrun at completion. The increase is driven by ATK Thiokol rates and growth in Ammonium Perchlorate price. The reason cost remains a concern is due to the uncertainty in the ammount of rework and engineering effort needed to resolve anomalies and process minor waivers.

LRIP 2 negative schedule variance (8.8%) is not affecting field deliveries of boosters. The schedule variance is the combination of recovery from a large GFP damage, a delay of the high energy computed tomography facility upgrade, and a late start in a contractor tooling design effort. Each of these efforts have recovery plans established and should not impact booster deliveries.

FRP 1 was exercised Oct 01. The Integrated Baseline Review (IBR) is

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

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scheduled for 23 - 30 Feb 02. ATK Thiokol rates and AP price will increase the FRP 1 option price.

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

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

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	<u>Total</u>
RDT&E	328.3	-		-	328.3
Procurement	228.3	276.4	290.2	1148.3	1943.2
MILCON	-	. –		-	~
O&M	·	-	-	-	-
Total	556.6	276.4	290.2	1148.3	2271.5

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			1	60.5	65.0
1999				55.5	60.3
2000				25.3	27.9
2001					
Subtotal				307.8	328.3

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		77.4	80.7	90.1
2001	33		116.4	122.1	138.2
2002	85		225.6	240.6	276.4
2003	96		233.5	248.5	290.2
2004	96		231.0	245.6	292.0
2005	96		220.7	234.8	284.4
2006	96		219.6	233.6	288.3

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

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
2007	95		212.3	225.6	283.6
Subtotal	606		1536.5	1631.5	1943.2

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	606		1536.5	1939.3	2271.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

RDT&E	0	0
Procurement	9	9

Plan

Actual

(U) Percent Total Program Quantities Delivered: 1.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 408.5

(U) Percent Total Program Expended: 18.0%

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.

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

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b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

	Minuteman III PRP	Antecedent System
Cost Element		
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
Total	0.0	0.0

Total O&S Cost	Minuteman III PRP	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/29/2002 2:27:53 PM

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- AF-12 GLOBAL HAWK

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

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Executive Summary Threshold Breaches Schedule Performance Characteristics Total Program Cost and Quantity Unit Cost Summary Cost Variance Analysis Unit Cost and Other History Contract Information Program Funding Summary Delivery/Expenditure Information Operating and Support Costs

AS OF DATE: December 31, 2001

- 1. Designation and Nomenclature (Popular Name): RQ-4A, Global Hawk
- 2. DoD Component: USAF

3. Responsible Office and Telephone Number:

Reconnaissance Systems Pgr Office Col Wayne Johnson Aeronautical Systems Center 2640 West Loop Road, Room 213 WPAFB, OH 45433-7106

Assigned: June 1, 2000 DSN 785-7764; COMM 937-255-7764 wayne.johnson2@wpafb.af.mil

4. Program Elemants/Procurement Line Items: RDT&E: PE 35205F **PROCUREMENT:** APPN 3080 ICN HAE UAV (Air Force) APPN 3010 ICN HAEUAV (Air Force) MILCON: PE 35205F O&M: PE 35205F

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

1. Global Hawk RDT&E BPAC is 674799 within PE 35205F.

SAE/DAS

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02-6-0606

5. References:

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SAR Baseline (Development Estimate): DAE Approved Acquisition Program Baseline (APB) dated March 6, 2001.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated March 21, 2002.

6. Mission and Description:

The Global Hawk system is a high altitude, long endurance, unmanned aerial vehicle (UAV) with an integrated sensor system and ground segment that provides Intelligence, Surveillance, and Reconnaissance (ISR) capabilities to joint warfighters. The system will provide 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 capability.

7. Executive Summary:

A 21 March 2002 Interim Program Review (IPR) approved the transformation program. The transformation program accelerates the delivery of more ISR capability to the warfighter customer. The transformation program's Acquisition Program Baseline (APB) was updated and is reported in this Selected Acquisition Report (SAR).

The transformation program develops a single, multi-intelligence (multi-Int) Global Hawk configuration with radar, electro-optical/infrared (EO/IR), and signals intelligence (SIGINT) sensors. AC2ISR received interim JROC approval of this direction. The FY03 President's Budget (PB) is consistent with this direction.

OPERATION ENDURING FREEDOM (OEF) Deployment: Global Hawk program received and is executing OEF deployment orders. Deployment particulars and accomplishments are classified. As reported by the Air Force, a Global Hawk unmanned aerial vehicle (UAV) crashed on 30 December 2001. A safety investigation board formed with the program office and prime contractor providing all requested support. Global Hawk subsequently returned to operations and development flying. This deployment was almost four years earlier than the baseline Initial Operational Capability (IOC) date (September 2003) with valuable operations feedback available to the program office a year earlier than the baseline Initial Operational Test and Evaluation (IOT&E) Phase I could have provided. This early operations information is being evaluated and used to adjust program priorities.

Contracting Events: Engineering and Manufacturing Development (EMD) and Low Rate Initial Production (LRIP) long lead efforts continued to execute. OEF-related tasks were initiated and are being definitized. The EMD baseline

Global Hawk, December 31, 2001

7. Executive Summary (Cont'd):

contract was definitized on 25 January 2002. The LRIP Lot 1 contract was initiated with an undefinitized contract action (UCA) on 31 January 2002. The UCA was necessary to preserve delivery schedule and maintain the subcontractor base.

8. Threshold Breaches:

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a. Acquisition Program Baseline (APB):

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

b. Nunn-McCurdy Unit Cost:

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

9. Schedule:

a. Milestones ---

			-	
	Development	Approved	Current	
	Estimate (SAR)	Program (APB)	Estimate	
Block 5: Approved for EMD/ LRIP	FEB 2001	MAR 2001	FEB 2001	
Block 5: Start IOT&E Phase I	OCT 2003	N/A	N/A (Ch-1)	
Block 5: Complete IOT&E Phase I	DEC 2003	N/A	N/A (Ch-1)	
Block 5: MS III FRP Review	MAR 2004	N/A	N/A (Ch-1)	
Block 5: IOC	SEP 2005	N/A	N/A (Ch-1)	
Block 10: Start Development	OCT 2003	N/A	N/A (Ch-1)	
Block 10: LRIP Interim Program	FEB 2007	N/A	N/A (Ch-1)	
Review (IPR)				
Block 10: Start Production	OCT 2007	N/A	N/A (Ch-1)	
Block 10: Start IOT&E Phase II	JUL 2010	N/A	N/A (Ch-1)	
Block 10: Complete IOT&E Phase II	OCT 2010	N/A	N/A (Ch-1)	
Block 10: MS III FRP IPR	JAN 2011	N/A	N/A (Ch-1)	
Block 10: FOC /1	TBD	N/A	N/A (Ch-1)	
Delivery of first AV with initial	N/A	SEP 2003	SEP 2003(Ch-2)	
Spiral 1 capability				
Operational Assessment (Spiral 1)				
Start	N/A	JUN 2004	JUN 2004(Ch-2)	
Complete	N/A	AUG 2004	AUG 2004(Ch-2)	

9a. Schedule (Cont'd):

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	Development	Approved	Current	
	Estimate (SAR)	Program (APB)	Estimate	
Delivery of first AV with initial	N/A	SEP 2004	SEP 2004(Ch-2)	
Spiral 2 capability				
Interim Program Review (IPR)	N/A	NOV 2004	NOV 2004(Ch-2)	
Required Assets Available (RAA),	N/A	MAR 2005	MAR 2005(Ch-2)	
initial Spiral 2 capability				
Initial Operational Capability (IOC),	N/A	SEP 2005	SEP 2005(Ch-2)	
initial Spiral 2 capability				
Initial Operational Test and Evaluati	on			
(Spiral 2) capability				
Start	N/A	APR 2006	APR 2006(Ch-2)	
Complete	N/A	JUN 2006	JUN 2006(Ch-2)	
Full Rate Production (FRP) Decision	N/A	NOV 2006	NOV 2006(Ch-2)	
Review (DR)				
Start FRP	N/A	DEC 2006	DEC 2006(Ch-2)	
FOC	N/A	TBD	TBD (Ch-2)	

b. Current Change Explanations --(Ch-1) These schedule milestones are no longer being tracked by the program office.

(Ch-2) These schedule milestones were approved at the 21 March 2002 Interim Program Review and have been added since the previous SAR.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Block 5: Endurance - Air Vehicle (AV)	Should be capable of flying an enroute distance of 3000 NM, remainin g on- stati on 24 hours, and recover at the	N/A / N/A	N/A	N/A (Ch-1)

10a. Performance Characteristics (Cont'd):

	_	7	pproved	Demon-		
	Development Estimate (SAR) launch	pment Program (APB) (SAR) Obj/Threshold h		strated <u>Perf</u>	Current Estimate	
Block 5: Airspace Coordination - Global Hawk System	base. The Global Hawk system must be sufficie ntly robust to allow world wide system employme nt in all classes of	N/A	/ N/A	N/A	N/A	(Ch-1)
Block 5: Mission Execution Ground Station	The ground station will allow UAV operator s to perform NRT mission control, mission updates/ modifica tions to include dymanic platform and payload control and	N/A	/ N/A	N/A	N/A	(Ch-1)

10a. Performance Characteristics (Cont'd):

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	Development Estimate (SAR) re- taski	Approved Program (APB) Obj/Threshold		Demon- strated <u>Perf</u>	Current Estimate	
Block 5: Information Exchange Requirements (IERs)	ng. 100% of all top-leve 1 IERs.	N/A	/ N/A	N/A	N/A	(Ch-1)
Block 10: System Survivability - Air Vehicle (AV)	The AV must be equipped to employ active counter- measures against radar and IR- guide d threats to the system as identifi ed in the STAR.	N/A	/ N/A	N/A	N/A	(Ch-1)
Block 10: Mean Time Between Critical Failure (MTBCF)	System MTBCF of 160 hours.	N/A	/ N/A	N/A	N/A	(Ch-1)
Block 10: Signal Intelligence (SIGINT)	TBD	N/A	/ N/A	N/A	N/A	(Ch-1)
Spiral 1: Endurance time on station (TOS) with 2000 lbs payload and 1200 NM enroute distance returning to the launch base with appropriate fuel reserves IAW Air Force directives	N/A 1	>24 hrs	/ 24 hrs	To date the Global Hawk ACTD AV has demonstr ated a total mission enduranc	>24 hrs	(Ch-2)
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10a. Performance Characteristics (Cont'd):

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	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated <u>Perf</u> e of 31.5 hours. This equates to the ability to transit 1200 NM, remain on	Current Estimate
Spiral 1: Aerospace Coordination - Global Hawk System	N/A	Must be / Must be suffic- / suffic- iently / iently 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	station 21.7 hours, and return to the launch To date Global Hawk ACTD has operated in Classes A, D and E domestic aerospac e and Clases A, E and G internat ional airspace Actual flights into class B airspace or other congeste d airspace	Must be (Ch-2) suffic- iently robust to allow world wide system employ- ment in all classes of airspace

10a. Performance Characteristics (Cont'd):

1 1

Spiral 1: Executior - Ground	Mission Station	Development <u>Estimate (SAR)</u> N/A	Approgram <u>Obj/Thro</u> Will / allow / UAV / opera- / tors to / perform / NRT / mission / monitor-/ ing, and/ mission / updates// modifi- / cations / to / include / dynamic / platform/ and / payload / control / and re- / tasking /	oved (APB) eshold Will allow UAV opera- tors to perform NRT mission control, mission updates/ modifi- cations to include dynamic platform and payload control and re- tasking	Demon- strated <u>Perf</u> over Global Hawk has demonstr ated real time status using and control of the air vehicle to include manual override of the pre-prog rammed flight plan in response to ATC and	Current Estimate Will allow UAV opera- tors to perform NRT mission control, mission updates/ modifi- cations to include dynamic platform and payload control and re- tasking	(Ch-2)
Spiral 1: Exchange (IERs)	Information Requirements	N/A 5	<pre>tasking / l00% of / all top-/ level / IERs / / /</pre>	l00% of all top- level IERs designa- ted critical	and re-taski ng directio n. The sy Global Hawk has demonstr ated some degree of performa nce in 11 of 12 IER level 1 events.	tasking 100% of all top- level IERs	(Ch-2)

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10a. Performance Characteristics (Cont'd):

		Appro	oved	Demon-	
	Development	Program	(APB)	strated	Current
1	Estimate (SAR)	Obj/Thre	eshold	Perf	Estimate
Spiral 2: Endurance time on station (TOS) with 3000 lbs payload and 1200 NM enroute distance returning to the launch base with appropriate fuel reserves IAW Air Force directives	N/A	>20 hrs /	20 hrs	TBD	>20 hrs (Ch-2)
Spiral 3: Signal Intelligence (SIGINT) High Band	N/A	TBD /	TBD	TBD	TBD (Ch-2)
Spiral 4: System Survivability - Air Vehicle (AV)	N/A	Must be / equipped/ to / employ / active / counter-/ measures/ against / radar / and IR- / guided / threats / to the / system / in the / STAR /	Must be equipped to detect radar- guided threats as iden- tified in the STAR and relay the informat ion to ground station personne	An ACTD demonstr ation launched a towed decoy demonstr ator.	Must be (Ch-2) equipped to employ active counter- measures against radar and IR- guided threats to the system as iden- tified in the STAR
Spiral 4: Mean Time Between Critical Failure (MTBCF)	N/A	160 hrs /	100 hrs	System MTBCF data will be collecte d during EMD testing.	160 hrs (Ch-2)
Spiral 1: SAR Capability (NIIRS X @Km)	N/A	160 Km /	120 Km	140 Km	160 Km (Ch-2)
Spiral 1: EO Spot (NIIRS X @ Km)	N/A	80 Km /	40 Km	50 Km	80 Km (Ch-2)
Spiral 1: IR (NIIRS X @ Km)	N/A	40 Km /	30 Km	35 Km	40 Km (Ch-2)

10a. Performance Characteristics (Cont'd):

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		Approved	Demon-	
	Development	Program (APB)	strated	Current
	Estimate (SAR)	Obj/Threshold	Perf	Estimate
Spiral 1: SIGINT	N/A	2-18 GHz/ 4-16 GHz	TBD	2-18 GHz (Ch-2)
(Frequency Range)				
Spiral 1: Mission	N/A	10 hrs / 12 hrs	>12	10 hrs (Ch-2)
Planning			hours	
Spiral 1: AV Power	N/A	10 KVa / 8 KVa	10 KVa	10 KVa (Ch-2)
Spiral 2: SAR	N/A	200 Km / 160 Km	140 Km	200 Km (Ch-2)
Capability				
(NIIRS X @Km)				
Spiral 2: EO Spot	N/A	160 Km / 80 Km	50 Km	160 Km (Ch-2)
(NIIRS X @ Km)				
Spiral 2: IR	N/A	60 Km / 30 Km	35 Km	60 Km (Ch-2)
(NIIRS X @ Km)				
Spiral 2: SIGINT	N/A	.03-18 / 1-16 GHz	TBD	.03-18 (Ch-2)
(Frequency Range)		GHz /		GHz
Spiral 2: Mission	N/A	10 hrs / 12 hrs	>12	10 hrs (Ch-2)
Planning			hours	
Spiral 2: AV Power	N/A	25 KVa / 22 KVa	10 KVa	25 KVa (Ch-2)

Some performance items were truncated. Truncated text for the following characteristics follows:

Spiral 1 Endurance: "...to the launch base with appropriate fuel reserves IAW Fir Force directives."

Spiral 1 Aerospace Coordination: "...congested airspace over densely populated areas are not anticipated."

Spiral 1 Mission Execution: "...The system has also demonstrated real-timne sensor re-tasking, to include rapid re-visit and "cued" response to a target in a larger, lower resolution image."

Global Hawk, December 31, 2001

10b. Performance Characteristics (Cont'd):

b. Current Change Explanations - (Ch-1) These performance parameters are no longer being tracked by the program office.

(Ch-2) These performance parameters were approved at the 21 March 2001 Interim Program Review and have been added since the previous SAR.

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

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	840.4	2093.9	2093.9
	Procurement	3484.4	3757.9	3757.9
	Non-recurring	(13.7)		(164.0)
	Recurring	(3072.8)		(3197.0)
	Total Flyaway	(3086.5)		(3361.0)
	Other Weapon Sys	(124.8)		(40.5)
	Peculiar Support	(48.6)		(46.5)
	Initial Spares	(224.5)		(309.9)
	Construction (MILCON)	25.5	125.0	125.0
	Acquisition Q&M	0.0	0.0	0.0
	Total FY 2000 Base-Year \$	4350.3	5976.8	5976.8
	Escalation	1043.7	869.8	869.8
	Development (RDT&E)	(65.8)	(217.1)	(217.1)
	Procurement	(975.4)	(631.0)	(631.0)
	Construction (MILCON)	(2.5)	(21.7)	(21.7)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	5394.0	6846.6	6846.6

Notes:

The Program Manager's current estimate reflects the approved FY03 PB plus FY01 supplemental (SIGINT - \$14M) and Cost of War plus-up in FY03 (SIGINT - \$5M & Survivability Suite - \$30M).

The Global Hawk procurement includes 51 A/Vs and the associated Ground Stations (10 LREs and 10 MCEs). The Global Hawk system is defined as costs for the A/Vs and Ground Stations. ACTD sunk costs (FY00 and prior years) are excluded from the numbers and computations since they aren't included in the APB values.

ACTD test units were purchased with ACTD sunk cost funds in FY00 and earlier. Two ACTD A/Vs built with FY00 and later funds, were not included.

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

b. Quantity	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	N/A	N/A	N/A
Procurement	63	51	51
Total	63	51	51

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

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	UCR	Current	
	Baseline	Estimate	Percent
	(MAR 2002 APB) (Dec	2001 SAR)	Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	5976.8	5976.8	
(2) Quantity	51	51	
(3) Unit Cost	117.192	117.192	0.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	3757. 9	3757.9	
(2) Quantity	51	51	
(3) Unit Cost	73.684	73.684	0.00

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	906.2	4459.8	28.0	5394.0
Previous Changes:	<u> </u>			
Economic	+3.9	+66.1	+0.1	+70.1
Quantity	-	-	-	
Schedule	-	-	-	- 1
Engineering	-	-	-	-
Estimating	+84.6	-39.8	-8.1	+36.7
Other	-	-		_
Support	-	-5.3	-	-5.3
Subtotal	+88.5	+21.0	-8.0	+101.5
Current Changes:				_
Economic	-4.6	-122.6	-0.2	-127.4
Quantity		-650.5	-	-650.5
Schedule	+198.3	-1275.4	-	-1077.1
Engineering	+1166.6	+1663.4	+117.0	+2947.0
Estimating	-68.4	+289.2	+9.9	+230.7
Other	-	-	_	-
Support	+24.4	+4.0	-	+28.4
Subtotal	+1316.3	-91.9	+126.7	+1351.1
Total Changes	+1404.8	-70.9	+118.7	+1452.6
Current Estimate	2311.0	4388.9	146,7	6846.6

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	-	-	-	-
Schedule	-	_	-	-
Engineering	-	-	-	-
Estimating	+81.4	-12.2	-7.5	+61.7
Other	~	-	-	-
Support	-	-17.7	-	-17.7
Subtotal	+81.4	-29.9	-7.5	+44.0
Current Changes:				
Quantity	-	-454.0	-	-454.0
Schedule	+163.4	-903.0	-	-739.6
Engineering	+1049.9	+1408.9	+98.3	+2557.1
Estimating	-64.4	+234.8	+8.7	+179.1
Other	-		-	
Support	+23.2	+16.7		+39.9
Subtotal	+1172.1	+303.4	+107.0	+1582.5
Total Changes	+1253.5	+273.5	+99.5	+1626.5
Current Estimate	2093.9	3757.9	125.0	5976.8

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

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b. Current Change Explanations --(Dollars in Millions) Base-Year Then-Year (1) RDT&E Revised escalation rates (Economic) N/A -4.6 Extension of EMD program from FY07 to FY11 +163.4+198.3and net impact of accelerating some efforts and delaying others (Schedule) Estimate updates for actuals, contract -64.4 -68.4 negotiation, overhead rate changes, etc. (Estimating) Additional requirements and capabilities +1049.9+1166.6 added to the program per current direction (Engineering) Additional support requirements for data & +23.2 +24.4 training (Support) +1172.1+1316.3RDT&E Subtotal (2)Procurement N/A Revised escalation rates (Economic) -122.6 -650.5 Reduction in Air Vehicle Quantities by 12 -454.0 from 63 to 51 (Quantity) Acceleration of buy profile per current -903.0 -1275.4direction (deletes 9-years of production program) (Schedule) Additional requirements and capabilities +1408.9 +1663.4 added to the program per current direction (Engineering) Changes due to estimate updates and overhead +234.8+289.2rate changes (Estimating) Changes to the support elements due to +16.7 +4.0 program acceleration, additional capabilities, etc. (Support) +303.4 -91.9 Procurement Subtotal (3) MILCON +98.3 +117.0 Additional requirements for concurrent operations (U-2 and Global Hawk). (Engineering) -0.2 Revised escalation rates (Economic) N/A Changes due to estimate updates. (Estimating) +8.7 +9.9 +107.0 +126.7 MILCON Subtotal

Global Hawk, December 31, 2001

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

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

<u>.</u>

PAUC		Changes							
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
85.62	-1.12	+7.40	-21.12	+57.78	+5.24		+0.453	+48.63	134.25

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC				Chan	ges				PUC
Dev Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
70.79	-1.11	+3.90	~25.01	+32.62	+4.89		-0.025	+15.27	86.06

c. Schedule, Cost, and Quantity History

· · · · · · · · · · · · · · · · · · ·	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	FEB 2001	N/A	FEB 2001
Milestone III	N/A	JAN 2011	N/A	N/A
IOC	N/A	SEP 2005	N/A	SEP 2005
Total Cost	N/A	5394.0	N/A	6846.6
Total Quantity	N/A	63	N/A	51
Prog Acq Unit Cost	N/A	85.6	N/A	134.3

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

a. RDT&E	Initial	Contract P	rice
Global Hawk EMD:	Target	Ceiling	<u>Qty</u>
Northrop Grumman - RAC, San Diego CA F33657-01-C-4600, CPAF Award: March 15, 2001 Definitized: January 22, 2002	\$41.5	\$41.5	0
Current Contract Price Target <u>Ceiling Oty</u> \$94.4 \$94.4 0	Estimated F <u>Contractor</u> \$94.4	rice At Com Progra	pletion m Manager \$94.4

Global Hawk, December 31, 2001

15a. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$\$	\$
Net Change	\$	\$

Explanation of Change:

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This is a newly definitized contract and initial cost and schedule performance reports have not been received.

b. Procurement <u>GH Procurement:</u> Northrop Grumman - BAC San Diego Ch	Initial <u>Target</u>	Contract P <u>Ceiling</u>	rice <u>Qty</u>
F33657-01-C-4601, FPIF Award: May 31, 2001	\$20.5	\$20.5	0
Definitized: May 31, 2001			
Current Contract Price	Estimated P	rice At Com	pletion
Target Ceiling Qty \$20.5 \$20.5 0	Contractor \$20.5	Progra	m Manager \$20.5
Previous Cumulative Variances Cumulative Variances To Date Net Change	Cost Variance \$ \$ \$	e <u>Schedule</u> \$ \$ \$	Variance

Explanation of Change:

This is a newly definitized contract and initial cost and schedule performance reports have not been received.

Global Hawk, December 31, 2001

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

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

Appropriation	Prior <u>Years</u> (FY01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-11)	<u>Total</u>
RDT&E	132.8	199.8	341.0	1637.4	2311.0
Procurement	21.0	113.1	170.8	4084.0	4388.9
MILCON	-	-	11.7	135.0	146.7
O&M	-	-		_	***
Total	153.8	312.9	523.5	5856.4	6846.6

b. Annual Summary -- Global Hawk

•. •

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

		Flyaway FY 2000	Flyaway FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001			129.3	129.3	132.8
2002			191.6	191.6	199.8
2003			322.3	322.3	341.0
2004			325.7	325.7	350.8
2005			270.5	270.5	296.5
2006			161.1	161.1	180.0
2007			194.6	194.6	221.4
2008			194.5	194.5	225.6
2009			194.5	194.5	229.9
2010			68.0	68.0	81.9
2011			41.8	41.8	51.3
Subtotal			2093.9	2093.9	2311.0

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001			20.2	20.2	21.0
2002	2	13.6	93.5	107.1	113.1
2003	3	14.2	119.5	158.3	169.9
2004	4	7.4	180.5	214.7	234.7
2005	4	19.9	186.2	239.1	266.1
2006	4	23.8	251.7	315.9	358.2
2007	10	40.7	615.7	713.4	824.7
2008	6	13.4	518.4	588.3	693.0
2009	6	13.4	484.1	564.7	677.6
2010	6	8.8	422.6	472.4	577.8

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

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Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2011	6	8.8	304.6	361.5	450.4
Subtotal	51	164.0	3197.0	3755.6	4386.5

FY2001 recurring flyaway includes advance procurement for 2 A/V's to be purchased in FY02.

Appropriation: 3080 - Other Procurement, Air Force

Riccol.		Flyaway FY 2000	Flyaway FY 2000	Total	Total
FISCAL	_	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003				0.9	0.9
2004				0.2	0.2
2005				0.3	0.3
2006				0.3	0.3
2007					
2008					
2009					
2010				0.6	0.7
Subtotal				2.3	2.4

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 \$
2001					
2002					
2003				10.9	11.7
2004				22.9	25.0
2005				22.4	25.0
2006					
2007					
2008					
2009					
2010				40.8	50.0
2011				28.0	35.0
Subtotal				125.0	146.7

Global Hawk, December 31, 2001

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

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		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	51	164.0	5290.9	5976.8	6846.6

17. Delivery/Expenditure Information:

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

Percent Total Program Quantitics Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 122.7

Percent Total Program Expended: 1.8%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

1. Documented IPR Position dated March 2002.

2. Global Hawk is designed to be forward based at 3 operating locations around the world and home based at a single main operating base (MOB) - Beale AFB.

3. Support planning concept of 2-level maintenance. Organizational maintenance will be performed by mixed force & depot maintenance by the contractor.

4. The prime contractor will provide supply support as part of his TSSPR responsibilities including normal depot services, component repair/overhaul and item management.

5. Steady state begins in 2010 and continues through 2030.

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

Cost Element	Global Hawk Steady State (SS) Costs - 1st year SS	Antecedent System
Mission Pay & Allowances	67.1	N/A
Unit Level Consumption	17.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	69.8	N/A
Sustaining Support	99.9	N/A
Indirect Costs	29.0	N/A

Global Hawk, December 31, 2001

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

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

······································	Global Hawk Steady State (SS)	Antecedent System
Cost Element	Costs - 1st year SS	9
Total	282.8	N/A

Total O&S Cost	Global Hawk	Antecedent System
BY\$ (In Millions)	6248.6	N/A
TY\$ (In Millions)	10233.8	N/A

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A-8 COMANCHE

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 2001

SUBJECT PAGE Cover Sheet Information 1 Mission and Description 2 Executive Summary 2 Threshold Breaches 3 Schedule 4 Performance Characteristics 5 Total Program Cost and Quantity 6 Unit Cost Summary 7 Cost Variance Analysis 8 Unit Cost and Other History 10 Contract Information 11 Program Funding Summary 12 Delivery/Expenditure Information 15 Operating and Support Costs 15

INDEX

1. (U) Designation and Nomenclature (Popular Name): Comanche Program (RAH-66)

2. (U) DoD Component: Army

Dooland Lay on: X3

3. (U) Responsible Office and Telephone Number:

Comanche Program Manager's Office ATTN: SFAE-AV-RAH, Building 5681 Redstone Arsenal Huntsville, AL 35898-5000

COL Robert P. Birmingham Assigned: September 15, 2000 DSN 897-0846; COMM 256-313-0846 Robert.Birmingham@comanche.redstone .army.mll

4. (U) Program Elements/Procurement Line Items: RDT&E: (0) PE 63220 Project D325 CLE/ RED PE 64216 Project DC72 PE 64223 Project D327, D397, DC72 (0)FOR OPENSION LOODN (U) PE 64810 Project D327, DC72 (U) pr Scutt **PROCUREMENT:** MAR 1 8 1192 APPN 2031 ICN A08300 (Army) (0) DIRECTURATE MILCON: HELL CARDELEY PE 10019484 (U) DEFARIMENT OF DEFARSE (U) NOTE: PE 64810 Project D327/DC72 (FY 88 Only)

Guide, January 30, 2000 Classified by: Comanche Section Downgrade instruction none

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Comanche (RAH-66), December 31, 2001

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5. (U) References:

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SAR Baseline (Development Estimate): (U) DAE Approved Acquisition Program Baseline (APB) dated July 7, 2000.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated July 7, 2000.

6. (U) Mission and Description:

(U) This program provides for the development of the RAH-56 Comanche. The Army requires an aviation system capable of performing aerial reconnaissance on the modern battlefield. Combat lessons learned and mission analysis have repeatedly supported a critical combat requirement for an aviation reconnaissance system capable of 24 hour combat operations, responsive to the battlefield commander in night and adverse weather conditions and able to survive on the 21st century battlefield. This air cavalry helicopter system will be self-deployable with highly improved sustainability and availability to support continuous combat operations in any world trouble spot. Comanche will be able to find the enemy with a low probability of self-detection and either engage or hand-off the target based on the battle commander's decision. The air cavalry system will be able to operate effectively in the close, deep or rear battles. Comanche incorporates emerging technologies to provide a leap-ahead air cavalry system, field a world-wide deployable, air cavalry reconnaissance helicopter; operate with minimal logistical burden, serve as the command and control node for the commander to win the knowledge war. This system will provide three dimensional battlefield situational awareness with greater depth and breadth than currently possible. This picture of the battlefield will be overlaid on digital maps that consolidate all real time data. The system will display friend or foe discrimination and will avoid detection and survive by reducing signature and incorporating low observable technology. The Comanche helicopter will replace the current light fleet of tactically obsolescent AH-1, OH-6 and OH-58A/C/D helicopters. The Comanche system will be integrated with the Army aviation force structure to complement the AH-64 Apache helicopter until it eventually replaces the AH-64.

7. (U) Executive Summary:

(U) Development of the RAH-66 Comanche was initiated in 1982 to replace the current light helicopter fleet. In 1991, the Boeing Sikorsky team was announced the winner of the competitive Comanche air vehicle program and was awarded a contract to proceed with the Demonstration/Validation (Dem/Val) phase. The Dem/Val program was restructured numerous times due to programmatic changes. The first flight of the prototype aircraft occurred in January 1996. The Dem/Val Program was successfully completed in June 2000.

In an Acquisition Decision Memorandum dated April 7, 2000, the Comanche Program received approval to enter into Engineering and Manufacturing Development (EMD). A Weapon System Requirements Preliminary Design Review (PDR) was successfully completed in July 2001. An update to the Boeing Sikorsky Estimate at Completion was submitted in September 2001 indicating cost growth. A

*** UNCLASSIFIED *** Comanche (RAH-66), December 31, 2001

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

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program assessment of alternatives immediately began to address not only cost growth but also risk reduction, emerging Objective Force requirements, and new DOD 5000 guidance for spiral development (blocking strategy). Aircraft 1 final flight test occurred in January 2002. Aircraft 2, with the initial MEP configuration of the Helmet and Pilotage systems, will begin flight test in FY02.

The Army is currently assessing EMD Program Alternatives which will impact the IOC date and result in a DAB Review, tentatively scheduled for third quarter FY02. Current alternatives under review will require additional APA to RDTE zero sum reprogramming, over and above the estimates presented, and will require an additional one year shift of production start.

8. (U) Threshold Breaches:

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

	Item		
Schedu	le	Yes	
Perfor	mance	No	
Cost -	- RDT&E	Yes	
-	- Procurement	No	
-	- MILCON	No	
-	- 0&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	ŇO
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

The Comarche Program Manager's Office review of the EMD program cost and schedule performance risk has resulted in breaches to the Approved Acquisition Program Baseline (APB) dated 7 July 2000. The review is currently in process. A revised APB will be submitted as part of a proposed third quarter FY02 DAB Review.

Comanche (RAH-66), December 31, 2001

9. (U) Schedule:

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a. Milestones --

	Deve]	lopment	Appi	roved	Curi	rent
	Estimat	e (SAR)	Progra	am (APB)	Esti	imate
T800 Engine FSD Contract Award	JUL	1985	ਹਾਸ	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	OCT	1988	OCT	1988	OCT	1988
Contracts						
TB00 FSD Downselection	OCT	1988	OCT	1988	OCT	1988
USD(A) Program Review	JAN	1991	JAN	1991	JAN	1991
Award Dem/Val Prototype Phase Contrac	t 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	JUN	2003	JUN	2003 (Ch-1)
Complete	JUL	2003	JUL	2003	JUL	2003 (Ch-1)
LUT						
Start	APR	2005	APR	2005	AUG	2006(Ch-2)
Complete	MAY	2005	MAY	2005	OCT	2006 (Ch-2)
LRIP Program Review (IPR)/Contract Av	vardJUN	2005	JUN	2005	DEC	2006 (Ch-2)
IOTEE						
Start	JUN	2006	JUN	2006	DEC	2008(Ch-2)
Complete	OCT	2006	OCT	2006	APR	2009(Ch-2)
Production Contract	DEC	2006	DEC	2006	SEP	2009(Ch-2)
Milestone III	DEC	2006	DEC	2006	JUN	2009(Ch-2)
IOC	DEC	2006	DEC	2006	SEP	2009(Ch-2)
Depot Support Date	DEC	2006	DEC	2006	SEP	2009 (Ch-2)
Organic Support Date	DEC	2009	DEC	2009	SEP	2012(Ch · 2)

b. Current Change Explanations --

 (U) (Ch-1) The current estimates for the Customer Test III were revised to align with Milestone II schedule.
 Customer Test III Start from March 2003 to June 2003
 Customer Test III Complete from April 2003 to July 2003.

(Ch-2) The following schedule estimates are based on a restructured EMD program that has not yet been approved by DA or DOD. The following milestones have changed. LUT Start from March 2005 to August 2006 LUT Complete from May 2005 to October 2006 LRIP Program Review (IPR)/Contract Award from June 2005 to December 2006 IOT&E Start from June 2006 to December 2008 IOT&E Complete from October 2006 to April 2009 Milestone III from December 2006 to June 2009 IOC from December 2006 to September 2009 Depot Support Date from December 2006 to September 2009 Production Contract from December 2006 to September 2009 Organic Support Date from December 2009 to September 2012

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Comanche (RAH-66), December 31, 2001

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

10. (U) Performance Characteristics:

a. Performance --

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	Development Estimate (SAR)	A Prog Obj/	pproved (APB) Threshold	Demon- strated <u>Perf</u>	Current Estimate
Flight Performance (Primary Mission): RAH					
Vertical Rate of Climb (VROC) (ft/min (FPM) @4000 ft, 95 F & PMGW & 100% MRP)	750	750	/ 500	510	510
Signature Levels: Radar Cross-Section (RCS) (dBsm)	(b)(1)				AMENDE
Exhaust System (watts/steradian)					TOE
Night Hot Target					This AMERICA
Classification Range					
(km)	100				AND Y
Night larger	and the second second				W Same
Identification (km)					
Digitally Exchange Battlefield Infor- mation to Joint 6	TBD	TBD	/ Link 16	TBD	See Connecti vity Chart
Multifunctional Launch Stations ATGM, ATAM, Rockets (Internal)/ Turret Gun System	6/1	6/1	/ 6/1	TBD	6/1
Operational					
Availability (Ao)					
(percent):	70	78	/ 75	TBD	78
Wartime	10	10	1 1 5		
Mean Time Between Essential Main- tenance Actions (MTBEMA) (hrs)	4.5	4.5	/ 4.5	TBD	4.5
Maintainability: Mean Time To Repair (MTTR) (hrs)				TBD	.86

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

Approved Demon-Development Program (APB) strated Current Estimate (SAR) Obj/Threshold Perf Estimate Mean Time Between 8.5 8.5 / 8.5 TBD 8.5 Mission Affecting 1 Failure (MTBMAF) (hrs) / 2.6 TBD Maintenance Manhours 2.6 2.6 2.6 per flight hr (MMH/FH) @ User Level

b. Current Change Explanations -- None

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

		Development	Approved	Current
а.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	8474.1	8474.1	10183.6
	Procurement	29093.6	29093.6	28916.2
	Recurring Flyaway	(21923.7)		(21975.1)
	Nonrecurring Flyaway	(314.2)		(540.3)
	Total Flyaway	(22237.9)		(22515.4)
	Other Wpn System Costs	(4917.8)		(4376.7)
	Peculiar Support	(168.0)		(169.0)
	Initial Spares	(1769.9)		(1855.1)
	Construction (MILCON)	368.4	368.4	77.0
	Acquisition O&M	0.0	0.0	0.0
	Total PY 2000 Base-Year \$	37936.1	37936.1	39176.8
	Escalation	10198.2	10198.2	8728.8
	Development (RDT&E)	(-220.3)	(-220.3)	(-25.0)
	Procurement	(10264.6)	(10264.6)	(8730.1)
	Construction (MILCON)	(153.9)	(153.9)	(23.7)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	48134.3	48134.3	47905.6

(U) Note: Development RDTE aircraft excludes 2 Demonstration Validation Prototype (DVP) aircraft and 5 EMD (7 total) that are not considered fully configured. Current estimate of 6 RDTE aircraft are currently being assessed for possible reduction as part of ongoing review of EMD alternatives.

Note: These estimates reflect current APA to RDTE zero sum reprogrammings to date. EMD alternatives currently under review by the Army will require additional zero sum reprogramming within Comanche funds.

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

b. (U) Quantity	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	8	8	6
Procurement	1205	1205	1207
Total	1213	1213	1213

Note: Excludes 2 RDT&E prototypes from the SAR Baseline and 7 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales -- None.

d. (U) Nuclear Costs -- None.

12. (U) Unit Cost Summary:

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		UCR Baseline (JUL 2000 APB)(Dec	Current Estimate 2001 SAR)	Percent Change
a.	(U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 2000 BY\$)	37936.1	39176.8	
	(2) Quantity	1213	1213	
	(3) Unit Cost	31.275	32.297	+3.27
b.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 2000 BY\$)	29093.6	28916.2	
	(2) Quantity	1205	1207	
	(3) Unit Cost	24.144	23.957	-0.77

(U) Note: These estimates reflect current APA to RDTE zero sum reprogrammings to date. EMD alternatives currently under review by the Army will require additional zero sum reprogramming within Comanche funds.

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	8253.8	39358.2	522.3	48134.3
Previous Changes:				
Economic	-	-	- 1	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	
Other	-	-	-	-
Support		-	-	
Subtotal	-	-	-	-
Current Changes:				
Economic	-7.4	-398.5	-1.1	-407.0
Quantity	-81.3	+44.2	-	-37.1
Schedule	+230.0	-858.8	-	-628.8
Engineering	+845.4	-	-	+845.4
Estimating	+894.4	+254.7	-420.5	+728.6
Other	-	-	-	-
Support	+23.7	-753.5	-	-729.8
Subtotal	+1904.8	-1711.9	-421.6	-228.7
Total Changes	+1904.8	-1711.9	-421.6	-228.7
Current Estimate	10158.6	37646.3	100.7	47905.6

(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	-	-	-	-
Schedule	-	-	-	~
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	
Current Changes:				
Quantity	-75.7	+29.4	-	-46.3
Schedule	+200.7	-	-	+200.7
Engineering	+759.2	-	-	+759.2
Estimating	+803.7	+248.1	-291.4	+760.4
Other	-	- 1	-	-
Support	+21.6	-454.9	-	-433.3
Subtotal	+1709.5	-177.4	-291.4	+1240.7
Total Changes	+1709.5	-177.4	-291.4	+1240.7
Current Estimate	10183.6	28916.2	77.0	39176.8

(U) Note: These estimates reflect current APA to RDTE zero sum reprogrammings to date. EMD alternatives currently under review by the Army will require

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

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additional zero sum reprogramming within Comanche funds.

b. (U) Current Change Explanations --

		(Dollars Base-Year	in Millions) Then-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-7.4
	Decrease (from 8 to 6) 2 Fully Configured RDT/E	-75.7	-81.3
	Enditems due to exploration of block		
	development strategy (Quantity)		
	Revised Schedule based on current assessment	+200.7	+230.0
	of EMD alternatives (Schedule)		
	Mission Equipment Package (MEP)	+476.7	+529.1
	ProductionizationChanges to Comanche		
	MEP due to Processor Obsolescence and changes		
	to new MBP architecture (Engineering)		
	SATCOM and Link 16 (Engineering)	+63.7	+70.1
	Weight Improvement Program (Engineering)	+70.2	+79.5
	High Frequency Radio (Engineering)	+32.9	+36.3
	Enhanced Position Location Recognition System (Engineering)	+35.8	+39.6
	UAV Level 4 Control (Engineering)	+79.9	+90.8
	Adjustment for Current and Prior Inflation. (Estimating)	+11.5	+9.6
	The Net of Undistributed Reductions (Estimating)	-10.6	-11.2
	The Net of Undistributed Reductions	+2.2	+2.4
	(Inflation) (Estimating)	71 6	
	(SEIR/STTR) (Estimating)	-31.0	-32.3
	Comanche Risk Reduction for conversion to Block Development Strategy (Estimating)	+842.5	+935.4
	Revised estimate to reflect prior execution (Estimating)	-10.3	-9.5
	Change in Support for Purchase of Spares (Support)	+21.6	+23.7
	(<u>-</u>)		
	RDT&E Subtotal	+1709.5	+1904.8
(2)	Procurement		5 A . B
	Economic adjustment for negative program change. (Economic)	N/A	+50./
	Total Quantity Variance associated with increase of 2 units. (Quantity)	+29.4	+44.2
	Acceleration of annual procurement buy profile.	0.0	-858.8
	Estimating revisions due to learning curves/quantity/rates (Estimating)	+248.1	+254.7

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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 Initial Spares due to Acceleration	+85.2	+51.7
of Program from 62/year to 96/year. (Support)	1	
Change in Peculiar Support (Support)	+1.0	-5.7
Change in Other Wpn System Costs due to	-541.1	-799.5
acceleration of program from 62/year to 96/year (Support)		
Revised escalation indices. (Economic)	N/A	-449.2
Procurement Subtotal	-177.4	-1711.9
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-6.6
Economic adjustment for negative program change. (Economic)	N/A	+5.5
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
Estimate revised to meet changes in field sites and requirements (Estimating)	-291.3	-420.4
MILCON Subtotal	-291.4	-421.6

(U) Note: These estimates reflect current APA to RDTE zero sum reprogrammings to date. EMD alternatives currently under review by the Army will require additional zero sum reprogramming within Comanche funds.

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

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

PAUC	Changes								PAUC
Dev Est	k k								Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
39.68	-0.336	-0.031	-0.518	+0.697	+0.601		-0.602	-0.189	39.49

Current SAR Baseline to Current Estimate

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

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

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est	t k							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
32.66	-0.330	-0.017	-0.712		+0.211		-0.624	-1.47	31.19

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate (PE)	Estimate(DE)	Estimate(PdE)	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	JUN 2009
IOC	N/A	DEC 2006	N/A	SEP 2009
Total Cost	2130.9	48134.3	0.0	47905.6
Total Quantity	N/A	1213	0	1213
Prog Acq Unit Cost	N/A	39.7	0.0	39.5

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

a. RDT&E --

		Initial	Contract Pri	ice
(U) Comanche EMD:		Target	Ceiling	Qty
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 Pr	rice At Comp]	letion
Target Ceiling	Qty	Contractor	Program	Manager
\$3167.2 N/A	13	\$3526.6	\$362	28.9
		Cost Variance	e Schedule Va	iriance
Previous Cumulative Variances		\$0.0	\$0.0)
Cumulative Variances To Date	(11/30/01)	\$-58.8	\$-25.6	5
Net Change		\$-58.8	\$-25.6	5

Explanation of Change:

(U) Cost performance has decreased due to higher than anticipated costs in Airframe and Mission Equipment Package. Schedule performance has similarly decreased due primarily to late ramping up of staff in Airframe and Mission Equipment Package. Integration complexity and risk was much greater than

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

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estimated. Both PMO and Contractor Estimates at Completion do not include schedule extension and additional work required for transition to production.

Quantities reported on this contract consist of 8 fully configured and 5 test units.

	Initial	Contract	Price
(U) EMD SUPPORT PROGRAM:	Target	Ceiling	Qty
LHTEC, INDIANAPOLIS, IN			
DAAH23-02-C-0122, CPFF	\$130.2	N/A	0
Award: January 31, 2002			
Definitized: January 31, 2002			

Current Target	Contract Pri- Ceiling	ce <u>Qty</u>	Estimated Pric Contractor	e At Completion Program Manager
\$130.2	N/A	0	\$	\$
			Cost Va <u>riance</u> S	chedule Variance
Previous Cumul	ative Varian	ces	\$	\$
Cumulative Var	iances To Da	te	\$	\$
Net Change	1		\$	\$

Explanation of Change:

(U) This is the initial report for this contract.

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

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

Appropriation	Prior <u>Years</u> (FY84-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-23)	<u>Total</u>
RDT&E	5230.2	781.3	910.2	3236.9	10158.6
Procurement	_	-	-	37646.3	37646.3
MILCON	-	10.8	-	89.9	100.7
O&M		-	-	-	~
Total	5230.2	792.1	910.2	40973.1	47905.6

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

b. Annual Summary -- COMANCHE

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

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				1.5	1.0
1985				100.9	71.3
1986				147.2	107.0
1987				183.6	137.6
1988				163.0	127.1
1989				218.2	177.0
1990				319.2	268.7
1991				386.4	337.6
1992				567.8	507.7
1993				428.6	392.3
1994				391.3	364.8
1995				499.4	474.6
1996				293.7	284.1
1997				332.4	325.2
1998				266.2	262.6
1999				352.9	352.2
2000				442.6	448.7
2001				573.1	590.7
2002				746.5	781.3
2003				855.0	910.2
2004				926.3	1003.6
2005				855.0	943.7
2006				402.9	453.1
2007				729.9	836.5
ubtotal	6			10183.6	10158.6

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 \$
2005				422.8	469.9
2006	18	213.2	691.7	912.3	1033.3
2007	24	12.1	732.1	1504.3	1736.1
2008	36	52.9	1074.0	1741.4	2047.9
2009	48	95.6	1195.3	1882.0	2255.4
2010	72	107.8	1558.9	2148.4	2623.4
2011	96	34.4	1890.5	2453.7	3053.2
2012	96	24.3	1775.9	2314.3	2934.5
2013	96		1688.6	2044.9	2642.2
2014	96		1628.9	1969.5	2593.0

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

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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 \$
2015	96		1581.4	1923.0	2579.9
2016	96		1542.3	1878.9	2568.7
2017	96		1509.3	1841.4	2565.2
2018	96		1480.6	1794.1	2546.9
2019	96		1455.5	1751.8	2534.0
2020	96		1433.1	1555.9	2293.4
2021	49		737.0	745.2	1119.3
2022				16.3	25.0
2023				16.0	25.0
Subtotal	1207	540.3	21975.1	28916.2	37646.3

Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				10.1	10.8
2003					
2004					
2005					
2006					
2007					
2008				8.6	10.3
2009				2.5	3.0
2010				3.6	4.5
2011				4.9	6.2
2012				4.9	6.3
2013	TABL			5.0	6.5
2014				4.9	6.6
2015				4.9	6.7
2016				5.0	6.9
2017				5.0	7.0
2018				5.0	7.2
2019				5.0	7.3
2020				5.0	7.5
2021				2.6	3.9
Subtotal				77.0	100.7

Plan

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Actual

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

		Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1213	540.3	21975.1	39176.8	47905.6

17. (U) Delivery/Expenditure Information:

		·		_	
	ТТ		1107100	T	Date
a. 1			IVELIES		
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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): \$ 5190.3

(U) Percent Total Program Expended: 10.8%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --Comanche is designed for two levels of maintenance: user level (similar to the current fleet AVUM level) and depot level. A majority of user level maintenance tasks will be repair by replacement. This will be performed primarily by Military Personnel. Depot maintenance tasks will include component repair and major aircraft overhaul. Current program concept transitions from Interim Contractor Support (ICS) to complete organic depot support five years after IOC. 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. The distribution plan fields 1213 Comanche aircraft in accordance with Total Army Analysis (TAA) 05 and the 1999 Aviation Force Structure. Tables of Organization and Equipment (TOE) requirements are met with 973 aircraft. The remaining 240 aircraft are fielded to training, Aviation Technical Test Center (ATTC), and float/attrition accounts. Comanche will be integrated into the following types of TOE units: Corps Airborne Division AHBs and cavalry squadrons, Assault Division AHBs and reconnaissance squadrons, Heavy Division cavalry squadrons and AHBs, Light Division AHBs and cavalry squadrons, Armored Cavalry Regiment Regimental Aviation Squadron, and Special Operations Units. The O&S cost for the comparative systems shown in the second column is derived from the Comanche Milestone II Analysis of Alternatives (AoA). This column represents the weighted average cost of operating and maintaining a fleet of 855 OH-58D Kiowa Warrior, 342 AH-64D Apache and 16 AH-6J SOA helicopters if Comanche is not fielded. Both O&S cost estimates include all MPA, O&M and DBOF funded costs throughout each aircraft's 20 year life cycle. They exclude OSD O&S cost elements that are APA and AMMO funded such as 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 Reparables, and POL. Unit Level

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

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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 Post Production Software Support (after Production Phase), Program Management, Replacement Training, and O&M Funded Environmental Cost. Sustaining support excludes Post Production Software Support during the Production Phase and Modifications which are Procurement funded.

Total Operating and Support Costs for the Comanche Program are estimated to be \$38546.9 in then year \$M and 19307.8 in Base Year \$M (FY 00).

Operating and Support Costs will be assessed during ongoing reviews of EMD alternatives.

	COMANCHE	AH-1, OH-6 and
	Average Annual Cost	OH-58A/C Helicopters
Cost Element		_
Mission Pay & Allowances	375.8	490.7
Unit Level Consumption	337.8	361.3
Intermediate Maintenance	0.0	0.0
Depot Maintenance	13.0	33.4
Contractor Support	12.4	32.5
Sustaining Support	24.0	0.0
Indirect Costs	32.8	12.8
Other	0.0	0.0
	N/A	N/A
Total	795.8	930.7

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

Total O&S Cost	COMANCHE	AH-1, OH-6 and
BY\$ (In Millions)	19307.8	22568.5
TY\$ (In Millions)	42401.5	45056.7

Report Creation Date: 03/27/2002 7:53:23 AM

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A-17 MLRS UPGRADE

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: MLRS Upgrade Program

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- 1. (U) Designation and Nomenclature (Popular Name): MLRS Upgrade Program
- 2. (U) DoD Component: Army

Classified D, ML Downgrade instance Declastry on: X3

 3. (U) Responsible Office and Telephone Number:

 Project Manager
 COL James C. Naudain

 Precision Fires Rocket & Missile Sys Assigned: June 8, 2001

 ATTN: SFAE-MSL-PF
 DSN 746-1195; COMM 256-876-1195

 Redstone Arsenal, AL 35898-5700
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4. (U) Program Elements/Procurement Line Items:

 RDT4E:

 (U)
 PE 63778
 Project 093, 784

 PROCUREMENT:
 (U)
 APPN 2032
 ICN C65402 (Army)

 (U)
 APPN 2032
 ICN C65900 (Army)

 (U)
 APPN 2032
 ICN CA0257 (Army)

 (U)
 APPN 2032
 ICN CA65404 (Army)

 (U)
 APPN 2032
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5. (U) References:

Launcher

SAR Baseline (Development Estimate): (U) AAE Approved Acquisition Baseline (APB) dated March 23, 1998.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated February 20, 2002.

Tactical Rocket

SAR Baseline (Development Estimate): (U) AAE Approved Acquisition Baseline (APB) dated March 23, 1998.

Approved Program: (U) AAE Approved Acquisition Program Baseline (APB) dated February 20, 2002.

6. (U) Mission and Description:

(U) The Multiple Launch Rocket System (MLRS) Upgrade program is comprised of the MLRS M270A1 Improved launcher (M270A1) Program, the Guided MLRS (GMLRS) Rocket Program, and the Extended Range (ER) Rocket Program. The M270A1 program is scheduled for a Full Rate Production decision on March 26, 2002. The GMLRS Engineering Manufacturing Development contract is 85% complete. The ER program has completed production. The MLRS Upgrade Program satisfies the need for a non-nuclear, all-weather, indirect, area fire weapon system to strike counterfire, air defense, armored formations, and other high-payoff targets at all depths of the tactical battlefield. First Unit Equipped (FUE) of the basic system occurred in 1983. Primary missions of MLRS include the suppression, neutralization and destruction of threat fire support and forward area air defense targets. The MLRS launcher is a full-tracked, self-propelled launcher/loader designed to launch the entire MLRS Family of Munitions (MFOM) tactical rocket/missile variants. The M270A1 recapitalizes the M270 basic launcher and then upgrades the fire control system and the launcher mechanical system. The Improved Fire Control System (IFCS) and the Improved Launcher Mechanical System (ILMS) are modifications to the launch platform to produce the upgraded launcher. These two synchronized programs are the centerpieces of the next generation of the MLRS Weapon System. In concert with the application of these kits, the remanufacture of all carrier vehicles will convert the MLRS launcher fleet to the M270Al. The IFCS corrects present and future supportability problems in the current MLRS Fire Control System resulting from electronic component obsolescence in the existing design. The effort results in reduced operation and support costs and will provide growth capabilities for existing and future MFOM weapon systems. The ILMS decreases the stow to aim point time line, enhances effectiveness in engaging and supporting the force, and increases MLRS platform survivability.

The system has demonstrated a 60% reduction in time on the firing point, and

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

the capability of firing the first round within minutes of receiving a fire mission. It also has demonstrated the capability to fire all of the precision-guided munitions in the MFOM.

Simultaneously, MLRS rockets evolved as a result of the need for greater range and technological advances making guidance feasible. The ER-MLRS rocket enhances the capability of the existing rocket inventory by providing improvements in range. The Guided Multiple Launch Rocket System (GMLRS) will provide longer range and improve accuracy with a lower submunition hazardous dud rate. Utilizing various components of the ER-MLRS, GMLRS will transform the ER-MLRS free flight rocket into a missile through the incorporation of a guidance and control package. GMLRS will provide greater accuracy, reduce the number of rockets required to defeat targets at maximum range, reduce the number of launchers required per fire mission, and directly contribute to reducing the logistics burden.

7. (U) Executive Summary:

(U) Launcher

The Army Acquisition Executive approved a revised APB incorporating the Army's decision reducing the launcher quantities from 857 to 327 in February 2002.

The Fort Sill Fire Support Test Directorate, Operational Test Command, conducted the Multiple Launch Rocket System M270A1 Improved Launcher Extended System Integration Test (ESIT-2) record test at Fort Sill, OK in April 2001. The purpose of the ESIT-2 test was to assess functionality of the M270A1 launcher when operated by soldiers in an operational field environment and to determine if the Initial Operational Test and Evaluation (IOT&E) entrance criteria have been met. During the ESIT-2 record test, the M270A1 launcher met the entrance criteria for IOTE and dry fired all of the MFOM variants. Furthermore, the test demonstrated resolution of all of the launcher performance issues identified in the Deputy Under Secretary of the Army, Operations Research, memorandum dated June 23, 1999.

The Fort Sill Fire Support Test Directorate, Operational Test Command, in conjunction with the Army Test and Evaluation Center (ATEC) conducted the MLRS M270A1 Improved Launcher IOT&E from June 25 to October 10, 2001. The test was conducted with two phases: a ground phase conducted at Fort Sill, OK, and a flight phase conducted at White Sands Missile Range, New Mexico. The ground phase used a side-by-side methodology with an M270 platoon operating beside an M270A1 platoon. The ATEC System Evaluation Report (SER) assessed the system as suitable, effective, and survivable.

A software package (called the First Unit Equipped (FUE) software) was developed to correct the deficiencies noted during the IOTE and provide an improved man machine interface in the fire control system. The M270A1 FUE software and MLRS Pod Assembly (MLPA) trainer were demonstrated in a follow-on test in November, 2001.

On August 17, 2001, as part of the Army Recapitalization Review, the Vice Chief

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

of Staff of the Army approved the M270A1 as a Recapitalization Program and approved procurement of 327 M270A1 launchers. A Cost Analysis Brief with the new RECAP quantity of 327 was prepared by the Cost and Economic Analysis Center (CEAC) and approved by the Army Cost Review Board (CRB) to establish the approved Army Cost Position (ACP). A revised APB was submitted as part of the program evaluation to a Special ASARC held in December 2001 and approved by the Army Acquisition Executive, February 20, 2002.

On December 26, 2001, the Precision Fires Rockets and Missiles Systems Project Office (PFRMS) awarded the FY 02 M270Al Launcher production contract (LRIP 5) using Priced Based Acquisition Procedures. The award was for 35 US launchers and 10 South Korean FMS launchers, including spares and logistics support, for a total value of \$99.9M. The contract also contained an option for 6 additional launchers. A reprogramming action was approved by Congress to award the additional launchers. On February 14, 2002, the option was exercised. Sufficient savings were achieved by leveraging the FMS cases and outstanding negotiations that 41 US launchers were procured for the same amount budgeted in FY02 to procure 35 launchers. Lockheed Martin Missiles and Fire Control, Dallas (LMMFC) is the prime contractor.

Tactical Rockets

The GMLRS program was restructured in October 2000 due to development problems experienced by the previous guidance set subcontractor. Development is now on track for an April 2002 Critical Design Review (CDR). The program has successfully completed two ballistic flight tests and three of the six planned engineering design flight test missions.

A Special ASARC was conducted on December 6, 2001 during which the Acting Army Acquisition Executive and the Vice Chief of Staff of the Army reviewed the breach and initiated SECDEF certification procedures.

As of December 2001, the GMLRS System Development and Demonstration contract has experienced minimal cost and schedule variances, primarily due to delayed vendor hardware deliveries (schedule) and increased rates and factors (cost). The schedule problem is expected to recover by April 2002 with no impact to the System Development and Demonstration (SDD) schedule. The contractor's cost controls remain effective at identifying and resolving problem areas early.

8. (U) Threshold Breaches:

Launcher

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

Item			Breach	
Schee	Schedule			
Perfo	orma	ance	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: None.

Tactical Rocket

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

	Breach	
Sched	No	
Perfo	rmance	No
Cost	RDT&E	No
	Procurement	No
	MILCON	No
	O&M	No
	Program Acquisition Unit Cost (PAUC)	No
	Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

MLRS Upgrade Program, December 31, 2001

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

The Nunn-McCurdy breaches to APUC and PAUC are primarily due to increased design complexity to meet requirements, changes in acquisition strategy from a multi-year procurement to annual buys, funding decreases in FY 03 through FY 07 necessitating respective quantity reductions, contractor rate increases, and changes in cost methodology in Government Furnished Equipment submunition costs.

9. (U) Schedule:

Launcher

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a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
M270A1 ESIT	JUL 1998	JAN 1999	JAN 1999
Modified LRIP Review	OCT 1998	MAY 1998	MAY 1998
M270A1 Operational Test (OT)			
Start	JAN 1999	JUL 2001	AUG 2001(Ch-1)
Complete	MAY 1999	AUG 2001	OCT 2001(Ch-1)
MS III	AUG 1999	SEP 2001	MAR 2002(Ch-1)
FUE	SEP 2000	DEC 2001	MAR 2002(Ch-1)

(U) Acronyms:

ESIT - Extended System Integration Test
 FUE - First Unit Equipped
 LRIP - Low Rate Initial Production
 MS - Milestone
 ASARC - Army Systems Acquisition Review Council
 ADM - Acquisition Decision Memorandum

b. Current Change Explanations --(U) (Ch-1) DOT&E postponed start of OT from May 01 to Aug 01 and consequently delayed completion of OT from Jun 01 to Oct 01. As a result, Milestone III has slipped from Sep 01 to Mar 02 and FUE has slipped from Sep 01 to Feb 02.

Tactical Rocket

a. Milestones --

		Development	Approved	Current
		Estimate (SAF	 Program (APB) 	Estimate
GMLRS	MS II EMD	MAR 1998	MAR 1998	JUL 1998
GMLRS	LRIP Review	AUG 2001	APR 2003	APR 2003 (Ch-1)
GMLRS	OT	JUL 2003	JUN 2005	NOV 2005 (Ch-2)
GMLRS	MS III	OCT 2003	FEB 2006	JUN 2006(Ch-1)
GMLRS	IOC	APR 2004	NOV 2006	MAR 2006(Ch-1)
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9a. (U) Schedule (Cont'd): Tactical Rocket

Development	Approved	Current
<u>Estimate (SAR)</u>	Program (APB)	Estimate
SEP 1999	N/A	MAR 1999

ER-MLRS IOC

(U) Acronyms:

1. EMD - Engineering Manufacturing and Development 2. GMLRS- Guided Multiple Launch Rocket System

3. IOC - Initial Operational Capability

b. Current Change Explanations - (U) (Ch-1) Program schedule was restructured in September 2002 due to late
 (D) approval of International Memorandum of Understanding resulting in

approval of International Memorandum of Understanding resulting in subsequent late award of development contract and guidance set development problems. Congressional reduction in FY02 of \$8.5M for facilitization results in further delay to IOC because of further LRIP I quantity reductions.

(Ch-2) Delay of the prime contractor's vendor selection resulted in a program slip required a program test restructure. As a result, Operational Test was changed from from October 2003 to December 2005.

10. (U) Performance Characteristics:

Launcher

a. Performance --



(U) Acronyms:

Mean Time Between Operational Mission Failure(MTBOMF)

MLRS Upgrade Program, December 31, 2001

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

b. Current Change Explanations -- None

Tactical Rocket

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a. Performance --

Technical Development Characteristics: Accuracy	Development Estimate (SAR)	Proc Obj/	approved gram (APB) 'Threshold	Demon~ strated <u>Perf</u>	Current <u>Estimate</u>
Range	(D)(1)				
ER-MLRS at Range 30-40 Km					
ER-MLRS Range	50	N/A	/ N/A	TBD	50
Max (Km)					
ER-MLRS Range	10	N/A	/ N/A	TBD	10
Min (Km)					
GMLRS Range Max	70	70	/ 60	TBD	70
GMLRS Range Min	10	10	/ 15	TBD	10
Effectiveness					
GMLRS Expected	30%	30%	/ 30%	TBD	30%
Fractional					
Damage					
Reliability			// 		0.7
ER-MLRS	0.97	N/A	/ N/A	TBD	.97
GMLRS	0.95	0.95	/ 0.92	TBD	. 95
Hazardous Dud Rate	0.8	U 15	/ <18	TBD	<18

b. Current Change Explanations -- None

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

	Development	Approved	Current
a. (U) Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	19.5	252.5	252.4
Procurement	1930.3	1345.1	1328.1
Launcher	(1759.2)		(778.3)
Other Weapon System	(15.0)		(394.4)
Peculiar Support	(56.8)		(88.6)
Initial Spares	(99.3)		(66.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1998 Base-Year \$	1949.8	1597.6	1580.5
Escalation	262.0	127.0	126.8
Development (RDT&E)	(1.4)	(-5.7)	(-5.7)
Procurement	(260.6)	(132.7)	(132.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2211.8	1724.6	1707.3
b. (U) Quantity			
Development (RDT&E)	N/A	0	0
Procurement	857	327	327
Total	857	327	327

(U) The original quantity of LRIP M270Al launchers approved at the May 1998 LRIP Decision Review was 86. The current planned LRIP quantity is 175 which exceeds 10% of the total MLRS M270Al launcher procurement. The Deputy Under Secretary of the Army for Operations Research directed restructure of the M270Al test program and this necessitated procuring additional LRIP quantities in FY 00-02 prior to OT prior to completion of Operational Tests in October 2001, full-rate production in March 2002, and subsequent full-rate production beginning in FY 04.

c. (U) Foreign Military Sales --An FMS sale is currently pending configuration finalization for 12 M270A1 launcher upgrade kits for Norway. A contract has been awarded for 19 Korean M270s and 10 M270A1s. Contract awards to Korea for M270A1 kits and 26 M270 launchers awarded in December 2001.

d. Nuclear Costs -- None.

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

Tactical Rocket

		Development	Approved	Current
a. (U)	Cost	Estimate (SAR)	Program (APB)	Estimate
Deve	elopment (RDT&E)	81.9	179.6	174.6
Proc	urement	1313.8	7537.8	7806.4
Ta	actical Rocket	(1313.8)		(7806.4)
To	otal Other Wpn Sys			(0.0)
Pe	eculiar Support	(0.0)		(0.0)
Ir	itial Spares	(0.0)		(0.0)
Cone	struction (MILCON)	0.0	0.0	0.0
Acqu	isition O&M	0.0	0.0	_0.0
Tota	al FY 1998 Base-Year S	1395.7	7717.4	7981.0
Esca	alation	292.9	2964.0	2710.2
D€	evelopment (RDT&E)	(3.4)	(14.3)	(13.4)
Pi	rocurement	(289.5)	(2949.7)	(2696.8)
Co	onstruction (MILCON)	(0.0)	(0.0)	(0.0)
Ac	quisition O&M	(0,0)	(0.0)	(0.0)
Tota	al Then Year \$	1688.6	10681.4	10691.2
b. (U)	Quantity			
Devel	lopment (RDT&E)	0	0	o
Procu	irement	43182	140004	140004
Total	L	43182	140004	140004

(U) The GMLRS program is currently in deveopment. LRIP I is scheduled for 3QFY03, with a projected quantity of 84 rockets. LRIP II is scheduled for 2QFY04, with a projected quantity of 678 rockets.

c. (U) Foreign Military Sales --FMS cases for ER-MLRS procurement have been signed with Greece, Norway, Denmark, Korea, and Egypt.

There are no current FMS cases for the GMLRS rocket.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

(2) Quantity(3) Unit Cost

Launcher

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	UCR	Current	
	Baseline	Estimate	Percent
	(FEB 2002 APB) (D	ec 2001 SAR)	Change
a. (U) Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1998 BYS)	1597.6	1580.5	
(2) Quantity	327	327	
(3) Unit Cost	4.886	4.833	-1.08
(-,			2.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	1345.1	1328.1	
(2) Quantity	327	327	
(3) Unit Cost	4.113	4.061	-1.26
Tactical Rocket			
	UCR	Current	
	Baseline	Estimate	Percent
	(MAR 2000 APB) (De	C 2001 SAR)	Change
a. (U) Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1998 BYS)	2203.2	7981.0	
(2) Quantity	63456	140004	
(3) Unit Cost	0.035	0.057	+62.86
	0.000	0.05.	
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BYS)	2111.9	7806.4	

(U) For the purpose of being able to complete Section 12, parts e-l, the March 2000 APB dollars and quantities were used.

63456

0.033

140004

0.056 +69.70

		UCR	Current	
		Baseline	Estimate	Percent
	(MAR	2000 APB)	(Dec 2001 SAR)) Change
	c. (U) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost $(TY$)$	2740.5	10691.2	
	(2) Unit Cost	0.043	0.076	+76.74
	d. (U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (TY\$)	2645.6	10503.2	
	(2) Unit Cost	0.042	0.075	+78.57
e.	(U) Changes from Previous SAR (Dec 1999)	Dol	lars/Qty Pe	ercent
	(1) PAUC (BY\$)		0.020	+54.05
	(2) APUC (BY\$)		0.020	+55.93
	(3) PAUC Quantity		77856 +	125.28
	(4) PAUC (TY\$)		0.027	+54.70
	(5) APUC (TY\$)		0.028	+59.55

12f. (U) Unit Cost Summary (Cont'd): Tactical Rocket

f. (U) Initial SAR Information
 Initial SAR Date (Dec 1998):
 (1) Program Acquisition Cost (BY\$) 2160.8
 (2) Program Acquisition Cost (TY\$) 2691.7

g. (U) Unit Cost PAUC Changes --Nunn-McCurdy breaches to PAUC are primarily due to underestimated design changes from Advanced Technology Demonstration configuration to meet requirements, changes in acquisition strategy from a multi-year procurement to annual buys, funding decreases in FY 03 through FY 07 necessitating quantity reductions, contractor rate increases, increases in Government Furnished Equipment submunition costs.

(U) Unit Cost APUC Changes --Nunn-McCurdy breaches to APUC are primarily due to underestimated design changes from ATD configuration to meet requirements, changes in acquisition strategy from a multi year procurement to annual buys, funding decreases in FY 03 through FY 07 necessitating respective quantity reductions, increases in Government Furnished Equipment submunition costs.

- h. (U) Impact of Perf or Sched Changes --No changes to system Key Performance Parameters. Revised APB reflects delay in initial operational capability due to FY 02 funding cut and reduction in quantities in FY 03-04 due to increased unit cost.
- (U) Program Management & Control --SDD program rebaselined in October 2000. Program executing on schedule. The prime contractor's launcher program manager was removed and replaced. The current military Project Manager is COL James C. Naudain and the current Business Management Division Chief is Mr. Carlos Kingston.
- j. (U) Cost Control Actions --Unit manufacturing cost updated and reported quarterly by System Development and Demonstration contractor. The contractor submits cost performance reports on a monthly basis, as well as other periodic cost control reports which are under continuous scrutiny. The program office cost model is updated continually to reflect reported changes. Cost reduction efforts have been initiated by the prime and subcontractors.
- k. (U) Contract Information (In Millions of Then-Year Dollars) --
 - (U) (1) Contractor(s): LMMFC
 - (2) Contract Title: GMLRS EMD
 - (3) Contract Number: DAAH01-98-C-0033
 - (4) Actual Cost of Work Performed (ACWP) to date: 120.1
 - (5) Percent contract completed (BCWP/target cost): 84.70

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12k. (U) Unit Cost Summary (Cont'd): Tactical Rocket

(6) Variances:

	Cost Variance	Schedule Variance
	(\$/を)	(\$/%)
Baseline Report	\$-6.4/ -14.60	\$-1.0/ -2.30
Previous SAR	\$-4.6/ -13.10	\$-0.7/ -1.90
Current Values	\$-1.8/ -1.23	\$-2.8/ -1.92
Change from the Baseline Report	\$4.6/ +13.37	\$-1.8/ +0.3B
Change from the Previous SAR	\$2.8/ +11.87	\$-2.1/ -0.02

Explanation of Variances -- None.

(U) Impact of Variances on Contract --Large cost and schedule variances were due to developmental problems experienced by the previous guidance set subcontractor. This required a formal rebaselining in which an over-target baseline was authorized in November 2000, and the SDD contract was modified to reflect resulting program changes.

Impact of Variances on Unit Costs -- None.

1. (U) General Comments ---

An Army Special ASARC was conducted on December 6, 2001 to review the GMLRS program cost breach. An ADM was issued on December 10, 2001 confirming: the MLRS Upgrade program is essential to national security; there is no existing alternative program with equal or greater capability available at lower cost; the program management structure is adequate to control cost; and, the new estimates of unit costs are reasonable and affordable. The Army in accordance with Nunn-McCurdy legislation (10 U.S.C. Sec 2433) will request that the DAE certify the program as a required part of our national defense.

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13. (U) <u>Cost Variance Analysis</u>: Launcher

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	20.9	2190.9	-	2211.8
Previous Changes:				
Economic	-	-53.8	-	-53.8
Quantity	-	-	_	-
Schedule	-	+33.3	-	+33.3
Engineering		-	-	-
Estimating	-15.5	-85.5	-	-101.0
Other	-		-	-
Support	-	+105.9	-	+105.9
Subtotal	-15.5	-0.1	-	-15.6
Current Changes:				
Economic	-	+35.5	-	+35.5
Quantity	-	-1290.7	-	-1290.7
Schedule	-	-82.1	-	-82.1
Engineering	-			-
Estimating	+241.3	+263.7	-	+505.0
Other		~	-	-
Support	-	+343.4	- 1	+343.4
Subtotal	+241.3	-730.2	-	-488.9
Total Changes	+225.8	-730.3	-	-504.5
Current Estimate	246.7	1460.6	-	1707.3

(U) Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	19.5	1930.3	-	1949.8
Previous Changes:				
Quantity	-	- 1	-	-
Schedule	-	+10.8	-	+10.8
Engineering		-	-	
Estimating	-14.3	-77.1	~	-91.4
Other	-		~	-
Support	-	+85.0	- 1	+85.0
Subtotal	-14.3	+18.7	-	+4.4
Current Changes:				
Quantity	-	-1059.4	-	-1059.4
Schedule	-	-25.7	-	-25.7
Engineering	-	-	-	-
Estimating	+247.2	+170.5	-	+417.7
Other	-	- 1	-	-
Support	-	+293.7	-	+293.7
Subtotal	+247.2	-620.9	-	-373.7
Total Changes	+232.9	-602.2	-	-369.3
Current Estimate	252.4	1328.1		1580.5

(U) Increase in Other Weapon System cost due to previous SAR not including the Mod

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13a. (U) <u>Cost Variance Analysis</u> (Cont'd): Launcher

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b. (U) Current Change Explanations --(Dollars in Millions) Base-Year Then-Year (1) RDT&E Adds previous SAR funding (FY92 - FY97) +247.2 +241.3 omitted in error for total Joint Technical Architecture (JTA) program. (Estimating) RDT&E Subtotal +247.2 +241.3 (2) Procurement Revised escalation indices. (Economic) N/A +3.9 Economic adjustment for negative program N/A +31.6 change. (Economic) Adjustment for Current and Prior Inflation. -3.8 -4.1 (Estimating) Total Quantity Variance associated with -920.5 -1107.8 decrease of 530 units from 857 to 327. Quantity decrease of 530 units from 857 to -1059.4 ~1290.7 327 as part of Recapitalization Study (Quantity) Allocation to Schedule variance resulting from -25.7 -92.7 Quantity Change. (QR) (Schedule) Allocation to Estimating variance resulting +183.7 +278.0 from Quantity Change. (QR) (Estimating) Stretchout of annual procurement buy profile. 0.0 +10.6 (Schedule) -9.4 Congressional reductions. (Estimating) -10.2 Adjustment for Current and Prior Inflation. -0.4 -0.4 (Support) Reduced Initial Spares requirement due to -52.8 -63.0 quantity reduction. (QR) (Support) Change in Peculiar Support (Support) +7.0 +7.4 Change in Other Weapon System (QR) (Support) +339.9 +399.4 -620.9 -730.2 Procurement Subtotal

QR = Quantity related changes.

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

Tactical Rocket

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	85.3	1603.3	-	1688.6
Previous Changes:				
Economic	-1.3	-66.7	-	-68.0
Quantity	-	+1016.2	- !	+1016.2
Schedule	-	+3.3	-	+3.3
Engineering	' - '	- 1	-	-
Estimating	+9.8	+45.5	- 1	+55.3
Other		-	-	-
Support	-	-	_	
Subtotal	+8.5	+998.3		+1006.8
Current Changes:				
Economic	+0.4	-9.0	-	-8.6
Quantity	-	+3140.7	-	+3140.7
Schedule	-	+167.2	· -	+167.2
Engineering	-	-	-	-
Estimating	+93.8	+4602.7	-	+4696.5
Other) –	-	-	-
Support	-	-		-
Subtotal	+94.2	+7901.6	-	+7995.8
Total Changes	+102.7	+8899.9	-	+9002.6
Current Estimate	188.0	10503.2		10691.2

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

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(U) Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	81.9	1313.8	-	1395.7
Previous Changes:				
Quantity	-	+753.3	~	+753.3
Schedule	-	+0.1	-	+0.1
Engineering		-	-	-
Estimating	+8.8	+37.3	~	+46.1
Other	1 -	-	-	
Support	-	-		-
Subtotal	+8.8	+790.7		+799.5
Current Changes:				
Quantity	-	+2232.0	-	+2232.0
Schedule	-	+1.6	-	+1.6
Engineering	- 1	-	_	-
Estimating	+83.9	+3468.3		+3552.2
Other	-	-	-	-
Support	1	-		
Subtotal	+83.9	+5701.9		+5785.8
Total Changes	+92.7	+6492.6	-	+6585.3
Current Estimate	174.6	7806.4	-	7981.0

b. (U) Current Change Explanations --

	D. (0) Current Change Expranacions	(Dollars i Base-Year	n Millions) Then-Year
(1)	RDT&E		
	Revised escalation indices. (Rconomic)	N/A	+0.4
	Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
	Added funds for added risk to finish EMD, motor requalification, overhead rates, IOTE costs, OT hardware, and added test requirements, and insensitive munitions. (Estimating)	+84.3	+94.2
	RDT&E Subtotal	+83.9	+94.2
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-9.0
	Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
	Total Quantity Variance associated with increase of 77856 units.	+2835.1	+3990.6
	Quantity increase of 77856 units from 62,148 to 140.004. (Quantity)	+2232.0	+3140.7
	Allocation to Schedule variance resulting	+1.6	+57.5

from Quantity Change. (QR) (Schedule)

*** UNCLASSIFIED ***

+5701.9 +7901.6

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

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b. (U) Current Change Explanations --

	(Dollars i	in Millions)
	Base-Teal	Inen-iear
Allocation to Estimating variance resulting	+601.5	+792.4
from Quantity Change. (QR) (Estimating)		
Stretchout of annual procurement buy profile	0.0	+109.7
by four years (FY 15-FY 18). (Schedule)		
To reflect new cost estimating methodology.	+2867.2	+3810.7
Original parametric model used with Extended		
Range Rocket plus Global Positioning System		
as the baseline. Current model reflects		
actual data and the procurement strategy		
reflects annual buys versus a multi-year.		
Ne islude in week in the second		
rates		
and new Joint requirement for insensitive		
and new point requirement for insensitive		
municions. (Escimating)		

Procurement Subtotal

QR = Quantity related changes.

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

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

Current	SAR	Baseline	to	Current	Estimate	
and the second s						_

PAUC	Changes							PAUC	1	
Dev Est								Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		7
2.58	-0.056	+0.235	-0.149		+1.24		+1.37	+2.64	5.22	Ĵ

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

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Dev Est		lo l							Cur Est
	Econ	Oty	Sch	Eng	Est	Oth	Spt	Total	
2.56	-0.056	+0.200	-0.149		+0.545		+1.37	+1.91	4.47

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

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	AUG 1999	N/A	MAR 2002
FUE	N/A	SEP 2000	N/A	FEB 2002
Total Cost	N/A	2211.8	N/A	1707.3
Total Quantity	0	857	N/A	327
Prog Acq Unit Cost	N/A	2.6	N/A	5.2

Tactical Rocket

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

Current	SAR	Baseline	to	Current	Retimate
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			~~~		

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.039	-0.001	+0.003	+0.001		+0.034			+0.037	0.076

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	
0.037	-0.001	+0.005	+0.001		+0.033			+0.038	0.075

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

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate(DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAR 1998	N/A	JUL 1998
Milestone III	N/A	OCT 2003	N/A	JUN 2005
IOC	N/A	APR 2004	N/A	MAR 2006
Total Cost	N/A	1688.6	N/A	10691.2
Total Quantity	0	43182	0	140004
Prog Acq Unit Cost	N/A	0.0	N/A	0.1

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

a. RDT&E (U) <u>GMLRS EMD:</u>	Initial Co <u>Target</u> Ce	ntract Price iling Oty
DAAH01-98-C-0033, CPAF	\$121.1	N/A O
Award: November 4, 1998		
Definitized: November 4, 1998		
Current Contract Price	Estimated Pric	e At Completion
Target Ceiling Qty	Contractor	Program Manager
\$146.0 N/A 0	\$139.8	\$143.9
	Cost Variance S	chedule Variance
Previous Cumulative Variances	\$-4.9	\$-0.7
Cumulative Variances To Date	\$-2.3	\$-3.5

Net Change

\$-2.8 \$2.6

Explanation of Change:

None.

(U) Contract Comments: The GMLRS's total contract costs (reported above) are shared 50/50 between the U.S. and the European partners in accordance with the Memorandum of Agreement dated September 1998.

b.	Procurement		Initial	Contract 3	Price
(U)	M270Al Production:		Target	Ceiling	Qty
LMMFC,	Dallas, TX				
DAAH01-	98-C-0138, FFP w/CPFF (	CLINS	\$63.0	N/A	21
Award:	July 2, 1998				
Definit	ized: July 2, 1998				
	Lunnant Gasturet Dries		Estimated D	rice At Co	mletion
_ (	urrent contract price		BSCIMALEU PI	LICE AL CO	
Targ	let <u>Ceiling</u>	OLY	Contractor	Progr	am Manager
\$160	).9 N/A	45	\$160.9	i	\$160.9

Explanation of Change:

(U) This contract was for LRIP 1&2 for 45 launchers. It has been completed.

Cost and Schedule variance reporting is not required on this FFP w/CPFF CLINS contract.

MLRS Upgrade Program, December 31, 2001

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

		Initial	Contract Price	e
(U) <u>M270A1:</u>		Target	Ceiling	Qty
LMMFC, Dallas, TX				
DAAH01-00-C-0109, FFP W/CPFF	CLINS	\$290.1	\$290.1	140
Award: June 29, 2000				
Definitized: June 29, 2000				
Current Contract Price		Estimated Pi	cice At Complet	tion
<u>Target</u> <u>Ceiling</u>	Qty	Contractor	Program M	anager
\$290.1 \$290.1	140	\$290.1	\$290	. 1

Explanation of Change:

(U) This contract is for LRIPs 3-5. Costs and schedule variance reporting is not required on this firm fixed-price with cost plus fixed-fee CLINS contract.

Cost and Schedule variance reporting is not required on this FFP W/CPFF CLINS contract.

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

Total Program

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

Appropriation	Prior <u>Years</u> (FY92-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To <u>Complete</u> (FY04-18)	Total
RDT&E	321.6	47.3	26.6	39.2	434.7
Procurement	597.0	147.0	177.6	11042.2	11963.8
MILCON	-		-	-	-
O&M	-	-	**	-	-
Total	918.6	194.3	204.2	11081.4	12398.5

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

Launcher

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

Appropriation	Prior <u>Years</u> (FY92-01)	Budget <u>Year</u> (FY02)	Budget Year (FY03)	Balance To <u>Complete</u> (FY04-10)	Total
RDT&E	246.7	**	-	-	246.7
Procurement	597.0	147.0	147.9	568.7	1460.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	843.7	147.0	147.9	568.7	1707.3

#### Tactical Rocket

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

Appropriation	Prior <u>Years</u> (FY98-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-18)	<u>Total</u>
RDT&E	74.9	47.3	26.6	39.2	188.0
Procurement		-	29.7	10473.5	10503.2
MILCON	-	-	-	~	-
0&M	-	-	-	-	-
Total	74.9	47.3	56.3	10512.7	10691.2

b. Annual Summary -- Launcher

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

Fiscal		Flyaway FY 1998 Dollars	Flyaway FY 1998 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992				13.8	12.6
1993				18.4	17.2
1994				32.2	30.7
1995				47.7	46.3
1996				62.7	62.0
1997	<u> </u>			53.1	53.1
1998				22.0	22.2
1999				1.0	1.0
2000					
2001				1.5	1.6
Subtotal		-1		252.4	246.7

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

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	21	8.4	59.1	121.7	124.0
1999	24		62.2	115.0	119.1
2000	39		96.1	143.3	150.6
2001	66	1.8	121.4	190.3	203.3
2002	41	4.4	76.5	135.5	147.0
2003	35	1.5	75.9	134.0	147.9
2004	31		68.3	116.7	131.2
2005	29		64.4	109.2	125.1
2006	32		68.3	108.8	127.0
2007	9		70.0	78.8	93.8
2008				42.1	51.1
2009				31.3	38.7
2010				1.4	1.8
Subtotal	327	16.1	762.2	1328.1	1460.6

(U) The FY 02 quantity of 41 reflects 6 additional missiles approved by Congress through a reprogramming action subsequent to the submission of the FY 03 President's Budget which only shows 35 units in FY 02. The 6 additional missiles came from the FY 07 quantity which was reduced from 15 to 9.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year Ş	Total Program Then-Year S
Grand Total	327	16.1	762.2	1580.5	1707.3

## b. Annual Summary -- Tactical Rocket

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

Fiscal Year	Oty	Rollaway FY 1998 Dollars Nonrec	Rollaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				13.5	13.6
1999				17.4	17.7
2000				25.9	26.8
2001				15.9	16.8
2002				44.2	47.3
2003				24.4	26.6
2004				0.1	0.1

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

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

Fiscal Year	Qty	Rollaway FY 1998 Dollars Nonrec	Rollaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				2.0	2.3
2006				7.8	9.0
2007				9.7	11.4
2008				12.4	14.8
2009				1.3	1.6
Subtotal				174.6	188.0

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Rollaway FY 1998 Dollars Nonrec	Rollaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996					
1997					
1998					
1999					
2000					
2001					- The second sec
2002	COME San and				
2003	108	7.2	19.7	26.9	29.7
2004	678		75.6	75.6	85.0
2005	906	0.1	87.9	88.1	100.9
2006	930	1.4	76.0	77.4	90.4
2007	828	3.0	62.5	65.6	78.0
2008	2682		189.7	189.7	230.0
2009	7002		439.3	439.3	542.7
2010	9000		533.3	533.3	671.4
2011	9000	6.0	517.5	523.5	671.5
2012	9894	6.0	569.5	575.5	752.3
2013	16902		912.2	912.2	1215.1
2014	18252		962.0	962.0	1305.7
2015	16470		856.3	856.3	1184.4
2016	18942		1089.8	1089.8	1536.0
2017	19422		947.3	946.4	1359.2
2018	8988		444.1	444.8	650.9
ubtotal	140004	23.7	7782.7	7806.4	10503.2

(U) The Guided MLRS begins production in FY 2002.

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

TACCICAL ROCKE

		Rollaway	Rollaway	Total	Total
1		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	140004	23.7	7782.7	7981.0	10691.2

## 17. (U) Delivery/Expenditure Information:

Launcher

a.	(U) Deliveries To Date	Plan	Actual
	RDT&E	0	o
	Procurement	4.5	45

(U) Percent Total Program Quantities Delivered: 13.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 855.8

(U) Percent Total Program Expended: 50.1%

(U) 45 launchers have been delivered under the LRIP 1&2 contracts. 140 additional launchers are scheduled to be delivered under the LRIP 3-5 contracts. Full rate production of the remaining 142 launchers will begin 1QFY03.

## Tactical Rocket

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(U) Deliveries To Date	Plan	Actual
RDT&E	O	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 58.6

(U) Percent Total Program Expended: 0.5%

# 18. (U) Operating and Support Costs:

#### *** UNCLASSIFIED ***

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

#### Launcher

a. (U) Assumptions and Ground Rules --

The unit for tracking O&S costs is a firing battery of 6 launchers. The estimated costs assumes 45 Tactical Batteries. The reflected O&S costs were estimated in the January 18, 2002 excursion Program Office Estimate (POE). The POE includes operating tempo, reliability/maintainability, maintenance concept, manning and logistics policies. This POE information is integrated into the annual update of the MLRS O&S Cost Reduction Program and provides the methodology to portray the O&S costs per battery. The M270 Basic Launcher was the antecedent system for the M270A1.

	Launcher	MLRS Basic (M270)
	Avg Annual Cost Per	Avg Annual Cost Per
Cost Element	Battery (FY98\$)	Battery (FY98\$)
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Military Personnel Direc	4.5	5.6
Replenishment Depot-Leve	0.5	0.5
Replen Consum (Spares)	0.1	0.1
POL	0.0	0.0
End Item Supply/Maint	0.1	0.1
Transportation	0.0	0.0
Training	0.3	0.3
Other O & M	0.1	0.1
Total	5.6	6.7

b. (U) Costs - (FY 1998 Constant (Base-Year) Dollars in Millions)

Total O&S Cost	Launcher	MLRS Basic (M270)
BY\$ (In Millions)	5.6	6.7
TY\$ (In Millions)	6.2	7.4

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

Tactical Rocket

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a. (U) Assumptions and Ground Rules --The unit for tracking O&S cost is the rocket pod. The Guided Rocket is a wooden round. There are no personnel costs, maintainence costs, or contractor supporting cost, or other O&S cost associated with it. The total number of rocket pods planned for production is 23,334.

b. (U) Costs -- (FY 1998 Constant (Base-Year) Dollars in Millions)

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

Total O&S Cost	Tactical Rocket	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/28/2002 1:29:07 PM

#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) **PROGRAM:** Advanced EHF

#### AS OF DATE: December 31, 2001

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1. (U) Designation and Nomenclature (Popular Name): Advanced Extremely High Frequency (AEHF) Satellite

2. (U) DoD Component: USAF -

Joint Participants: Canada, United Kingdom & Netherlands

#### 3. (U) <u>Responsible Office and Telephone Mumber</u>: SMC/MC SES Christine Anderson

2420 Vela Way Assigned: December 31, 2000 Suite 1467-A8 DSN 833-4877; COMM 310-336-4877 El Segundo, CA 90245-4659 chris.anderson@losangeles.af.mil

4. (U) Program Elements/Procurement Line Items: RDT&E:  $(\mathbf{U})$ PE 0603430F **PROCUREMENT:** (U) APPN 3020 ICN 0303604F (Air Force)

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> CLEARED FOR OPEN PUBLICATION

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW

DEPARTMENT OF DEFENSE

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02-C-0269

Advanced EHF, December 31, 2001

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#### 5. (U) References:

SAR Baseline (Planning Estimate): (U) Defense Acquisition Executive (DAE) Acquisition Program Baseline (APB) approved on May 6, 1999 and reflected two RDT&E satellites.

Approved Program / Development Estimate (DE): (U) DAE Approved Acquisition Program Baseline (APB) dated October 6, 2001.

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

(U) The Advanced Extremely High Frequency (AEHF) satellite system provides survivable, jam-resistant, worldwide, secure communications for the strategic and tactical warfighter. The AEHF Program is a follow-on to replenish the Milstar satellite constellation and to provide Ground Control Segment software upgrades. The program combines the Low Data Rate and Medium Data Rate functions of the Milstar II satellites into a single payload while providing greater capacity and throughput at higher data rates and lower cost. The AEHF satellites will be backward compatible to the Milstar satellite system. The terminal program offices will upgrade Milstar terminals and/or provide new terminals to be compatible with the extended data rates (XDR), which AEHF provides.

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

(U) **System Definition:** On August 23, 1999 two competitive System Definition contracts were awarded to Lockheed/TRW and Hughes (now Boeing Satellite Systems) teams. Each contractor team provided the government with a System Requirements Review (SRR).

National Team Formation: Following the competitive System Requirements Reviews (SRRs) and the Milstar Flight 3 launch failure, the AEHF competition was collapsed into a National Team (NT) consisting of all three major AEHF contractors with Lockheed as the prime integrating contractor. The National Team proposed a "Pathfinder" concept to mitigate the loss of Milstar 3 capability. This concept included the acceleration (Dec 2004 launch) of a Milstar II capable AEHF satellite followed by delivery of four additional fully capable AEHF satellites. The Pathfinder would be upgraded to AEHF capability following the launch of the second AEHF satellite. A "delta" SRR representing the National Team approach was conducted, followed by a System Design Review (SDR). Additionally, an end-to-end engineering assessment, a Milstar-to-AEHF transition plan, a Life Cycle Cost estimate, and system cost drivers were provided to the government to support the final determination of operational requirements.

The JROC met on December 13, 1999, and elected to consider the "Pathfinder" approach. Integrating Integrated Product Team (IIPT), Overarching Integrated

Advanced EHF, December 31, 2001

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

Product Team (OIPT), and Defense Acquisition Executive (DAE) reviews were conducted to consider the merits of terminating the AEHF competition in favor of a sole source award to a team consisting of the contractors that had participated in the competition (the same contractors that currently produce the Milstar II). The "Pathfinder"/National Team concept was briefed to USD (AT&L). The National Team, prior to this review, updated their previous corporate commitments based on a draft Operational Requirements Document (ORD) and Technical Requirements Document (TRD). The corporate commitment was to provide not less than AEHF threshold capability on the first satellite (Pathfinder) and greater than threshold on the remaining satellites on a firm-fixed price basis. The concept was approved by USD (AT&L). The Acquisition Decision Memorandum (ADM) was signed May 26, 2000. Contract changes were immediately issued to the existing contracts to enable the National Team implementation and the contractors began discussions for a combined system design.

Stretched Program: Requirements were modified as the ORD became better defined. These actions drove changes to design concepts that were needed to fulfill war fighting requirements. To accommodate fiscal constraints, the program was stretched, which resulted in two production cycles. The first cycle, beginning in FY2002, includes production of satellite vehicles (SVs) 1 and 2 and the associated ground segment resulting in an FY 2008 initial operational capability (IOC). The second cycle would begin in FY2006 and include production of SVs 3-5 resulting in an FY 2012 full operational capability (FOC).

Letter Contract Award: On September 28, 2001, a Milestone B Defense Acquisition Board (DAB) was successfully accomplished. The Acquisition Program Baseline (APB) was approved by the DAE on October 6, 2001, followed by an October 10, 2001 Acquisition Decision Memorandum (ADM) authorizing entry into the System Development and Demonstration (SDD) phase. These events culminated in award of a not-to-exceed (NTE) letter contract on November 16, 2001 to a contractor team which consists of Lockheed Martin (Prime) and TRW (Payload Subcontractor) for the development of SVs 1 and 2 and the associated ground command and control segment. For business reasons, Boeing decided to opt out of the Team. This contract is anticipated to be definitized by July 2002.

Deputy Secretary of Defense (DEPSECDEF) Guidance: Since approval of the Milestone B acquisition strategy, the DEPSECDEF issued guidance on December 28, 2001 directing the Air Force to accelerate procurement of AEHF satellite 3 from FY 2006-07 to FY 2003-04. The guidance also directed a comprehensive study to determine the technical feasibility of meeting or exceeding by 2010 the capabilities that would have been achieved by a full AEHF constellation through an alternative architecture. The guidance further stipulated that if the revised architecture can not provide at least the Full Operational Capability (FOC) capacity of the AEHF system by 2010, funding will be transferred to enable procurement of the fourth and fifth AEHF satellites required to achieve a 2010 FOC. The Department is addressing alternative approaches to satisfy the AEHF FOC. It is anticipated that the Department will provide an assessment as to whether an alternative means to achieve the AEHF 2010 FOC is feasible.

Advanced EHF, December 31, 2001

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

Based on the results and USD(AT&L) determination (approximately July 2002), AEHF may be rebaselined.

**FY02 Congressional Cut:** AEHF sustained a \$70M FY02 congressional reduction to RDT&E funding. The AEHF space segment is a firm fixed price contract. This sizable reduction will result in a six-month launch delay to satellites 1-3, breach of IOC and a significant overall program cost increase. The program rapidly staffed personnel to support a national warfighter need. The congressional cut results in contractor program reductions to fit within the revised FY 2002 budget. The program office and the contractor team are working to mitigate these funding impacts, however, this reduction will result in the removal of up to 180 contractor personnel from the AEHF program.

Potential Loss of International Partners (IP): Uncertainty of the final alternative architecture has made the AEHF International Partners concerned over their return on investment (\$270 million through FY 2008). ASD(C3I) is trying to reassure IPs that either through AEHF or AEHF and some resulting new system their requirements will be met. The AEHF program is projected to lose \$30M in FY 2002 IP funding.

#### 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 Initial Operational Capability (IOC) schedule milestone threshold of Jan 2009 (with an objective of Jul 2008) can no longer be met due to FY 2002 external budget reductions. The milestone breach is due to FY 2002 congressional \$70M cut to the firm fixed price contract and projected \$30M FY 2002 International Partners (IP) funding reductions. These budget reductions will result in a six-month launch delay to satellites 1-3. A Program Deviation

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#### Sc. (U) Threshold Breaches (Cont'd):

Report (PDR), dated March 7, 2002, has been completed and forwarded to the DAE via the Air Force Acquisition Executive for Space Related Programs to reflect the IOC threshold breach and proposed action plan.

9. (U) Schedule:

a. Milestones --

	Planning	Approved	Current
	Estimate (SAR)	Program; DE	<u>Estimate</u>
Milestone I	APR 1999	N/A	APR 1999
Contract Award System Definition	OCT 1999	N/A	AUG 1999
Milestone B (DAB)	FEB 2001	JUN 2001	SEP 2001(Ch-1)
Contract Award EMD/Production	MAR 2001	JUN 2001	NOV 2001(Ch-2)
Initial Operational Capability (IOC)	NOV 2007	JUL 2008	FEB 2009(Ch-3)
Full Operational Capability (FOC)	MAR 2009	<b>JAN 2012</b>	JUN 2010(Ch-4)
Tailored Milestone C (DAB)	N/A	MAR 2005	AUG 2004(Ch-5)

#### b. Current Change Explanations --(U) (Ch-1) - A Milestone B Defense Acquisition Board (DAB) was conducted on September 28, 2001.

(Ch-2) - A System Development and Demonstration (formerly called EMD/Production) letter contract was awarded on November 16, 2001.

(Ch-3) - The Initial Operational Capability (IOC) schedule milestone threshold of January 2009 (with an objective of July 2008) will be changed to August 2009. The milestone breach is due to FY 2002 congressional and projected IP funding reductions which caused a minimum six-month launch delay to satellites 1-3.

(Ch-4) - The Full Operational Capability (FOC) milestone threshold date reflects the stretched production program approved on October 6, 2001. The DEPSECDEF approved funding to accelerate procurement of satellite 3 from FY 2006-07 to FY 2003-04, and directed deletion of advance buy funding of satellites 4 and 5 pending the outcome of an Air Force study, in conjunction with ASD(C3I) and Joint Staff.

(Ch-5) - Tailored Milestone C was directed after System Critical Design Review (CDR).

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## 10. (U) Performance Characteristics:

a. Performance --

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		Approved	Demon-	
Coverage	Planning Estimate (SAR) Provide	Program; DE <u>Obi/Threshold</u> Provide / World-	strated <u>Perf</u> N/A	Current <u>Estimate</u> World-
	global coverage	global / wide, 24 coverage/ hrs/day / coverage / between / 65°S / latitude / to 65°N / latitude		wide, 24 hrs/day coverage between 65°S latitude to 65°N latitude
Capacity	1.2 Gbps CMTW, 600 Mbps Strate- gic	<pre>1.2 Gbps/ Support CMTW, / at least 600 Mbps/ 500 Mbps Strate- / for CMTW gic / Scenario</pre>	N/A	Support at least 500 Mbps for CMTW Scenario and at least 350 Mbps for Strate- gic Scenario
Nuclear Frotection	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	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		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
	tne follow- ing	the / the follow- / follow- ing / ing		follow- ing

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

Approved Demon-Planning Program; DE strated Current Estimate (SAR) Obj/Threshold Perf Estimate critical/ critical func- / funccritical critical funcfunctio / tio tio tio / Suffi-Suffi-Suffi-Suffi-N/A cient / cient cient cient (b)(1)

VAnti-Jam Protection

Access and Control

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

Approved Demon-Planning Program; DE strated Current Estimate (SAR) Obi/Threshold Perf Estimate such as such as / such as such as situa- / situasituasituation tion / tion tion monitormonitor-/ monitormonitoring, ing, ing, / ing, decision decision/ decision decision making. making, / making, making, force force / force force direc- / direcdirecdirec-/ tion, tion. tion, tion, force force / force force managemanage- / managemanagement,& ment,& / ment,& ment,& plan plan / planni planni Interoperability AEHF Interopera-Support / Support N/A Support Support bility joint joint / joint joint interopinterop-/ interopinteroperable / erable erable erable / warwarwarwarfighter / fighter fighter fighter communicommuni-/ communicommunications cations / cations cations among among / among among **a**11 all / all all military military/ military military branches/ branches branches branches / EHF EHE EHF EHE termin- / terminterminterminals 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 supportsupport-/ supportsupported data ed data / ed data ed data rates, / rates, rates, rates, through-/ throughthroughthroughout the / out the out the out the Milstar / Milstar Milstar Milstar transitransi- / transitransition to / tion to tion to tion to the AEHF/ the AEHF the AEHF the AEHF

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

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	Planning Estimate (SAR)	Approved Program;DE Obj/Threshold	Demon- strated <u>Perf</u>	Current Estimate
AEHF Data Rates	(b)(1)			
		,		
Affordability	Program funding & cost thresh- olds are set at the funding level for AEHF in the FY00 PB; mile- stone II ORD will reflect the require-	/ N/A / N/A	N/A	KPP (Ch-1) deleted per JROCM
	- 9	-		

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Jammer Platform Downlink EIRP(dBw) Max. Alt. (ft) K-Band: 18-26.5 GHz

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

Uplink-EIRP(dBw) O-Band: 36-46 GHZ

Planning	Approved Program; DE	Demon- strated	Current
Estimate (SAR)	Obj/Threshold	Perf	Estimate
ments			
(KPP and			
non-KPP)			
which			
will be			
met			
within			
this			
base-			
line.			



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# (S) AEHF System Jamming Threats

Jammer	Platform

(b)(1)	

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## Advanced EHF, December 31, 2001



Acronym List: CMTW - Combined Major Theater War HGEC - High Gain Earth Coverage HRCA - High Resolution Coverage LDR - Low Data Rate LGEC - Low Gain Earth Coverage MDR - Medium Data Rate MRAC - Medium Resolution Coverage NCGS - Nuclear Criteria Group Secretariat STAR - System Threat Assessment Report SOD - Standoff Distance

 b. Current Change Explanations - (U) (Ch-1) - The Affordability Key Performance Parameter (KPP) was deleted per Joint Requirements Oversight Council (JROC) memorandum.

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

		Planning	Approved	Current
a.	(U) Cost	Estimate (SAR)	Prouram UL	
	Development (RDT&E)	2593.1	4074.2	3937.7
	Procurement	0.0	1205.0	1311.6
	Total Flyaway			(1311.6)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		
	Initial Spares	(0.0)		
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 2002 Base-Year	\$ 2593.1	5279.2	5249.3
	Escalation	97.5	366.1	312.0
	Development (RDT&E)	(97.5)	(190.7)	(170.1)
	Procurement	(0.0)	(175.4)	(141.9)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2690.6	5645.3	5561.3

(U) Note: The approved program baseline and current estimate values reflect an FY 2002 base year. A factor of 1.049 was used to convert from base year 1999 to 2002.

b. (U) Quantity --

Development (RD)	T&E) 2	2	2
Procurement	<u>_N/A</u>	3	3
Total	2	5	5

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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## Advanced EHF, December 31, 2001

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12. (U) Unit Cost Summary: UCR Current Baseline Estimate Percent (OCT 2001 APB) (Dec 2001 SAR) Change a. (U) Prog. Acq. Unit Cost (PAUC) 5249.3 (1) Cost (FY 2002 BY\$) 5279.2 (2) Quantity
(3) Unit Cost 5 5 1055.840 1049.860 -0.57 b. (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 2002 BY\$) 1205.0 1311.6 3 3 (2) Quantity 401.667 437.200 +8.85 (3) Unit Cost

## 13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2690.6	-	-	2690.6
Previous Changes:				
Economic	-18.5	-	_	-18.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-286.2	-	-	-286.2
Other	-	-	-	-
Support	-			
Subtotal	-304.7	-	-	-304.7
Current Changes:				
Economic	-104.1	-	-	-104.1
Quantity	-	-	-	-
Schedule	+218.0	+73.1	-	+291.1
Engineering	-	-	-	-
Estimating	+1608.0	-	-	+1608.0
Other	-	-	-	-
Support	-		-	-
Subtotal	+1721.9	+73.1	-	+1795.0
Total Changes	+1417.2	+73.1	-	+1490.3
Adjustments	-	+1380.4	-	+1380.4
Current Estimate	4107.8	1453.5	-	5561.3

Advanced EHF, December 31, 2001

(Dollars in Millions)

1.1.1

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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
Planning Estimate	2593.1	-	-	2593.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	- 1	-	-
Estimating	-363.5	-	-	-363.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-363.5	~	-	-363.5
Current Changes:				
Quantity	-	-	-	- 1
Schedule	+195.6	+106.6	-	+302.2
Engineering	-	-	-	- 1
Estimating	+1512.5	-	-	+1512.5
Other	-	-	-	-
Support	-	- 1	-	
Subtotal	+1708.1	+106.6	-	+1814.7
Total Changes	+1344.6	+106.6	-	+1451.2
Adjustments	-	+1205.0		+1205.0
Current Estimate	3937.7	1311.6	-	5249.3

b. (U) Current Change Explanations --

		<u>Base-Year</u>	<u> Then-Year</u>
(1)	RDRAE		
	Revised escalation indices. (Economic)	N/A	-104.1
	Satellites 1-3 launches and IOC slipped 6 months (Schedule)	+195.6	+218.0
	Adjustment for current and prior inflation. (Estimating)	+43.8	+43.2
	Addition of International Partner funding (Estimating)	+260.7	+270.0
	System requirements were modified as the ORD became better defined, which drove changes to design concepts that were needed to fulfill warfighting requirements (Estimating)	+1208.0	+1294.8
	RDT&E Subtotal	+1708.1	+1721.9
(2)	Procurement Funding adjustements required to support DEPSECDEF guidance to accelerate procurement of satellite 3 from FY 2006-07 to FY 2003-04 (Schedule)	+106.6	+73.1
	Procurement Subtotal	+106.6	+73.1

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

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

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

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

Current	SAR Base	line to	Current	Estimate					
PAUC Changes								PAUC	
Plan Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt_	Total	
N/A								-233.04	1112.26

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

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Plan Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A				~					484.50

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	APR 1999	N/A	N/A	APR 1999
Milestone B	FEB 2001	N/A	N/A	SEP 2001
Milestone C	FEB 2001	N/A	N/A	AUG 2004
IOC	NOV 2007	N/A	N/A	FEB 2009
Total Cost	2690.6	N/A	N/A	5561.3
Total Quantity	2	N/A	N/A	5
Prog Acq Unit Cost	1345.3	N/A	N/A	1112.3
#### Advanced EHF, December 31, 2001

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

a. RDT&E			Initial	. Contract Pr	ice
(U) <u>Syste</u>	m Definition:		Target	<u>Ceilina</u>	Oty
Hughes Space	and Comm, Los	Angeles CA			
F04701-99-C	0028, FFP		\$22.2	\$22.2	0
Award: Augus	t 23, 19 <b>9</b> 9				
Definitized:	August 23, 19	99			
Curren	t Contract Prie	ce	Estimated F	rice At Comp	letion
<u>Target</u>	Ceiling	Oty	<u>Contractor</u>	Program	Manager
\$10.2	\$10.2	0	\$10.2	\$	10.2

Explanation of Change:

None.

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

(U) Contract Comments: The Hughes System Definition Contract was descoped to consolidate and accelerate the design activities of the AEHF program.

This contract is complete and will not be reported in future SARs.

		Initial	. Contract Pi	ice
(U) <u>System Definition:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
Lockheed Martin, Sunnyval	e, CA			
F04701-99-C0027, FFP		\$22.3	\$22.3	0
Award: August 23, 1999				
Definitized: August 23, 1	999			
Current Contract Pr	ice	Estimated F	rice At Comp	letion
<u>Target Ceiling</u>	Oty	Contractor	Program	<u>Manager</u>
\$226.5 \$226.5	0	\$226.5	\$2	26.5

#### Explanation of Change:

None.

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

(U) Contract Comments:

The Lockheed Martin System Definition Contract was modified and increased to conduct required work to enable minimal schedule impact due to delay in awarding System Development and Demonstration (SDD) contract.

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

This contract is complete and will not be reported in future SARs.

	Initial	Contract P	rice
(U) Engineering Model:	Target	<u>Ceiling</u>	<u>Otv</u>
TRW, Redondo Beach, CA			
F04701-97-C0025, CPFF	\$59.2	N/A	0
Award: May 21, 1997			
Definitized: May 21, 1997			
Current Contract Price	Estimated H	Price At Com	pletion
<u>Target Ceiling Oty</u>	<u>Contractor</u>	Progra	<u>m Manager</u>
\$61.9 N/A 0	\$61.9		\$61.9
	Cost Variand	<u>e Schedule</u>	Variance
Previous Cumulative Variances	\$-0.4	\$-0	.2
Cumulative Variances To Date (12/31/99)	<u> </u>	<u> </u>	-2
Net Change	\$0.0	\$0	.0
Explanation of Change:			
Nono			
None.			
(II) Contract Comments:			
This contract is complete and will not	be reported	in future S	ARS
	Initial	Contract P	rice
(U) Engineering Model:	<u>Target</u>	Ceiling	OLV
Hughes Space and Comm., Los Angeles CA			
F04701-97-C0026, CPFF	\$64.6	N/A	0
Award: May 21, 1997			
Definitized: May 21, 1997			
Current Contract Price	Estimated	Price At Com	pletion
Target Ceiling Oty	Contractor	Progra	<u>m Manager</u>
\$66.7 N/A 0	\$66.7		\$66.7
Descione Constanting Hardeney	Cost Variand	<u>schedule</u>	Variance
Previous cumulative variances	\$-3.3	5-1	
Cumulative variances To Date (12/31/99)			- 0
Net Change	\$U.U	ŞU	
Explanation of Change:			
None.			

(U) Contract Comments: This contract is complete and will not be reported in future SARs.

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

Initial Contract Price (U) SDD Letter Contract: Target Ceiling Oty Lockheed Martin, Sunnyvalle, CA F04701-02-C-0002, FFP/CPAF \$2698.0 \$2698.0 2 Award: November 16, 2001 Definitized: N/A Current Contract Price Estimated Price At Completion Target. Ceiling Oty Contractor Program Manager \$2698.0 \$2698.0 \$2698.0 \$2698.0 2 Cost Variance Schedule Variance Previous Cumulative Variances N/A N/A Cumulative Variances To Date N/A N/A Net Change N/A N/A

Explanation of Change:

None.

(U) Contract Comments: Cost data will be available for the ground segment (Cost Plus Award Fee) after contract definitization.

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

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

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-18)	Total
RDT&E	494.8	544.8	891.8	2176.4	4107.8
Procurement	-	-	94.5	1359.0	1453.5
MILCON	-	-	-	-	-
04M	-	-	-	-	-
Total	494.8	544.8	986,3	3535.4	5561.3

(U) The Research and Development (3600) Appropriation funding profile identified in this SAR includes both US and International Partner (IP) funding.

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

#### b. Annual Summary -- AEHF

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

		Flyaway	Flyaway		
		FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				25.2	23.1
1996				33.3	31.0
1997				34.2	32.3
1998				36.0	34.2
1999				56.9	54.6
2000				92.1	89.8
2001				231.7	229.8
2002				541.0	544.8
2003				872.6	891.8
2004				649.7	675.7
2005				557.3	590.2
2006	,,,,			221.3	238.8
2007				149.4	164.3
2008				189.1	211.8
2009				134.4	153.5
2010				13.5	15.7
2011				13_3	15.8
2012				13.3	16.1
2013				13.4	16.5
2014				12.7	15.9
2015				12.3	15.7
2016				11.9	15.5
2017			T	11.6	15.4
2018				11.5	15.5
Subtotal	2			3937.7	4107.8

(U) Footnote:

The Research and Development (3600) Appropriation funding profile identified in this SAR includes both US and International Partner (IP) funding.

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#### Advanced EHF, December 31, 2001

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

Appropriation: 3020 - Missile Procurement, Air Force

Fiscal		Flyaway FY 2002 Dollars	Flyaway FY 2002 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003		91.5		91.5	94.5
2004	1		371.1	371.1	390.0
2005					
2006					
2007					
2008	1	166.8	344.2	511.0	579.0
2009	1		338.0	338.0	390.0
2010					
2011					
2012					
2013					
2014					
2015					
2016					
2017					
2018					
Subtotal	3	258.3	1053.3	1311.6	1453.5

(U) Footnote:

The Missile Procurement (3020) Appropriation funding profile identified in this SAR reflects what is currently in the FY03 President's Budget (PB) request. The FY03 PB request includes a profile consistent with the DEPSECDEF direction for the acceleration of satellite 3.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5	258.3	1053.3	5249.3	5561.3

#### 17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 593.7

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

(U) Percent Total Program Expended: 10.7%

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The Operating and Support (O&S) period covers all operational activities after on-orbit checkout of satellite vehicle 5. The O&S estimate is based on the Program Office Estimate (POE) as of February 14. 2002, for a period that spans FY08 - FY18. The Antecedent system (MILSTAR) costs were derived from the August 25, 1992 Program Life Cycle Cost Estimate (PLCCE).

	AEHF Annual Average	MILSTAR Annual Average
Cost Element	for Constellation	for Constellation
Mission Pay & Allowances	9.6	17.9
Unit Level Consumption	6.0	2.9
Intermediate Maintenance	0.0	0.0
Depot Maintenance	2.0	0.1
Contractor Support	0.8	9.5
Sustaining Support	19.7	0.0
Indirect Costs	2.3	0.0
Total	40.4	30.4

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

Total O&S Cost	AEHF	MILSTAR
BY\$ (In Millions)	444.4	N/A
TY\$ (In Millions)	547.1	N/A

Report Creation Date: 03/29/2002 2:40:03 PM

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*** .... SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: F-22 Raptor

AS OF DATE: December 31, 2001

SUBJECT	PAGE	
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Mission and Description	2	
Executive Summary	2	4
Threshold Breaches	4	and and
Schedule	5	A REALIZED A
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Operating and Support Costs	22	
1. (U) Designation and Nomenclatur	ce (Po	pular Name): F-22 Raptor
2. (U) DoD Component: USAF		
3. (U) Responsible Office and Tels	ephone	Number:
ASC/YF		BGen William J. Jabour
2725 C Street, Bldg 553		Assigned: November 1, 2000
		which have been and the bart was forted

Aeronautical Systems Center WPAFB, OH 45433-7424

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DSN 785-4167; COMM (937) 255-4167 william.jabour@WPAFB.AF.MIL

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0207138F PE 0603109F (Shared) (0) PE 0603230F (U) PE 0604227F (Shared) (U) (U) PE 0604239F PE 0604250F (Shared) Proj 643786, 643393 (U) PROCUREMENT : APPN 3011 ICN 10F022 (Air Force) (U) MILCON: (U) PE 0207219F PE 0604239F (U)

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F-22 Raptor, December 31, 2001

#### 5. (U) References:

#### SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APE) dated February 3, 1992.

#### Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 19, 2002.

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

(U) The F-22 Program will develop the next-generation multimission air superiority fighter for introduction in the early 2000s to counter emerging proliferating world-wide threats. The F-22 is designed to penetrate enemy airspace and achieve a first-look, first-kill capability against multiple targets. The F-22 Engineering and Manufacturing Development (EMD) phase is based on the Weapon System Specification formulated from data developed during the previous Advanced Tactical Fighter (ATF) Demonstration/Validation Prototype phase. The current EMD program consists of design, fabrication, and development testing of 9 EMD flight test vehicles and 25 engines; updating of the Avionics Flying Test Bed and using it to develop and integrate the EMD avionics suite; and design and development of the F-22 support and training system. The on-going production program will deliver at least 339 F-22s, along with the required Alternate Mission Equipment (AME), support equipment, and training systems. The F-22 Program, from the outset, has placed emphasis on balancing affordability, performance, survivability, and reliability/maintainability. The F-22 is characterized by a low observable, highly maneuverable airframe, new engines capable of supersonic cruise without afterburners, and advanced integrated avionics.

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

(U) The F-22 EMD and production programs were capped per the National Defense Authorization Act for FY98. However, the FY02 Authorization Conference removed the EMD cap on December 13, 2001. Accounting for Out of Production Parts (OPP) transfers, revised inflation assumptions and changes resulting from the FY00 Appropriations bill, the adjusted cap for the production program is \$37.489B. The current Air Force Service Cost Position (SCP) for the F-22 production program exceeds the planned cost cap by \$5.4B.

The Low Rate Initial Production (LRIP) Defense Acquisition Board (DAB) was held in August, 2001, and the Under Secretary of Defense for Acquisition, Technology, and Logistics approved entry into LRIP. This included award of the Lot 1 contract for 10 aircraft and long lead for Lot 2 procurement of 13 aircraft. Program criteria for Lot 2 and long lead for Lot 3 procurement of at



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

least 21 aircraft were also approved.

The DAE decision to add \$5.4B to the production program, and the subsequent change in the production ramp rate, resulted in the ability to invest earlier in producibility improvement projects. Investments in production cost reduction projects will be managed with the objective of procuring at least 339 aircraft (which includes PRTV/PRTV II aircraft).

The Defense Acquisition Executive (DAE) Review was held in October, 2001, and the following issues were approved: A buy to budget approach, award of the Lot 2 contract for 13 aircraft, and long lead procurement for 21-24 Lot 3 aircraft.

On November 30, 2001, the Lot 2 Advance Buy contract was extended via long-lead funding to provide continuous performance through December 31, 2001. On December 4, 2001, the Lot 3 Advance Buy contract was awarded to provide Lot 3 schedule protection through December 31, 2001.

The CY01 Program Criterion was met with the completion of the Full Scale Airframe Fatigue Test Status report released on September 24, 2001. A total of 4153 flight hours have been simulated through December 31, 2001, equivalent to 51.9 percent of one lifetime.

Aircraft 4002 through 4006 continued flight test operations at Edwards AFB. Aircraft 4007 was added to the flight test fleet in January 2002. Flight envelope expansion is progressing and the 80% testing in two of the six zones required for the full envelope has essentially been completed. Specific milestones have been identified to support avionics testing, DIOT&E training requirements, and DIOT&E. Significant progress has been made in accomplishing logistics testing. Aircraft 4004 has been dedicated to supporting logistics testing and is now being prepared for the climatic test scheduled to begin in May 2002 at Eglin AFB. Both the first and second guided avionics missile shots have been successfully completed. The next guided missile shot is planned for March 2002. Avionics software updates have been delivered to flight test and have significantly improved the system stability. The Integrated Program Objectives Plan (IPOP) process is being implemented to track specific progress toward meeting preparation for DIOT&E.

Demonstrated flight test capabilities to date include: supercruise, flight above 50,000 feet, airspeed greater than 700 Knots Calibrated Air Speed (KCAS)/2.0 Mach, Angle of Attack from -60 deg to greater than +60 deg, separation tests of AIM-9 and AIM-120 missiles, and load factor from -2g to greater than +7g.

All training assets have been installed in the Nellis AFB Training Detachment and have been turned over to Air Education and Training Command (AETC)



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F-22 Raptor, December 31, 2001

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

instructors.

The USD approved the following CY02 Program Criteria for LRIP Lot 3 and Lot 4 Long Lead:

- Complete 1st fatigue life testing and provide updated life limits and airframe inspection requirements.

- Release avionics software for projects for EMD flight testing and the Air Combat Simulator.

- Complete RCS baseline measurement on a second EMD aircraft.

- Conduct first flight of the initial PRTV 1 aircraft.

- Successfully complete a guided AIM-120 missile test at supercruise with an Integrated Test Vehicle, with a goal of doing it live.

Initiate guided AIM-9 testing.

- Conduct an update to the LRIP production readiness review on risk items identified at that review, and also on key suppliers to demonstrate that critical parts flow, system availability, major assembly, and actual final assembly load dates support scheduled delivery dates for LRIP Lot 3 aircraft. Results will then be reported to OSD prior to the Lot 3 production decision. - Release flight test envelope for AFOTEC to begin unmonitored flight for initial pilot training, with a goal of releasing the Step 1 envelope.

#### 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) <u>Schedule</u>:
  - a. Milestones --

	Development	Approved	Current
104 104	stimate (SAR	) Program (APB)	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	AUG 2002	AUG 2002
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	MAR 2003
Dedicated IOT&E			
Start	JUN 1999	APR 2003	APR 2003
Complete	SEP 1999	DEC 2003	DEC 2003
Milestone III	DEC 1999	MAR 2004	MAR 2004
High Rate Production Contract Award	JAN 2001	NOV 2005	NOV 2005(Ch-1)
Initial Operational Capability	SEP 2003	DEC 2005	DEC 2005
Organic Organizational Maintenance	SEP 2003	N/A	N/A
Capability			
Required Assets Availability (RAA)	OCT 2002	SEP 2005	SEP 2005
Organic Depot Activation	SEP 2003	N/A	N/A

b. Current Change Explanations --(U) (Ch-1) The High Rate Production Contract Award date was previously listed in error as a result of the LRIP DAB changes. The APB and PM's current estimate have been changed to reflect the correct date from Dec 03 to Nov 05.

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Reason for stassification-

Peacon for Cla	coltication.		F-22 Raptor	, Decembe	r 31, 2001
. (U) <u>Performance Chara</u> a. Performance	cteristics:				
	Development Estimate (SAR)	Pro Obi	Approved gram (APB) /Threshold	Strated Perf	Current Estimate
Range-Mission Radius Sub & Supersonic** Subsonic Mission	(b)(1)	N. Co			(Cł
<pre>Payload, Internal Missile Load**</pre>	BCC	8cc	/ 4 AIM- / 120 + 2 / AIM-9	TBD	6 AIM- 120C + 2 AIM-9#
Reduced All-Aspect Radar Cross Section (RCS)			,		
Front Sector RCS**, + Maneuverability (max	•	•	/•	TBD	***
<pre>power sustained G) (30000 ft) (mach) ) @0.9 Mach**</pre>	(b)(1)	-		25.20	(C)
C-141's/24 PAI Squadron For Deployment					
(#a/c)** Sortie Generation Rate (Wartime, per dav)					
) Days 1 to 6** Mean Time Between Maintenance (MTBM)					7
Supercruise** Vmax/Opt Alt/Mil Power (Mn)					(C)
Acceleration/.8-1.5/					(C)
)Radar Detection Range (RDR)**,+	*	•	/*	TBD	(b)(1)
Assessment Items: Mission Effective-	2	2	/ 2	TBD	2###
ness (Compared to current operational F-15 at time of IOTAE)					
Direct on-and-off Maintenance Personnel (spaces	8.7	8.7	/ 8.7	TBD	7.8

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



(U) * Classification/control is beyond the level of this document.

(U) # Estimate reflects capability with a full primary mission load.

(U) **II** Current Estimate is better than threshold.

(U) **###** A mission scenario was assumed for estimating purposes. The current estimate will be updated when the scenario is refined.

#### b. Current Change Explanations --

(Ch-1) Fluctuations in the changed parameters from the last SAR resulted from completed tradeoff studies, incorporation of engineering changes, and aircraft testing.

Changes: FROM TO Sep 01 Dec 01 (U) Maneuverability (max power sustained G)

(30,000 ft)

at 0.9 Mach



(U) Supercruise

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#### F-22 Raptor, December 31, 2001

10b. Nerformance Characteristics (Cont'd):

Vmax/Opt Alt/Mil Acceleration, 0.8-1.5,	30,000	(sec)
--------------------------------------------	--------	-------

(1) Aircraft Weight (lbs) - Empty



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

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	16560.0	21985.1	22495.1
	Procurement	43510.0	30936.0	31277.7
	Airframe	(21485.7)		(15588.3)
	Engines	(5993.7)		(4178.1)
	Avionics	(9250.6)		(5042.1)
	Special Projects			(197.0)
	Munitions			(64.0)
	Total Nonrecurring			(1681.7)
	In-line Modernization			(78.4)
	Total Flyaway	(36730.0)		(26829.6)
	Other Weapon Systems	(1032.1)		(462.5)
	Peculiar Support	(1896.1)		(3965.5)
	Initial Spares	(3851.8)		(20.1)
	Construction (MILCON)	200.0	357.0	356.4
	Acquisition OaM	0.0	0.0	0.0
	Total FY 1990 Base-Year \$	60270.0	53278.1	54129.2
	Escalation	38839.0	15555.2	15592.2
	Development (RDT&E)	(2969.0)	(3373.7)	(3646.7)
	Procurement	(35762.0)	(12049.7)	(11813.1)
	Construction (MILCON)	(108.0)	(131.8)	(132.4)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	99109.0	68833.3	69721.4
b.	(U) Quantity			
	Development (RDT&E)	0	8	8
	Procurement	_648	297	_333
	Total	648	305	341

(U) These figures represent the FY03 PB position.

Average Unit Procurement is based on a maximum production of 56/year. The Air Force intention is to procure a minimum of 339 aircraft (which includes PRTV/PRTV II aircraft).



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

Development includes \$353M directed by Congress to be moved from production to EMD for redesign of Out-of-Production Parts (OPPs).

Figures reflect impact of FY00 Appropriations bill which transferred budget for six aircraft from procurement to RDTsE.

On October 19, 2001, the Under Secretary of Defense (Acquisition Technology & Logistics) approved a buy-to-budget approach for the F-22 production program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR	Current	
	Baseline	Estimate	Percent
	(SEP 2001 APB) (Dec	2001 SAR)	<u>Change</u>
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	53278.1	54129.2	
(2) Quantity	305	341	
(3) Unit Cost	174.682	158.737	-9.13
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	30936.0	31277.7	
(2) Quantity	297	333	
(3) Unit Cost	104.162	93.927	-9.83

(U) Current Estimate reflects the FY03 PB and a maximum production rate of 56/year. Maximum production rate is achieved in FY07. The Air Force intention is to procure a minimum of 339 aircraft (which includes PRTV/PRTV II aircraft).

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## 13. (U) Cost Variance Analysis:

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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	-810.4	-8883.2	-49.8	-9743.4
Quantity	+542.0	-36992.1	-	-36450.1
Schedule	+2427.2	+4684.2	-	+7111.4
Engineering	+734.9	-17.9	+5.0	+722.0
Estimating	+2773.2	+7809.9	+225.6	+10808.7
Other	-	-	-	-
Support	+214.4	-2887.2	-	-2672.8
Subtotal	+5881.3	-36286.3	+180.8	-30224.2
Current Changes:				
Economic	-2.8	+133.0	-4.6	+125.6
Quantity	-	+2939.2	-	+2939.2
Schedule	-	-885.5	-	-885.5
Engineering	+736.3	+106.4	-	+842.7
Estimating	-2.0	+39.1	+4.6	+41.7
Other	-	-	-	-
Support	-	-2227.1	-	-2227.1
Subtotal	+731.5	+105.1	-	+836.6
Total Changes	+6612.8	-36181.2	+180.8	-29387.6
Current Estimate	26141.8	43090.8	488.8	69721.4

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

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	16560.0	43510.0	200.0	60270.0
Previous Changes:				
Quantity	+429.4	-18015.9	-	-17586.5
Schedule	+1840.1	+101.1	-	+1941.2
Engineering	+546.3	+52.9	+4.0	+603.2
Estimating	+2364.7	+5953.3	+149.2	+8467.2
Other	-	-	-	-
Support	+215.1	-1051.7	-	-836.6
Subtotal	+5395.6	-12960.3	+153.2	-7411.5
Current Changes:				
Quantity	-	+1922.3	-	+1922.3
Schedule	-	-87.9	-	-87.9
Engineering	+541.0	+77.3	-	+618.3
Estimating	-1.5	+96.5	+3.2	+98.2
Other	-	-	-	-
Support	-	-12B0.2	-	-1280.2
Subtotal	+539.5	+728.0	+3.2	+1270.7
Total Changes	+5935.1	-12232.3	+156.4	-6140.8
Current Estimate	22495.1	31277.7	356.4	54129.2

b. (U) Current Change Explanations --

		(Dollars in <u>Base-Year</u> 1	n Millions) <u>[hen-Year</u>
(1)	RDTAE		
	Revised escalation indices. (Economic)	N/A	-2.9
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Additional funding for system modernization. (Engineering)	+541.0	+736.3
	Adjustment for Current and Prior Inflation. (Estimating)	-3.7	-4.9
	Congressional reduction and misc. adjustments. (Estimating)	+2.2	+2.9
	RDT&E Subtotal	+539.5	+731.5
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-655.9
	Economic adjustment for negative program change, (Economic)	N/A	+788.9
	Total Quantity Variance associated with increase of 36 aircraft from 297 to 333.	+1928.2	+2948.2
	Increased quantity from 297 aircraft to 333 aircraft. (Quantity)	+1922.3	+2939.2

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

.

b. (U) Current Change Explanations --

	. () carrene emange ingrene content		
	•••	(Dollars i	n Millions)
		<u>Base-Year</u>	<u>Then-Year</u>
	Allocation to Schedule variance resulting from	+0.1	+3.4
	Allocation to Engineering variance resulting	+0.1	0.0
	from Quantity Change (OR) (Engineering)		0.0
	Allocation to Retimating Variance resulting	+5.7	+5.6
	from Quantity Change (DR)(Estimating)		
	Acceleration of annual procurement buy profile	-88.0	-888.9
	(Schedule)		00017
	Additional funding for system modernization.	+77.2	+106.4
	(Engineering)		
	Adjustment for Current and Prior Inflation.	+16.8	+21.8
	/Estimating)		
	Undated risk assessment (Estimating)	+60.9	+13.8
	Adjustment for Current and Prior Inflation.	+3.0	+4.7
	(Support)		
	Revised estimate for initial spares. (Support)	-0.1	-0.1
	Revised estimate for Peculiar Support.	-1269.6	-2229.2
	(Support)		
	Revised estimate for Other Weapon Systems.	+0.6	-2.5
	(Support)		
	Misc. adjustments (Estimating)	~1.0	-2.1
	Correction to align Flyaway and Support	0.0	0.0
	Coats.		
	Correction to align support costs. (Support)	-14.1	0.0
	Correction to align Flyaway cost. (Estimating)	+14.1	0.0
	······································		
	Procurement Subtotal	+728.0	+105.1
(3)	MILCON		
(-)	Congressional and miscellaneous adjustments.	+3.1	+4.5
	(Estimating)		
	Adjustment for Current and Prior Inflation.	+0.1	+0.1
	(Estimating)		
	Revised escalation indices. (Economic)	N/A	-4.6
	MILCON Subtotal	+3.2	0.0

QR = Quantity related changes.

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

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

#### Current SAR Baseline to Current Estimate

PAUC		Changes							
Dev Est									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
152.95	-28.20	+39.42	+18.26	+4.59	+31.82		-14.37	+51.52	204.46

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

#### Current SAR Baseline to Current Estimate

PUC	Changes								
Dev Est	k								Cur Est
	Econ	Qty	Sch	Èng	Est	Oth	Spt	Total	
122.33	-26.28	+13.46	+11.41	+0.266	+23.57		-15.36	+7.07	129.40

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	MAR 2004
IOC	SEP 2003	SEP 2003	N/A	DEC 2005
Total Cost	99109.0	99109.0	N/A	69721.4
Total Quantity	648	648	N/A	341
Prog Acg Unit Cost	153.0	153.0	N/A	204.5

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

a. RDT4E (U) <u>F-22 E</u>	MD (LMAC):		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Qty</u>
LOCKHEED MART F33657-91-C-0 Award: August	IN AERO CORP, 006, CPAF 2, 1991	Marietta GA	\$9550.1	N/A	11
Definitized:	August 2, 1991				
Current	Contract Pric	e	Estimated P	rice At Comp	letion
<u>Target</u> \$14676.2	<u>Ceiling</u> N/A	<u>Otv</u> 9	Contractor \$14783.6	Program \$147	<u>Manager</u> 83.6

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-449.3	\$-31.8
Cumulative Variances To Date (11/30/01)	\$-465.0	\$-22.0
Net Change	\$-15.7	\$9.8

#### Explanation of Change:

(U) There was an overall unfavorable change of \$15.7M in the cost variance (CV) for this period (30 November 2001 CPR data) since the September 2001 SAR (31 July 2001 CPR data). In addition, the 31 October 2001 CPR included an Over-Target-Baseline (OTB) that added a budget of \$230M. During this period, Aft Fuselage, Forward Fuselage, Airframe Analysis & Integration (A&I), Final Assembly & Checkout, Empennage, Environmental Control Systems (ECS), EAFB Mission Avionics, EAFB Aircraft Test & Evaluation, Electronic Warfare (EW) and Communication, Navigation and Identification (CNI) experienced the most significant variances. Almost half of the Aft Fuselage cumulative CV is due to producibility problems at Aerojet and the added manpower to meet schedule.

The primary contributor to the Forward Fuselage cost variance is associated with increased material support for the fabrication of the Fatigue & Static Test Article and EMD Lots 2-4 vehicles due to design changes and elevated scrap and rework rates. The Airframe Analysis A&I variance is mainly due to fabrication and assembly overruns and additional manpower required over the course of EMD for developmental/change activities. The Final Assembly and Checkout variance is primarily due to higher than planned costs in the development of the special technology coatings application techniques by robotics and developmental changes with the tooling fixtures in Coating Operations. The major contributors to the Empennage variance are engineering design changes that have been more numerous than anticipated and composite disbonding problems with the horizontal stabilators requiring an engineering design change that affected all EMD aircraft. The ECS variance is due chiefly to subcontractor Honeywell VCS effort which caused increased costs due to improvements with compressor aero performance and stator insulation durability (Quantum Shield). EAFB Mission Avionics has a positive cost variance due to lower than planned staffing levels caused by delays in obtaining new employee security clearances and from slower than anticipated manpower buildup in the SIL due to aircraft/hardware/personnel availability. The EAFB Aircraft Test & Evaluation variance is due primarily from LMAC actual rates exceeding budgeted rates, use of support personnel for which there was no budget allocated and unexpected overtime required to meet flight schedules affected by A/C maintenance downtime at EAFB. The key factors for the CNI cost variance are software development slips to support integration and testing and late hardware deliveries. The EW variance is principally caused by lower than expected software productivity, late engineering releases, material delays, software integration costs and increased systems engineering analysis costs.

F-22 Raptor, December 31, 2001

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

The cumulative cost variance of -\$465.0M is driven mainly by the negative cost drivers mentioned above for the current period plus previous problems in Aft and Forward Fuselages, Wings, CNI, EW and Overhead/Other burdens. There were raw material, outside production, non-recurring tooling changes and labor costs needed to support design changes on the Aft and Forward. Fuselages. More machining work than expected and early producibility problems with the large structural castings used in the wing, such as flaw sizes larger than accounted for in the analysis, impacted the wing. Late delivery of these castings caused a cascade of work-a-rounds, increased traveled work and drove the need for additional tooling to recover schedule. Past problems in CNI included front-end electronic software slips, hardware predelivery and software integration and test cost growth. EW had higher than expected software integration costs due to late engineering releases, supplier overruns and lower than expected software productivity. Also, a CV in Overhead/Other burdens was caused by an IAM Labor settlement at Boeing.

The \$9.8M positive schedule variance change is due mainly to the approaching end of the EMD phase (95% complete) as well as the positive increases in the schedule variances of three IPTs (Forward Fuselage, Edges and Air Vehicle A&I) resulting from incorporation of Over-Target-Baseline budget.

The cumulative schedule variance of -\$22.0M can be attributed to the above and past delays in Wings, Edges, Empennage, Final Assembly & Checkout, EW and CNI. Late deliveries of side-of-body castings, flaws in the wing assemblies and parts shortages for the ailerons, flaperons and vertical leading edged contributed to the SV in the Wings IPT. The schedule variance for Edges was due to manufacturing problems which caused range testing to increase due to the combination of the humidity and hot debulk of the third inner core skin. For the Vertical Trailing Edges, the Block II tooling changes and engineering conversion to BMI core resulted in detail parts being scrapped and remade. Significant factors in the variance for Empennage were difficulties in producing the horizontal tail. The Final Assembly & Checkout schedule variance was due to late wing deliveries and parts availability. The schedule variance for EW was caused mainly by software productivity, late engineering releases, material delays, operational delays due to design changes and testing rework and slow progress in hardware and software subsystem integration for Blocks II and III. The CNI variance resulted from manufacturing delays due to problems with suppliers and delays in material procurement. Front-end electronics software slips to support the CNI system integration and test effort and increased systems engineering support on the backplane redesign also contributed to the variance.

(The cumulative cost variance does not include an unfavorable cost variance of \$181.2M which existed prior to the June 1995 cost growth baseline implementation and an unfavorable \$394.8M which existed prior to the March

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F-22 Raptor, December 31, 2001

T-IAI-1 C-A-A-A Dulas

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

1997 cost growth baseline implementation.]

[The cumulative schedule variance does not include an unfavorable schedule variance of \$59.4M which existed prior to the June 1995 cost growth baseline implementation and the unfavorable \$177.4M which existed prior to the March 1997 cost growth baseline implementation.]

	1010101	CONCIACE PI	lce
	<u>Target</u>	Ceiling	<u>Oty</u>
HARTFORD CT	\$1375.1	N/A	33
	Estimated P	rice At Comp	letion
Oty	Contractor	Program	Manager
25	\$2447.2	\$244	7.2
	<u>Cost Varianc</u>	e Schedule Va	riance
	\$-39.2	\$-8.0	5
(11/30/01)	<u>\$-37.1</u>	\$-7.0	2
	\$2.1	\$1.0	5
	HARTFORD CT <u>Oty</u> 25 (11/30/01)	HARTFORD CT HARTFORD CT Estimated P <u>Oty</u> 25 (11/30/01) <u>Cost Varianc</u> \$-39.2 <u>\$-37.1</u> \$2.1	HARTFORD CT HARTFORD CT HARTFORD CT 51375.1 N/A Estimated Price At Compl Contractor Program 25 \$2447.2 \$244 (11/30/01) <u>S-37.1</u> S-7.0 \$2.1 \$1.0

#### Explanation of Change:

(U) The Performance Measurement Baseline was updated to reflect the F119 EMD Restructure which was placed on contract on August 25, 1997.

Through November 2001, the cumulative unfavorable cost variance was -\$37.1M (-1.7%). This is an improvement of \$2.1M from the September 2001 SAR. The cumulative variance drivers include the Nozzle, Engine Development Test, Controls, Compressor, and Augmentor WBS elements.

Through November 2001, the cumulative unfavorable schedule variance was -\$7.0M (-0.3%). This variance is an improvement of \$1.6M from the September 2001 SAR. The cumulative variance drivers include Test Facilities, Controls, Support System Data, Engine Development Test, and Externals WBS elements.

Pratt & Whitney also established an Over Target Baseline of \$17.6M in February 2001. During June 2001, a successful joint Targeted Baseline Review was held to validate the new baseline and instill confidence in the executability of the approved program. Team included members from P&W, SPO, DCMA, DCAA and ASC/FMC. The PMEAC currently equals the Pratt & Whitney LRE.

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F-22 Raptor, December 31, 2001

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

[The cumulative cost variance does not include an unfavorable \$41.3M cost variance which existed prior to the August 1995 cost growth baseline implementation or an unfavorable \$34.8M cost variance which existed prior to the FY97 program restructure.]

[The cumulative schedule variance does not include an unfavorable \$21.4M schedule variance which existed prior to the August 95 cost growth baseline implementation or an unfavorable \$11.2M schedule variance which existed prior to the FY97 program restructure.]

			Initia	1 Contract P	rice
(U) <u>F-22 E</u>	<u>MD (LMA):</u>		<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
LOCKHEED MART	IN CORP., Mar!	letta GA			
F33657-91-C-0	006, CPAF		\$	\$	
Award: Novemb	er 20, 1998				
Definitized:	November 20, J	1998			
Current	Contract Pric	ce	Estimated	Price At Com	pletion
Target	<u>Ceiling</u>	Oty	<u>Contractor</u>	<u>Progra</u>	<u>m Manager</u>
\$1999.4	\$	8	\$		Ş

#### Explanation of Change:

(U) This is the current contract value (price and cumulative obligation).

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

(U) <u>F-22 EMD Engines (P&amp;W):</u>	Initial Contract Price <u>Target Ceiling</u> Ot	<u>iy</u>
LOCKHEED MARTIN AERO CORP, MARIETTA GA F33657-91-C-0007, CPAF Award: December 30, 1999 Definitized: December 30, 1999	\$\$	
Current Contract Price	Estimated Price At Completic Contractor Program Mana	n ager

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*** UNCLASSIFIED *** F-22 Raptor, December 31, 2001 15. (U) Contract Information (Cont'd): \$1917.1 S 10 Ś S Explanation of Change: (U) This is the current contract value (price and cumulative obligation). Cost and Schedule variance reporting is not required on this CPAF contract. b. Procurement --Initial Contract Price (U) F-22 Lot 2 (LMA): Target. Ceiling OLY LOCKHEED MARTIN AERO CORP, MARIETTA GA F33657-00-C-0020, FFP Ŝ Ŝ Award: December 30, 1999 Definitized: December 30, 1999 Current Contract Price Estimated Price At Completion Target Ceiling Oty <u>Contractor</u> Program Manager \$2516.3 S 13 Ś Ś 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. Initial Contract Price (U) F-22 Lot 3 AB: Ceiling Oty Target LOCKHEED MARTIN AERO CORP, MARIETTA GA F33657-01-C-2095, FFP \$ \$ Award: December 4, 2001 Definitized: December 4, 2001 Current Contract Price Estimated Price At Completion Program Manager Ceiling Contractor Target. OLY \$262.2 Ŝ 23 \$ \$ Explanation of Change: (U) This is the current contract value (price and cumulative obligation). - 18 -

F-22 Raptor, December 31, 2001

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

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)

Appropriation	Prior <u>Years</u> (FY83-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04–12)	Total
RDTLE	23042.5	881.6	808.5	1409.2	26141.8
Procurement	3700.3	3041.6	4638.8	31710.1	43090.8
MILCON	65.0	61.3	42.8	319.7	488.8
OSM	-	-	-	-	-
Total	26807.8	3984.5	5490.1	33439.0	69721.4

b. Annual Summary -- Advanced Tactical Fighter

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

		Flvawav	Flvaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1983				24.8	20.0
1984				40.7	34.1
1985				104.8	90.8
1986			1	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				B93.4	953.3
1992				1463.4	1606.8
1993				1717.4	1925.2
1994				1806.0	2058.8
1995				1962.7	2280.6
1996	1			1820.3	2153.4
1997				1513.3	1814.5
1998				1666.8	2010.2
1999				1284.7	1566.1
2000				1808.6	2239.1
2001				1121.2	1411.6

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F-22 Raptor, December 31, 2001

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

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

		Flyaway	Flyaway		
1	[	FY 1990	FY 1990	Total	Total
Fiscal	i	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2002				689.3	881.6
2003				622.9	808.5
2004				361.3	477.3
2005				152.9	205.7
2006				191.0	261.9
2007				332.4	464.3
Subtotal	8			22495.1	26141.8

(U) 1) The FY02 Authorization Conference removed the EMD cap on 13 December 2001.

2) PE 0207138F is a new program element for F-22 Support. Included within this PE are funds for post EMD enhancements for FY03-07.

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal	1	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997			6.2	6.2	7.5
1998	,		59.2	59.2	72.4
1999	2	57.0	559.7	645.3	798.9
2000			224.7	224.7	283.1
2001	10	170.6	1559.7	1987.9	2536.5
2002	13	434.4	1609.2	2345.4	3037.3
2003	23	433.1	2624.2	3517.4	4632.4
2004	27	275.4	2663.0	3450.0	4626.5
2005	32	118.6	2809.8	3475.5	4747.6
2006	40	74.5	2884.5	3383.8	4710.2
2007	56	62.2	3444.1	4071.1	5772.8
2008	56	21.8	3073.9	3706.0	5355.2
2009	56	20.8	2730.2	3289.4	4842.0
2010	18	13.3	835.4	1025.9	1538.9
2011				21.3	32.6
2012				4.5	7.0
2013					
2014					
2015					
Subtotal	333	1681.7	25083.8	31213.6	43000.9

Appropriation: 3010 - Aircraft Procurement, Air Force

(U) The Air Force intention is to procure a minimum of 339 aircraft (which

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F-22 Raptor, December 31, 2001

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

includes PRTV/PRTV II aircraft). On October 19, 2001, the Under Secretary of Defense (Acquisition Technology & Logistics) approved a buy-to-budget approach for the F-22 production program.

PE 0207138F is a new program element for F-22 Support. BP10 funds are included in this summary.

Appropriation:	3011	-	Procurement	of	Ammunition,	Air	Force
----------------	------	---	-------------	----	-------------	-----	-------

Fiscal		Flyaway FY 1990 Dollars	Flyaway FY 1990 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1999			0.4	0.4	0.5
2000			1.1	1.1	1.4
2001					
2002			3.3	3.3	4.3
2003			4.9	4.9	6.4
2004			7.1	7.1	9.5
2005			6.9	6.9	9.4
2006			7.8	7.6	10.9
2007			7.6	7.6	10.8
2008			8.3	8.3	12.0
2009			8.4	8.4	12.3
2010			8.3	8.3	12.4
2011					
Subtotal			64.1	64.1	89.9

(U) Per Air Force guidance, funding for chaff and flares must be appropriated munitions. Funds were reprogrammed from 3010 to munitions in Sep 98.

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				3.9	4.6
1996				10.1	12.1
1997				3.6	4.4
1998				J	
1999					
2000				14.8	18.6
2001		1		19.8	25.3
2002				47.3	61.3
2003				32.4	42.8

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F-22 Raptor, December 31, 2001

#### 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 \$
2004				16.2	21.7
2005				36.4	49.8
2006				33.8	47.1
2007				29.0	41.2
2008				45.0	65.1
2009				51.9	76.5
2010				12.2	18.3
Subtotal				356.4	488.8

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	341	1681.7	25147.9	54129.2	69721.4

#### 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	Actual
	RDT&E	7	7
	Procurement	0	0

(U) Percent Total Program Quantities Delivered: 2.1%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 21166
  - (U) Percent Total Program Expended: 30.4%

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --For purposes of this cost comparison, the F-22 concept of operations is assumed to be a 24 aircraft fighter squadron with a utilization rate of 332 flight hours per aircraft per year. The wartime scenario was used to estimate the manpower. The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-22 is 339. Total aircraft included in the F-22 O&S estimate is 283, the number of Primary Aircraft Inventory (PAI) aircraft.

The F-15C is antecedent to the F-22; both are two engine air-to-air fighters

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F-22 Raptor, December 31, 2001

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

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.

The F-22 estimate was based on a combination of AFI 65-503 Cost and Planning Factors and information provided in the contractor's Affordability Analysis.

In December 2000, the Air Force Cost Analysis Improvement Group (AFCAIG) worked with the F-22 System Program Office and the F-15 System Program Office to develop updated estimates of both the F-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-22 vs. the F-15.

	Advanced Tactical Fighte	r Avg Annual Cost Per
	F-22 Squadron/Year	F-15C Squadron
Cost Element	During Steady State	
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
acts	N/A	N/A
Total	71.4	98.4

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Total OsS Cost	Advanced Tactical Fighte	r Avg Annual Cost Per
BY\$ (In Millions)	19254.1	N/A
TY\$ (In Millions)	37036.9	N/A

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# AF-23 TITAN IV

#### *** UNCLASSIFIED ***

#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: Titan IV

AS OF DATE: December 31, 2001

SUBJECT	PAGE	
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 <u>Designation and Nomenclature (Popular Name)</u>: Titan IV, Expendable Launch Vehicle (ELV)

2. DOD Component: USAF

3. Responsible Office and Telephone Number:

INDEX

Space and Missile Systems Center/CLCol Michael J. Dunn2420 Vela WayAssigned: May 15, 1999Suite 1467DSN 833-3915; COMM (310)363-3915Los Angeles AFB, CA 90245-4683mike.dunn@losangeles.af.mil

4. Program Elements/Procurement Line Items: RDT&E: PE 0304111F (Shared) Project 299998, 346503, 6569AJ PE 0305119F (Shared) Project 66624A PE 0305171F (Shared) PROCUREMENT: APPN 3080 ICN 834600 (Air Force) APPN 3020 ICN MSBSTR (Air Force) (Shared) Project 23BSTR APPN 3020 ICN MS0299 (Air Force)

MILCON: PE 0305119F

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#### 5. <u>References</u>:

SAR Baseline (Development Estimate): FY87 President's Budget, February 1986.

Approved Program: CAE Approved Acquisition Program Baseline (APB) dated January 3, 2001.

#### 6. Mission and Description:

The Titan IV is a heavy-lift rocket booster that launches the nation's highest priority space systems. The Titan IV does not replace any defense programs. The Titan IV system evolved from the basic family of Titan systems, namely the Titan II, Titan III and 34D, which have contributed to national space objectives for more than 25 years. The Titan IVA, the immediate predecessor to Titan IVB, consisted of a two stage liquid propellant core with a pair of large, attached Solid Rocket Motors (SRMs), which provide the initial boost stage for liftoff. Beginning with the twenty-fourth vehicle in the program, a new block change Titan IVB incorporating advanced technology and improved processes became operational. The Titan IVB flies with Solid Rocket Motor Upgrades (SRMUs) and new avionics, both of which increase reliability and performance for larger payload requirements. Two upper stage configurations are used on Titan IV, the Inertial Upper Stage (IUS) and the Titan/Centaur. The Titan IVB/Centaur is capable of placing a 13,250-pound payload into Geosynchronous Earth Orbit (GEO). The Titan IVB/IUS configuration is capable of placing a 5,300-pound payload into GEO. The Titan IVB/NUS (No Upper Stage) can place a 40,000-pound payload into a 100-nmi circular, polar orbit.

#### 7. Executive Summary:

Titan IV was developed in direct response to a National Security Decision Directive. The initial contract for 10 Titan IV's with Centaur upper stages was awarded in February 1985. The Department of Defense (DoD) added 13 additional Titan IVs following the January 1986 Space Shuttle accident. The resulting 23-vehicle program was placed on contract in December 1987. The DoD later embarked on an increased capacity plan, which included an additional launch pad at Cape Canaveral Air Force Station (CCAFS), 18 additional Titan IV boosters, and associated facility enhancements. In July 1988, the Solid Rocket Motor Upgrade (SRMU) was authorized to increase mission reliability and performance. In December 1989 the Titan IV avionics upgrade was authorized to implement the SRMU configuration. The 41-vehicle program was definitized in December 1989. The first Titan IV was successfully launched in 1989 from In July 1991, the Titan IV was designated a Defense Acquisition Board CCAFS. program. In December 1998 the PEO for space authorized Titan IV program completion at 39 launches.

As a result of a series of commercial and government mission failures in 1998 and 1999, the President directed a Broad Area Review (BAR) of national space launch. The BAR panel extensively reviewed government and contractor programs, with an eye towards uncovering common contributing causes to this string of failures. In parallel to this panel, the Titan program was developing and

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

implementing corrective actions to improve mission success of Titan and Centaur Upper Stage vehicles. These corrective actions directly contributed to the mission success achieved by the Titan Program since that time (6 Titan IV launches). Since the December 1999 SAR, the TItan IV program has completed 6 straight successful missions. The sixth success, TIVB-12, was launched successfully 22 May 99 from Vandenberg AFB, and was highlighted in the previous SAR.

On May 8, 2000, Titan IVB-29/DSP-20 was successfully launched from CCAFS. Originally scheduled for a November 1999 launch, it was delayed to deal with several flight hardware technical issues. The degree of analysis and scrutiny placed on these issues was a direct result of sharpened focus on mission success by the contractor and Air Force team. The orbital placement of the DSP payload by the combined launch vehicles (Titan and IUS) was one of the most accurate to date.

On August 17, 2000, Titan IVB-28 with a National Reconnaissance Office (NRO) payload was successfully launched from Vandenberg AFB.

On February 27, 2001, Titan IVB-41/Centaur with the Milstar-4 satellite was successfully launched from CCAFS. This flight represented the culmination of a thorough return-to-flight process for the Centaur upper stage, which had an anomaly on its previous flight in April 1999.

On August 6, 2001, Titan IVB-31/IUS with the DSP-21 satellite was successfully launched from CCAFS. The overall mission (Titan and IUS) provided the most accurate placement of DSP to date.

On October 5, 2001, Titan IVB-34 successfully placed an NRO payload into Low Earth Orbit from Vandenberg AFB.

On January 15, 2002, Titan IVB-38/Centaur with the Milstar-5 satellite was successfully launched from CCAFS.

The hardware delivery and processing flows through 2000 and 2001 indicate that the over 100 corrective actions implemented in the wake of the failures of 1998-1999 were extremely effective (e.g. award fee plans and fee structure were modified to emphasize quality and mission success; mission success incentives were added to recognize successful launches). Hardware delivery quality control issues and problems uncovered at the launch bases continually dropped for successive vehicles over this time period. In addition, the number of post-flight items requiring further review dropped markedly. This statistic provides the best indication of the greatly improved focus on quality and mission success. Finally, the government and the contractor worked closely to fashion employee retention incentives on the contract to involve employees directly in each success and preserve critical skills and critical mass through the last launch and thereby minimize rlsk. The Titan leadership has kept strictly to mission success as the number one priority.

The NRO jointly funds the Titan program.

### 7. Erecutive Summary (Cont'd):

This may be the final SAR for Titan IV since the program now exceeds 90% of planned acquisition expenditures.

### 8. Threshold Breaches:

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	NO
Performance	NO
Cost RDT&E	No
Procurement	No
MILCON	NO
06M	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. <u>Schedule</u>:
  - a. Milestones --

4. H1120000000			
	Development	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Initial Contract Award	FEB 1985	FEB 1985	FEB 1985
Production Start	OCT 1985	N/A	OCT 1985
System Preliminary Design Review	APR 1986	N/A	APR 1986
Critical Design Review	NOV 1986	NOV 1986	OCT 1986
Addition of 13 Vehicles	N/A	DEC 1987	DEC 1987
First Core Delivery to CCAFS	N/A	JAN 1988	JAN 1988
First Delivery to CCAFS	FEB 1988	N/A	APR 1988
Initial Launch Capability (ILC)			
Titan IV/IUS	OCT 1988	FEB 1989	FEB 1989
Titan IV/NUS (WTR)	N/A	OCT 1990	OCT 1990
Titan IV/Centaur	N/A	MAY 1993	SEP 1993
SLC-40	N/A	SEP 1992	FEB 1993
Centaur Structural Test	N/A	JUL 1989	APR 1991
SRMU Static Firing (PQM-1)	N/A	JUN 1992	JUN 1992
SRMU ILC	N/A	JUL 1996	JUL 1996

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#### 9a. <u>Schedule (Cont'd)</u>:

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Space Launch Complex 40 (SLC-40) is referred to as Launch Complex 40 (LC-40) throughout this document.

b. Current Change Explanations -- None

#### 10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>		Demon- strated <u>Perf</u>	Current <u>Estimate</u>
System Reliability (%)	98	92	/ 90	91	92
Payload to					
Geosynchronous Orbit (k-lbs)					
(Titan IV/Centaur)					
SRM	10.0	N/A	/ N/A	10.35	10.35
SRMU	N/A	11.5	/ 11.5	13.25	13.25
Payload to Transfer Orbit (k-lbs)					
SRMU	N/A	47.0	/ 47.0	49.1	49.1
Payload to Low Earth Polar Orbit (k-lbs) (Titan IV/NUS)			·		
SRMU	N/A	38.8	/ 38.8	40.0	40.0

During the 2001 SAR reporting period, Titan IV demonstrated performance for system reliability increased from 89% to 91% (30 of 33 launches have been successful). On January 3, 2001 a revised APB was approved that reflected the 2 failures in 1999. This revised APB changed the approved program objective from 98% to 92%, and changed the approved program threshold from 96% to 90%.

b. Current Change Explanations -- None

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### Titan IV, December 31, 2001

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

	Development	Approved	Current
a. Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	579.7	3194.0	3168.7
Procurement	1570.8	19868.4	10318.5
Flyaway	(1106.6)	)	(8882.3)
Other Wpn Sys	(464.2)	)	(1436.2)
Peculiar Support	(0.0)	)	(0.0)
Initial Spares	(0.0)	>	(0.0)
Construction (MILCON)	0.0	105.3	93.1
Acquisition OsM	0.0	0_0	0.0
Total FY 1985 Base-Year \$	2150.5	23167.7	13580.3
Escalation	378.7	14545.4	3904.3
Development (RDT&E)	(61.4)	(1252.3)	(640.9)
Procurement	(317.3)	(13267.4)	(3235.4)
Construction (MILCON)	(0.0)	(25.7)	(28.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2529.2	37713.1	17484.6
b. Quantity			
Development (RDT&E)	0	0	0
Procurement	10	65	39
Total	10	65	39
totat	20	ψu u	
Note 1: Vehicle Quantity Histor	v :		
DEC 85 SAR DEC 86 SAR DEC 88 S	AR AUG 94 DAB	DEC 94 SAR DEC	95 SAR
10 23 57	65	47	46
DEC 96 SAR DEC 97 SAR DEC 98 S	AR CC	.,	
A1 40 39			
12 10 59			
Note 2: No Low Rate Initial Pro-	duction (LRIP) f	for this program.	

c. Foreign Military Sales --None.

d. Nuclear Costs --None

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### Titan IV, December 31, 2001

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## 12. Unit Cost Summary:

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	UCR	Current	
	Baseline	Estimate	Percent
	(JAN 2001 APB) (Dec	2001 SAR)	Change
a. Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1985 BY\$)	23167.7	13580.3	
(2) Quantity	65	39	
(3) Unit Cost	356.426	348.213	-2.30
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1985 BY\$)	19868.4	10318.5	
(2) Quantity	65	39	
(3) Unit Cost	305.668	264.577	-13.44

### 13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	641.1	1888.1	-	2529.2
Previous Changes:				
Economic	-87.3	-1314.0	+6.9	-1394.4
Quantity	-237.3	+947.4	-	+710.1
Schedule	+795.1	+4478.5	+5.0	+5278.6
Engineering	+894.8	-3630.6	-	-2735.8
Estimating	+1809.5	+10849.2	+109.2	+12767.9
Other	-	-	-	-
Support	+45.6	+826.4	-	+872.0
Subtotal	+3220.4	+12156.9	+121.1	+15498.4
Current Changes:				
Economic	+1.1	-33.2	-	-32.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-		-
Estimating	-53.0	-412.1	-	-465.1
Other	-	-	-	-
Support	-	-45.8	-	-45.8
Subtotal	-51.9	-491.1	-	-543.0
Total Changes	+3168.5	+11665.8	+121.1	+14955.4
Current Estimate	3809.6	13553.9	121.1	17484.6
## 13a. Cost Variance Analysis (Cont'd):

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	579.7	1570.8	-	2150.5
Previous Changes:				
Quantity	-138.8	+2139.5	-	+2000.7
Schedule	+377.7	+1553.1	-	+1930.8
Engineering	+651.4	-2288.6	-	-1637.2
Estimating	+1539.2	+6638.6	+93.1	+8270.9
Other	-	-	-	-
Support	+195.8	+1002.8	-	+1198.6
Subtotal	+2625.3	+9045.4	+93.1	+11763.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	- :	-	-
Engineering	-	-	-	-
Estimating	-36.3	-266.9	-	-303.2
Other	-	-	-	-
Support	-	-30.8	~	-30.8
Subtotal	-36.3	-297.7	*	-334.0
Total Changes	+2589.0	+8747.7	+93.1	+11429.8
Current Estimate	3168.7	10318.5	93.1	13580.3

b. Current Change Explanations --

		(Dollars in <u>Base-Year Th</u>	Millions) Men-Year
(1)	RDT&E	11 / 2	
	Revised escalation indices. (Economic)	N/A	+1.1
	Adjustment for Current and	-0.7	-1.1
	Prior Inflation. (Estimating)		
	Revised Air Force Titan IV	-1.7	-2.5
	funding requirements resulting		
	from program budget		
	realignment to Titan II. (Estimating)		
	Powieod program estimate (Fetimating)	-10 8	-15 8
	Revised program eachmate. (Eachmating)	-23 1	- 33 6
	Revised Research and	2J.1	55.0
	Development and Mission		
	Integration estimates for		
	contract underruns. (Estimating)		
	RDT&E Subtotal	- 36.3	-51.9
(2)	Procurement		
/	Revised escalation indices. (Economic)	N/A	-33.2
	Adjustment for Current and	+27.1	+31.3
	Delog Inflation (Fetimating)		
	EITOI INTIGUION, (DOCIMUCING)		

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

b. Current Change Explanations		
	(Dollars in	Millions)
	Base-Year T	hen-Year
Revised bir Force Titan IV	-40 1	- 60 0
funding requirements regulting	-40.1	-00.0
funding requirements resulting		
from program budget		
realignment to Titan II. (Estimating)		
Revised program estimate. (Estimating)	-61.2	-92.0
Revised estimate associated with	~199.9	-300.4
contract underruns. (Estimating)		
Revised estimate based on actuals. (Estimating)	-6.2	-10.4
Increased requirements due to	+13.4	+19.4
revised estimate for contract		
extensions through FY03. (Estimating)		
Revised support estimate for	-30.8	-45.8
Aerospace and Program Office		
Support requirements (Support)		
oupport reductements, (pupport)		
Procurement Subtotal	-297 7	-491 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	Changes							PAUC	
Dev Est		c							Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
252.92	-36.58	-169.86	+135.35	-70.15	+315.46		+21.18	+195.40	448.32

## b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
188.81	-34.54	-116.11	+114.83	-93.09	+267.62		+20.02	+158.73	347.54

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## Titan IV, December 31, 2001

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

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	FEB 1985
Milestone II	N/A	N/A	N/A	OCT 1985
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	APR 1988
Total Cost	N/A	2529.2	N/A	17484.6
Total Quantity	N/A	10	N/A	39
Prog Acq Unit Cost	N/A	252.9	N/A	448.3

Titan IV had no acquisition phase milestones.

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

a. RDT&E			Initial	Contract Pi	rice
Program R	<u>&amp; D;</u>		<u>Target</u>	Ceiling	Oty
LOCKHEED MART	IN, DENVER, CO	)			
F04701-96-C-C	035, CPFF/AF		\$62.3	N/A	0
Award: July ]	., 1996				
Definitized:	July 1, 1996				
Current	Contract Price	ce	Estimated Pr	ice At Comp	letion
Target	Ceiling	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$271.7	N/A	0	\$244.9	\$2	244.9
			<u>Cost Variance</u>	Schedule \	<u>/ariance</u>
Previous Cumu	lative Variand	ces	\$16.9	\$-1.	5
Cumulative Va	iriances To Dat	te (12/31/01)	\$21.6	\$-0.	1
Net Chang	e		\$4.7	\$1.	. 4

## Explanation of Change:

The current contract target price is \$271.7M for Titan IV effort. The net cumulative cost variance change is due to Lockheed Martin Astronautics (LMA) positive labor and overhead and G & A performance in 2000 and 2001. The period of performance on this contract is complete. The last Cost Performance Report was received as of September 30, 2001.

This is the last time this contract will be reported in the SAR.

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

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b. Procur	ement		Initial	Contract Pr	rice
<u>Launch Base Ops:</u>			Target	Ceiling	Oty
LOCKHEED MARTIN, DENVER, CO					_
F04701-95-C-0	012, CPAF/FF		\$1538.0	N/A	0
Award: April	1, 1996				
Definitized:	April 1, 1996				
Current	Contract Pric	ce	Estimated Pr	ice At Com	pletion
Target	Ceiling	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$2076.9	N/A	0	\$1897.4	\$18	371.1
			Cost Variance	Schedule )	Variance
Previous Cumu	lative Variand	ces	\$49,0	Ş-7	. 2
Cumulative Va	riances To Dat	te (12/31/01)	\$116.0	\$-5	. 0
Net Chang	re		\$67.0	\$2	. 2

## Explanation of Change:

The current contract target price is \$2,076.9M for Titan IV effort. The primary statement of work increase was due to a modification to extend this contract for fiscal year 2003. The favorable net cumulative cost variance change is due to favorable LMA labor, 2000 and 2001 overhead rates, and Solid Rocket Motor Upgrade (SRMU) Ammonium Perchlorate (AP) cost adjustments. The net schedule variance improved due to the early completion of Titan IVB-31 and B-34 milestones. A Baseline Review for the fiscal year 2003 contract extension is scheduled for third-quarter 2002.

Unified Pa	yload Int(UPI);		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>			
F04701-98-C-0	1N, DENVER, CO.		\$283.4	N/A	0			
Award: Octobe	r 1, 1997		420014	.,	Ŭ			
Definitized:	October 1, 1997							
Current	Contract Price	1	Estimated Pr	ice At Comp	letion			
Target	Ceiling	Otv	Contractor	Program	Manager			
\$314.6	N/A	0	\$270.3	\$2	62.8			
Cost Variance Schedule Variance								
Previous Cumu	lative Variance	2	\$8.4	Ş-3.	3			
Cumulative Va	riances To Date	(12/31/01)	\$21.8	<u>\$-3.</u>	8			

Net Change

Explanation of Change:

The current contract target price is \$314.6M for Titan IV effort. The primary statement of work increase was due to a modification to extend this contract for fiscal year 2003. The favorable net cost variance change was

\$13.4

\$-0.5

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Titan IV, December 31, 2001

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

due to: 1) experience gained from performance efficiency for Titan IVB-41, B-34, and B-31, and 2) lower overhead and G&A rates in 2000 and 2001. The net schedule variance change is due to a launch delay of Titan IV B-41, which slipped the schedule milestones for the rest of the manifest. Titan IVB-41 launched in February 2001.

			Initial	l Contract P	rice
Productio	<u>n:</u>		<u>Target</u>	<u>Ceiling</u>	Oty
Lockheed Mar	tin, Denver, CO	)			
F04701-96-C-	0001, FPIF		\$568.9	\$589.6	0
Award: April	1, 1996				
Definitized:	April 1, 1996				
Curren	t Contract Prie	ce	Estimated F	Price At Com	pletion
Target	Ceiling	Oty	<u>Contractor</u>	Progra	<u>m Manager</u>
\$2912.1	\$3239.7	0	\$2671.7	Ş 2	642.6
			<u>Cost Varian</u>	e Schedule	Variance
Previous Cum	ulative Variand	ces	\$175.4	\$-34	. 4
Cumulative Va	ariances To Dat	te (12/31/01)	<u>\$170.7</u>	\$-9	.6
Net Chan	ge		\$-4.7	\$24	. 8

## Explanation of Change:

The December contract target price is \$2,912.1M for the Titan IV effort. The primary statement of work increase was due to a modification to extend this contract for fiscal year 2003. The unfavorable net cumulative cost variance change since the 1999 SAR of \$4.7M reflects increased resources applied by the contractor to assure mission success by delivering quality hardware to the launch sites. The favorable net schedule variance of \$24.8 was due to replanning launch requirements into fiscal year 2003, and completion of build to stock launch vehicle contract line items. A Baseline Review for the fiscal year 2003 contract extension is scheduled for third-quarter 2002.

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

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

Appropriation	Prior <u>Years</u> (FY83-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-05)	<u>Total</u>
RDTSE	3782.6	27.0	-	-	3809.6
Procurement	12747.2	455.3	337.4	14.0	13553.9
MILCON	121.1	-	-	-	121.1
O&M	-	-	-	-	-
Total	16650.9	482.3	337,4	14.0	17484.6

b. Annual Summary -- Titan IV

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

	<u> </u>	Flyaway	Flyaway		
1		FY 1985	FY 1985	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1983				170.8	162.2
1984				13.4	13.2
1985				201.7	205.7
1986		· · · · · · · ·		200.8	209.8
1987				115.5	126.2
1988				481.2	539.6
1989				396.9	466.6
1990	-			363.8	440.8
1991				179.7	225.9
1992				233.2	301.7
1993				136.8	180.8
1994				221.8	298.1
1995				115.9	158.7
1996				115.8	161.4
1997				55.0	77.7
1998				46.6	66.2
1999				52.2	75.0
2000				28.6	41.7
2001				21.1	31.3
2002				17.9	27.0
Subtotal				3168.7	3809.6

Total program funding reported in the Titan IV SAR is based on the fiscal year 2003 President's Budget. However, a single Program Element (PE) 0305144F funds the Titan IV and Titan II Programs, and additional funding is provided by the NRO. As a result of this cost sharing arrangement, total Titan IV funding differs from what is reflected in the President's Budget for this PE.

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

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Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1985	FY 1985	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
1983	*	111.0	117.0	274.7	269 8
1984		107.7	111.3	263.1	269.5
1985		74.6	66.3	165.7	174.6
1986		32.6	131.0	195.3	215.4
1987	2	82.4	238.3	380.7	438.0
1988	6	223.9	471.3	810.8	966.6
1989	5	252.1	400.3	737.6	918.3
1990	5	196.8	446.8	729.6	924.9
1991	5	270.3	262.5	606.9	791.9
1992	6	247.5	278.9	573.3	757.2
1993	6	307.3	293.3	647.7	872.7
1994	4	193.8	411.7	659.3	906.0
1995		153.2	221.9	419.0	581.3
1996		74.0	222.8	369.9	520.0
1997		103.4	193.8	347.7	495.8
1998		123.5	379.7	599.7	864.0
1999		79.6	321.0	566.9	827.8
2000		57.0	234.6	347.0	513.0
2001		60.2	191.4	311.2	466.1
2002		57.8	178.7	299.1	455.0
2003		47.7	133.5	218.1	337.1
2004		1.2		5.0	7.8
2005		1.1		3.8	6.1
Subtotal	39	2858.7	5305.8	9532.1	12578.9

The NRO funds approximately 50% of missile procurement in the Titan IV program. There are no production quantities associated with the Launch Base Operations (LBO) contract (-0012).

Total program funding reported in the Titan IV SAR is based on the fiscal year 2003 President's Budget. However, a single Program Element (PE) 0305144F funds the Titan IV, Titan II, and IUS Programs. As a result of this cost sharing arrangement, total Titan IV funding differs from what is reflected in the fiscal year 2003 President's Budget for this PE.

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## 16b. <u>Program Funding Summary (Cont'd)</u>:

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Appropriation: 3080 - Other Procurement, Air Force

(		Flyaway	Flvaway		
1		FY 1985	FY 1985	Tota1	Total
		11,1903		TOCAL	10041
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1986		0.5	3.8	4.9	5.1
1987		5.2	18.7	27.0	28.8
1988		30.4	42.3	81.3	89.0
1989		33.2	46.2	87.2	99.6
1990		19.1	60.9	90.1	106.7
1991		15.7	27.2	50.5	62.3
1992		57.8	100.4	172.7	220.6
1993		65.9	38.3	112.7	147.6
1994		34.5	75.2	113.7	152.0
1995		22.0	16.9	42.3	57.6
1996		1.0	1.2	2.4	3.3
1997		0.1	0.1	0.2	0.3
1998		0.1	0.1	0.2	0.3
1999			0.1	0.2	0.3
2000		0.1	0.2	0.3	0.5
2001		0.1	0.1	0.2	0.3
2002		0.2		0.2	0.3
2003		0.1		0.2	0.3
2004		0.1		0.1	0.1
Subtotal		286.1	431.7	786.4	975.0

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1985 Dollars Nonrec	Flyaway FY 1985 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				44.1	55.8
1991				7.7	10.0
1992				16.0	21.2
1993				25.3	34.1
Subtotal				93.1	121.1

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	39	3144.8	5737.5	13580.3	17484.6

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Actual

#### 17. Delivery/Expenditure Information:

a. Deliveries To Date

RDT&E	0	0
Procurement	33	33

<u>Plan</u>

Percent Total Program Quantities Delivered: 84.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 15888.1

Percent Total Program Expended: 90.9%

Deliveries are considered complete when vehicle ownership is transferred and the DD250 is signed. For Titan IV, the DD 250 is considered signed when the vehicle has moved 1 inch in an upward direction from the launch pad.

## 18. Operating and Support Costs:

a. Assumptions and Ground Rules --The costs for launch processing are based on actual contract values for the current Titan IV program and were transferred from operation and support (O&S) costs to procurement costs in conjunction with the FY92/93 President's Budget. Thus, these costs are not included below. Range costs continue to be carried as operation and support costs. The December 2001 Titan IV Program Office Estimate (POE) annual O&S costs were estimated to be \$65.1M in base year dollars. With an estimated rate of four launches per year the average annual cost per launch in base year dollars is \$16.3M.

The total Operations and Maintenance (O&M) cost estimate for 1989 through 2001 was converted to Base Year 1985 and divided by 4 missions per year to arrive at an average cost per launch in base year dollars.

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

	Md trans T11	Titon 24D
	, TICAN IV	TICAN 24D
	Annual cost / launch	Annual cost / launch
Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Range Support	16.3	7.5
Total	16.3	7.5

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Titan IV, December 31, 2001

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

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Total O&S Cost	Titan IV	Titan 34D
BY\$ (In Millions)	901.4	N/A
TY\$ (In Millions)	1258.4	N/A

Report Creation Date: 03/29/2002 8:20:31 AM

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# AF-16 JSTARS

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SELECTED ACOUISITION REPORT (RCS: DD-AST(OSA)823) PROGRAM: Joint STARS

## AS OF DATE: December 31, 2001

## SUBJECT

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Cover Sneet Information
Mission and Description
Executive Summary
Threshold Breaches
Schedule
Performance Characteristics
Total Program Cost and Quantity
Unit Cost Summary
Cost Variance Analysis
Unit Cost and Other History
Contract Information
Program Funding Summary
Delivery/Expenditure Information
Operating and Support Costs



- 1. (U) Designation and Nomenclature (Popular Name): Joint STARS
- 2. (U) DoD Component: USAF

Joint Participants: US Army

3. (U) Responsible Office and Telephone Number: Joint STARS Program Office Electronic Systems Center 75 Vandenberg Drive Hanscom AFB, MA 01731-2119

Col Gary S. Connor Assigned: May 20, 1999 DSN 478-5725; COMM (781)377-5725 gary.connor@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:** APPN 3010 ICN 0207581F (Air Force) (U) MILCON: (U) PE 0604770F

CLEARED FOR OPEN PUBLICATION S 1000 50 FEB 2 8 2002

**DIRECTORATE FOR FREEDOM OF INFORMATION** AND SECURITY REVIEW DEPARTMENT OF DEFENSE



## 5. (U) References:

SAR Baseline (Production Estimate): (U) AFAE Approved Acquisition Program Baseline (APB) dated October 24, 1996.

#### Approved Program:

(U) CAE Approved Acquisition Program Baseline (APB) dated October 15, 2001.

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

(U) The Joint Surveillance Target Attack Radar System (Joint STARS) is a Joint Army and Air Force Program, with the AF as the lead service. The Joint STARS system provides real-time wide-area surveillance of the battlefield and rear echelons. Joint STARS is unique because it detects and tracks enemy armor, vehicles, and troops over a wide-area in real-time using moving target indicator (MTI) and synthetic aperture radar (SAR) techniques. Joint STARS also plays a critical C2 battle management role providing precise real-time targeting information to direct attack aircraft, friendly artillery, and standoff missile batteries. Joint STARS unique capabilities can give the Joint Force Commander a near real-time look at enemy first and second echelon force buildups, force movements, and the enemy scheme-of-maneuver on the battlefield. This early information on the enemy battle plan will allow friendly forces to act before the enemy plan is executed and maneuver with economy of force to engage the enemy at a time and place of the Corps Commander's own choosing. Joint STARS is also identified as one of the core assets that provides rapidly employable, information superiority. Joint STARS provides SAR/MTI coverage of ground activity, with target identification and intelligence support from RIVET JOINT and works in concert with AWACS to provide a collaborative situation awareness, battle management, and precision engagement capability for the Joint Force Commander. There is no antecedent system.

## 7. (U) Executive Summary:

(U) World Events: The 93d Air Control Wing (ACW) has accomplished 100% mission effectiveness for deployed operations. As of January 30,2002, JSTARS has completed 127 of 130 Enduring Freedom missions.

**Production:** Since the last SAR, Congress authorized two additional aircraft be added to the JSTARS fleet, for a total of 17 E-8C aircraft. The 16th was inducted to the Northrop Grumman Corporation (NGC) production line in April 2001, our 17th will be inducted by April 1, 2002, ensuring continuity of the NGC Lake Charles, LA workforce (preventing loss of critical skills base and allowing time for orderly plan/transition to a 767-based program).

Since establishing a re-baselined production refurbishment schedule in August 1998, NGC has performed ahead of production schedule and delivered our last 8 E-8Cs early (7 of which delivered since our last SAR). Our next delivery, our 13th E-8C, is also on track to beat its May 31, 2002 contract delivery date.

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Joint STARS, December 31, 2001

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

Sustainment and Support: Interest areas include Total System Support Responsibility (TSSR); Decapitalization (decap); and 93d/116th Wing Transition.

TSSR: On September 15, 2000 we awarded the TSSR contract, establishing NGC as prime integrator of all JSTARS weapon system sustainment efforts. NGC has assigned all TSSR personnel to the Robins AFB area in an integrated government/contractor system support management (SSM) organization.

Decap: A key sustainment enabler, JSTARS decapitalization is effective as of February 1, 2002, NGC has assumed item management for JSTARS unique parts.

93d/ll6th Wing Transition: ll6th ACW activation is planned for October 1, 2002 as the first phase of transition. HQ ACC/XPX is leading Programming Plan development for standup of a JSTARS Future Total Force Wing at Robins AFB.

Modifications: Major efforts are Computer Replacement Program (CRP), and Communications upgrades--Satellite Communications (SATCOM), Improved Data Modem (IDM) and Link 16 Attack Support Upgrade (ASU).

CRP: The Engineering, Manufacturing and Development Phase of CRP (Commercial off the shelf computing architecture) completed on October 31, 2000, our focus now shifts to production/retrofit/delivery. Our last 2 E-8Cs delivered with CRP installed in-line, and retrofit is underway with the 1st CRP retrofit aircraft delivered on February 11, 2002, and 2nd inducted on December 20, 2001.

SATCOM: We restructured our SATCOM program due to cost and schedule delays driven by late/incomplete Airborne Integrated Terminal (AIT) radio development. We expect to definitize this restructure (already underway) in Spring 2002.

IDM: Live Apache Longbow attack support Time Critical Targeting (TCT) missions were demonstrated successfully during excercises in February through April 2001. Army and Air Force operators are pleased with the added sensor to shooter capability IDM offers. IDM will deliver in-line on our 13th JSTARS (May 2002), the remainder of the fleet and our test aircraft will be retrofit.

Link 16 ASU: The AC2ISR Center requested the Air Force accelerate Link 16 to enable greater Time Critical Targeting capabilities 1-year sooner than the current funded program--in the absence of acceleration, ASU development will start in FY03 with spiral deliveries in 1st guarter 2006 and 2nd guarter 2007.

Future Plans: Our primary "future" concentrations are: Ground Moving Target Indicator (GMTI); Trainers; Global Air Traffic Management (GATM); Joint Services Work Station (JSWS); Airborne Command and Control Center (ABCCC) functionality to JSTARS; JSTARS Extended Test Support (JETS); and Re-engining.

GMTI: In our role as informal Air Force and cross-service lead for integrating GMTI systems, we are building a capability-based investment strategy using the work of our joint-service 0-6 steering group for GMTI as a foundation.

Trainers: Flight Crew Training, a top fleet bed-down issue, is addressed by a

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

contract awarded in September 2000 to NLX Corporation to develop a new Weapon System Trainer (WST) with a Ready for Training date of September 27, 2002--WST, a full-motion simulator, provides operationally representative training at a rate meeting operational needs. We are also working to implement a Distributed Mission Training (DMT) capability for the 93d ACW. We have defined Operational and Technical Architectures and will demonstrate initial DMT capability in April 2002--this is a true spiral development effort that will culminate with delivery of the Support and Training System (STS) in November 2002.

GATM: The JSTARS and AWACS combined Global Air Traffic Management (GATM) team identify common issues and refine a common GATM approach for both programs.

JSWS: Procurement of Joint Services Work Stations (JSWS) was identified as a "Lessons learned" from our performance in Operation ALLIED FORCE. Since the last SAR, four of these portable versions of the Common Ground Station were shipped to USAFE (October 2000) for installation at various locations.

ABCCC: In response to Air Force direction to divest ABCCC from EC-130s and migrate functionality to elements of the Theater Air Control System, we have developed an evolutionary acquisition plan to host ABCCC roles aboard the E-8C platform. Divestiture and functionality implementation began in FY02.

JETS: The JETS contract was awarded in August 2001 to provide the test support infrastructure necessary to support development, production, and sustainment programs in the FY02-FY07 time frame. Our focus is on integrating test support efforts across all JSTARS related programs while reducing costs.

Congress designated JSTARS a "Re-engine lease" pilot program, Re-engining is another "lesson learned" from our performance in Operation ALLIED FORCE. SAF/AQ approved our strategy for NGC to conduct a competition for the Air Force and select a "best value" engine alternative using leasing concepts. We are progressing on US-only activities, as well as exploring an international cooperative program with NATO AWACS Program Management Agency (NAPMA), in parallel with the Re-engining Source Selection NGC is conducting.

The US commitment for manning the NATO Transatlantic Advanced Radar (NATAR) Project Definition Office (PDO) in Brussels, BE with seven individuals has been met--four of the assigned personnel are from JSTARS. The PDO is developing a system acquisition strategy and preparing acquisition documents (draft Request for Proposal, Memorandum of Understanding and Acquisition Program Charter) for the NATO-owned and operated core AGS capability, based on the MP-RTIP sensor.

Joint STARS, December 31, 2001

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## 8. (U) Threshold Breaches:

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

		Breach	
Schee	lul	e	No
Perfo	orm	ance	No
Cost		RDT&E	No
		Procurement	Yes
		MILCON	NO
		Osm	No
		Program Acquisition Unit Cost (PAUC)	NO
		Average Procurement Unit Cost (APUC)	NO

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

Note 1: Procurement funding (BY \$5555.5M) exceeds the APB threshold (BY \$5418.2M) approved by SAF/AQ on 15 Oct 01, primarily due to the addition of an aircraft (P-17) with the FY03 PB.

9. (U) <u>Schedule</u>:

a. Milestones --

	Production	Approved	Current	
	Estimate (SAR)	Program (APB)	<u>Estimate</u>	
Milestone IIA	SEP 1985	SEP 1985	SEP 1985	
FSD Contract Award	SEP 1985	SEP 1985	SEP 1985	
First Test Flight	APR 1988	APR 1988	APR 1988	
Milestone IIB	APR 1988	APR 1988	APR 1988	
System CDR	NOV 1988	NOV 1988	NOV 1988	
Contractor Flight Test Start	APR 1989	APR 1989	APR 1989	
Operational Field Demo I	JUL 1990	JUL 1990	SEP 1990	
System-level Perf. Verfstart	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	MAY 1996	MAY 1996	AUG 1996	
(MSSF Phase I)				
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	

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

	Producti	.on	App	roved	Curi	rent
	Estimate (	SAR)	Progra	am (APB)	Est	imate
First Aircraft Delivery to ACC	FEB 199	6	FEB	1996	JUN	1996
First Training Squad Ready for Trng	SEP 199	6	SEP	1996	SEP	1996
Depot Support Date	<b>JAN 199</b>	6	JAN	1996	MAY	1996
First SDS Installation (Group A)	FEB 199	6	FEB	1996	FEB	1996
Required Assets Availability (RAA)	SEP 199	16	SEP	1996	FEB	1997
Organic Support Capability	SEP 199	7	SEP	1997	NOV	1997
IOC	SEP 199	7	SEP	1997	DEC	1997
Mature Reliability	SEP 199	8	N/A		N/A	(Ch-1)
Follow-On OT&E Start	FEB 199	8	FEB	1998	AUG	1997

## b. Current Change Explanations --(U) Ch-1: The Mature Reliability Schedule Event was deleted from the JSTARS APB approved by SAF/AQ on 15 Oct 01 and is reflected in this SAR.

## 10. (U) Performance Characteristics:

a. Performance --

range

(weather)

(sec)



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



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10a. Nerformance Characteristics (Cont'd):



b. Current Change Explanations - (U) Ch-1: Mission Reliability Rate (MRR) was deleted from the JSTARS APB approved by SAF/AQ on 15 Oct 01 and is reflected in this SAR.

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## Joint STARS, December 31, 2001

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

		Production	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	3820.4	4051.0	4264.7
	Procurement	5982,4	4925.6	5555.5
	Recurring	(4570.5)		(4017.3)
	Non-Recurring	(196.5)		(102.4)
	Total Flyaway	(4767.0)		(4119.7)
	Other Wpn Sys	(585.6)		(877.6)
	Peculiar Support	(58.8)		(83.5)
	Initial Spares	(571.0)		(474.8)
	Construction (MILCON)	129.5	113.4	113.4
	Acquisition O&M	0.0	0.0	_ 0.0
	Total FY 1998 Base-Year \$	9932.3	9090.0	9933.7
	Escalation	-170.2	~429.8	-305.6
	Development (RDT&E)	(-465.8)	(-431.8)	(-401.9)
	Procurement	(296.5)	(4.7)	(99.0)
	Construction (MILCON)	(-0.9)	(-2.7)	(-2.7)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	9762.1	8660.2	9628.0
Ь.	(U) Quantity			
:	Development (RDT&E)	1	1	1
	Procurement	<u>19</u>	16	17
	Total	20	17	18

(U) The Low Rate Initial Production (LRIP) quantity approved at the Joint STARS' Milestone III Decision was 19 aircraft. The Quadrennial Defense Review (QDR) recommendation to reduce the Joint STARS fleet from 19 to 13 took effect with the FY 99 President's Budget (PB).

Since then, a 14th procurement aircraft was approved with the FY00 PB, a 15th with the FY01 PB, a 16th with the FY02 PB (reflected in our 15 Oct 01 APB above), and a 17th with the FY03 PB (the JSTARS APB will be updated to reflect additional aircraft). The annual buy quantity is limited by available funding.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

Joint STARS, December 31, 2001

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## 12. (U) Unit Cost Summary:

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	UCR	Current	
	Baseline	Estimate	Percent
	(OCT 2001 APB) (Dec	: 2001 SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1998 BY\$)	9090.0	9933.6	
(2) Quantity	17	18	
(3) Unit Cost	534.706	551.867	+3.21
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	4925.6	5555.5	
(2) Quantity	16	17	
(3) Unit Cost	307.850	326.794	+6.15

(U) The latest approved Acquisition Program Baseline (APB) (15 Oct 01) reflects 16 procurement aircraft. The APB will be updated to reflect our 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	-5.2	-9.3	-0.7	-15.2
Quantity	-	-1114.3	~	-1114.3
Schedule	-	-	-	-
Engineering	+348.6	+132.0	-8.2	+472.4
Estimating	-108.6	-302.9	-9.0	-420.5
Other	-	-	-	-
Support	+24.8	-112.2	-	-87.4
Subtotal	+259.6	-1406.7	-17.9	-1165.0
Current Changes:				
Economic	+2.3	+9.9	-	+12.2
Quantity	-	+507.6	-	+507.6
Schedule	-10.7	-	-	-10.7
Engineering	-	+14.5	-	+14.5
Estimating	+257.0	-81.0	-	+176.0
Other	-	-	-	-
Support	-	+331.3	-	+331.3
Subtotal	+248.6	+782.3	~	+1030.9
Total Changes	+508.2	-624.4	-17.9	-134.1
Current Estimate	3862.8	5654.5	110.7	9628.0

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(Dollars in Millions)

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

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(U) Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	TOTAL
Production Estimate	3820.4	5982.4	129.5	9932.3
Previous Changes:				
Quantity	-	-930.1	-	-930.1
Schedule	-	-	-	-
Engineering	+309.0	+116.8	-7.7	+418.1
Estimating	-107.0	-234.4	-8.4	-349.8
Other	- 1	-	-	-
Support	+23.8	-81.0	-	-57.2
Subtotal	+225.8	-1128.7	-16.1	-919.0
Current Changes:				
Quantity	-	+466.5	-	+466.5
Schedule	-7.9	-	-	-7.9
Engineering	~	+13.3	-	+13.3
Estimating	+226.4	-79.5	-	+146.9
Other	-	-	-	-
Support	-	+301.5	-	+301.5
Subtotal	+218.5	+701.8	-	+920.3
Total Changes	+444.3	-426.9	-16.1	+1.3
Current Estimate	4264.7	5555.5	113.4	9933.6

b. (U) Current Change Explanations --

		Base-Year	<u>Then-Year</u>
(1)	RDTSE		
	Revised escalation indices. (Economic)	N/A	+2.3
	Refinement of Link 16, SATCOM, and RVSM	-7.9	-10.7
	schedules resulting in reprogramming of R&D funds (to procurement) and reduction of		
	outyear funding. (Schedule)		
	Adjustment for Current and Prior Inflation.	-1.8	-1.8
	(Estimating)	170 7	107 0
	Baseline Extension - Five & Fiv/, for Link	+1/2./	+197.0
	16, Test efforts (JTF, JETS), GATH, Spilal		
	Development, Automatic Target Recognition,		
	and Reliability and Maintainability efforts.		
	(Estimating)	<b>+55</b> 5	+61 0
	Funding received for computer Replacement	+33.3	+01.0
	Program (CRP) Single Lab configuration,		
	Congressional add for GATM, FIUS PB plus ups		
	for ABCCC migration and keadiness and		
	Training. (Estimating)		
	DDTTE Subtatal	+218.5	+248.6
	KDIEL SUDCOLAI	. 210, 3	
(2)	Procurement		
. ,	Revised escalation indices. (Economic)	N/A	+9.9

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

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b. (U) Current Change Explanations		
	(Dollars 5	in Millions)
	Base-Year	Then-Year
Total Quantity Variance associated with	+439.9	+478.6
increase of 2 aircraft, from 15 to 17.		
Quantity increase of 2 aircraft, from 15 to	+466.5	+507.6
17. (Quantity)		
Allocation to Engineering variance resulting	+13.3	+14.5
from Quantity Change, (OR) (Engineering)		
Allocation to Estimating variance resulting	-39.9	-43.5
from Quantity Change, (OR) (Estimating)		
Adjustment for Current and Prior Inflation.	-6.8	-7.1
(Estimating)		
Adjustment for Current and Prior Inflation.	-2.8	-2.8
(Support)		
Baseline Extension for FY06 & FY07 for	+57.0	+66.7
Reliability and Maintainability, SATCOM, Kill	L	
Chain Minor Mods, and GATH. (Estimating)		
Adjustments for Congressional Actions,	-20.9	-17.9
Reprogramming, and Below Threshold		
Reprogramming, (Estimating)		
Refinement of estimate associated with the	+46.5	+50.6
addition of two aircraft. (Estimating)		
Revised program estimate to align flyaway and	-115.7	-125.8
support costs. (Estimating)		
Refigement of estimate to reflect actual	+0.3	-4.0
funding (Estimating)		
Change in Initial Spares (primarily due to	+97.7	+107.0
funding received for Long Lead (P-17).		
logistics support, modifications to the fuel		
tanks, and initial spares for P-16. (Support)	<b>)</b>	
Change in Peculiar Support due to addition of	+29.6	+31.1
two aircraft. (OR)(Support)		
Change in Other Won Sys due primarily to	+177.0	+196.0
reprogramming of RAD funds for SATCOM.		
funding received for the Computer Replacement	E.	
Program, and modifications to the fuel tanks	-	
(Support)	-	
Procurement Subtotal	+701.8	+782.3

QR = Quantity related changes.

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

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

## Current SAR Baseline to Current Estimate

PAUC	PAUC Changes								PAUC
Prod Est	st								Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
488.10	-0.167	+20.52	-0.594	+27.05	-13.58		+13.55	+46.78	534.89

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

Current SAR Baseline to Current Estimate

PUC				Chan	ges				PUC
Prod Est		c							
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
330.47	+0.035	+3.18		+8.62	-22.58		+12.89	+2.15	332.62

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

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	APR 1985	SEP 1985	SEP 1985	SEP 1985
Milestone III	N/A	SEP 1996	SEP 1996	SEP 1996
IOC	TBD	SEP 1997	DEC 1997	DEC 1997
Total Cost	1388.2	6741.9	9762.1	0678.0
Total Quantity	0	21	20	3
Prog Acg Unit Cost	0.0	321.0	488.1	

(U) NOTE: The SAR Planning Estimate (PE) Total Cost of 1388.2 was base the RDT&E program only.

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

#### (U) RDT&E:

The Computer Replacement Program (CRP) EMD, RDT&E contract F19628-90-C-0197, is over 90 percent complete and is no longer being reported.

Procurement:

Full Rate Production Lot V (P-9 and P-10), Procurement contract F19628-96-C-0021, reached over 98% complete since the last SAR and is no longer being reported (P-9 delivered in May 2000, P-10 in July 2000).

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

a. Procu (U) <u>LRIP</u>	Lot IV (P-7/8)	<u>.</u>	Initia] <u>Target</u>	Contract P: <u>Ceiling</u>	rice <u>Oty</u>
Northrop Gru F19628-95-C- Award: Julv	ımman Corp, Mel) -0169, FFP -21, 1995	bourne FL	\$168.6	N/A	2
Definitized:	December 20,	1996			
Currer	nt Contract Prie	се	Estimated H	Price At Com	pletion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	n Manager
\$558.8	N/A	2	\$558.8	\$.	558.8

Explanation of Change:

(U) The increase in Current Contract Price and Estimated Price at Completion from \$540.0 to \$558.8 is attributable to additional modifications (ECP's), work requests and JIMIS Options and extentions since the last (Dec 99) report.

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

(U) Contract Comments: **Please note:** This contract is 94.14% complete and will not be reported in future SAR submissions (P-7 delivered in December 1999, P-8 in March 2001).

			Initial	Contract Pi	rice
(U) Prod 1	Lot VI (P-11):		<u>Target</u>	Ceiling	<u>Oty</u>
Northrop Grun	mman Corp, Meli	bourne FL			
F19628-97-C-0	0001, FPI, CPF	F, FFP	\$226.5	N/A	1
Award: Decemb	ber 31, 1996			•	
Definitized:	May 5, 1998				
Current	t Contract Pri	ce	Estimated Pr	ice At Com	letion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	Contractor	Program	<u>Manager</u>
\$252.3	\$257.2	1	\$252.3	\$2	252.3
			Cost Variance	Schedule N	<u>Mariance</u>
Previous Cum	lative Varian	Ces	N/A	N/	'A
Cumulative Va	ariances To Da	te	\$5.0	\$0.	1
Net Chang	ge		\$5.0	\$0.	1

Explanation of Change:

(U) The increase in Current Contract Price and Estimated Price at Completion from \$247.8 to \$252.3 is attributable to additional Over and Above (O&A) aircraft refurbishment tasks, ECP activity, and severable work requests since the last (Dec 99) report.

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Joint STARS, December 31, 2001

Initial Contract Duis-

#### 15. (U) Contract Information (Cont'd):

(U) Contract Comments: Contract type includes Fixed Price Incentive, Cost Plus Fixed Fee and Firm Fixed Price.

Please note: Please note: This contract reached 100% complete in August 2001, and will not be reported in future SAR submissions (P-11 delivered in August 2001).

			INICIA.	L CONCLACE PI	LCE
(U) <u>Prod I</u>	Lot VII (P-12/	<u>'13):</u>	Target	<u>Ceiling</u>	Oty
Northrop Grun	aman Corp, Mel	bourne FL			
F19628-98-C-0	)001, FPI, CPF	'F, FFP	\$72.1	N/A	2
Award: Octobe	er 31, 1997				
Definitized:	August 12, 19	99			
Current	: Contract Pri	ce	Estimated	Price At Comp	letion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	<u>Manager</u>
\$393.8	\$411.0	1	\$335.3	\$3	62.6
			<u>Cost Varian</u>	<u>se Schedule V</u>	<u>ariance</u>
Previous Cumu	ilative Varian	ces	N/A	N/	'A
Cumulative Va	iriances To Da	te	<u>\$41.1</u>	\$-2.	6
Net Chang	je		\$41.1	\$-2.	6

## Explanation of Change:

(U) The increase in Current Contract Price and Estimated Price at Completion from \$387.4 to \$393.8 is attributable to additional refurbishment tasks, modifications, work requests and configuration updates since the last (Dec 99) report.

Cumulative cost variance is attributable to the Discovered Refurbishment Defects (DRD) driven by NGC Lake Charles labor under-runs. These DRD activities were not discovered at the levels originally anticipated. Cumulative schedule variance is attributable to Integrated Logistics Support Materials cost lagging behind schedule. The Air Force is taking action to identify and de-obligate under-runs.

(U) Contract Comments: Contract type includes Fixed Price Incentive, Cost Plus Fixed Fee and Firm Fixed Price.

**Please note:** as of this reporting period this contract is over 94% complete and will not be reported in future SAR submissions (P-12 delivered in Nov 01, P-13 will deliver by 31 May 01.

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## 15. (U) Contract Information (Cont'd):

(U) <u>Prod Lot VIII (P-14);</u> Northrop Grumman Corp. Melbourne FL			Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Qty</u>
F19628-98-C-0003, FPI, CPFF, FFP Award: June 30, 1999		, FFP	\$72.1 N/A		1
Definitized: 1	May 12, 2000				
Current	Contract Pric	e	Estimated P	rice At Comp	letion
<u>Target</u> \$233.3	<u>Ceiling</u> \$246.1	Oty 1	Contractor \$252.3	Program \$2	<u>Manager</u> 52.3
			<u>Cost Variance</u>	<u>Schedule V</u>	ariance
Previous Cumul Cumulative Vas Net Change	lative Varianc riances To Dat 2	es e	N/A <u>\$18.8</u> \$18.8	N/ \$-0. \$-0.	A <u>3</u> 3

## Explanation of Change:

(U) The increase in Current Contract Price and Estimated Price at Completion from \$226.3M to \$233.3M is attributable to configuration updates, ECP and CCP activities, modifications, work requests and Flight Manual updates since the last SAR.

The current cumulative cost variances in Discovered Refurbishment Defect (DRD) refurbishment are due to Lake Charles activities not occurring as anticipated as planned. The schedule variance attributable to the Radar Sub-System hardware fabrication and test activities. We have identified and are de-obligating the Air Force share of the projected under-run.

(U) Contract Comments: Contract type includes Fixed Price Incentive, Cost Plus Fixed Fee and Firm Fixed Price.

Please Note: The F19628-98-C-0003 basic contract was signed on 31 Oct 97 for Lot VII (P-12 and 13) with a dollar value of \$72.1M (long lead). This cost for Lots VI and VII were subsumed under contract F19628-97-C-0001 in Aug 99. F19628-98-C-0003 became Lot VIII (P-14) basic with full rate of production on 11 May 00 at a value of \$226.3M.

	Initia]	L Contract P:	rice
(U) <u>Prod Lot IX (P-15):</u>	Target	<u>Ceiling</u>	Qty
Northrop Grumman Corp, Melbourne FL			
F19628-99-C-0023, FPI, CPFF, FFP	\$35.7	N/A	1
Award: February 28, 2000			
Definitized: March 20, 2000			
Current Contract Price	Estimated I	Price At Com	pletion
<u>Target Ceiling Oty</u>	<u>Contractor</u>	Progra	<u>n Manager</u>

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Joint STARS, December 31, 2001

\$77.2

## 15. (U) Contract Information (Cont'd):

\$235.5	\$242.2	1	\$206.7	\$214.1	
			<u>Cost Variance</u>	Schedule Variance	
Previous Cumu	lative Variance	S	N/A	N/A	
Cumulative Va	riances To Date		<u>\$10.9</u>	\$1.7	
Net Chang	e		\$10.9	\$1.7	

Explanation of Change:

(U) The increase in Current Contract Price and Estimated Price at Completion from \$230.4M to \$235.5M is attributable to additional Over and Above (O&A)aircraft refurbishment tasks, modifications, work requests and configuration updates since the last (Dec 99) report.

The current cumulative cost variances in Discovered Refurbishment Defect (DRD) refurbishment are due to Lake Charles DRD activities not occurring as anticipated as planned. The schedule variance attributable to the Radar Sub-System is a result of sub-contractor (Norden) taking performance on materials received early from a major supplier. We have identified and are de-obligating the Air Force share of the projected under-run.

(U) Contract Comments: Contract type includes Fixed Price Incentive, Cost Plus Fixed Fee and Firm Fixed Price.

Please note: F19628-00-C-0023 basic contract was signed on 28 Feb 00 for a face value of \$35.7M, with full rate production awarded on 20 Mar 01 at a value of \$230.4M.

	Initial	Contract P:	rice
(U) <u>Prod Lot X (P-16):</u>	<u>Target</u>	<u>Ceiling</u>	Oty
Northrop Grumman Corp, Melbourne FL			
F19628-01-C-0015, FPI	\$38.4	N/A	1
Award: March 17, 2001			
Definitized: N/A			
Current Contract Price	Estimated P:	rice At Com	pletion
Target Ceiling Oty	Contractor	Program	n Manager

Explanation of Change:

N/A

\$77.2

(U) Currently \$77.2M of Long Lead funding is on a Undefinitized Contract Action with a projected definitization date of 15 Mar 02. First Cost Reporting expected 75 days after contract definitization.

\$77.2

## 15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FPI contract.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY82-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	<u>Total</u>
RDT&E	3296.3	75,9	55.5	435.1	3862.8
Procurement	4728.3	410.6	300.4	215.2	5654.5
MILCON	110.7	-	-	-	110.7
MaO	-	-	-	-	-
Total	8135.3	486.5	355.9	650.3	9628.0

b. Annual Summary -- JSTARS

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway	Flyaway		
		FY 1998	FY 1998	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1982				50.8	32.6
1983				46.6	31.3
1984				58.7	41.0
1985				67.4	48.6
1986				211.2	156.1
1987				388.9	300.2
1988				417.0	330.7
1989				276.3	229.6
1990				115.6	99.1
1991				261.6	232.6
1992				368.5	337.2
1993				335.3	313.2
1994				292.6	278.0
1995		Î		161.7	156.5
1996				158.9	156.5
1997				204.9	204.7
1998				106.7	107.2
1999				73.0	74.2
2000			ł	69.5	71.7
2001				90.8	95,3
2002				71.2	75.9
2003				51.3	55.5
2004				102.0	112.2

## Joint STARS, December 31, 2001

## 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005				126.6	141.9
2006		· · · · · · · · · · · · · · · · · · ·		109.9	125.5
2007				47.7	55.5
Subtotal	1			4264.7	3862.8

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flvawav	Flvawav		
		FY 1998	FY 1998	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992				145.0	137.2
1993	2	14.5	511.0	658.7	631.7
1994	2	6.0	528.0	551.5	537.7
1995	2	32.1	561.5	682.9	675.4
1996	2	15.3	404.7	503.1	504.1
1997	2	17.3	471.7	534.7	541.7
1998	1	17.2	230.7	345,7	352.3
1999	2		361.3	612.2	631.2
2000	1		211.3	346.8	364.1
2001	1		224.8	332.0	352.9
2002	1		252.4	380.5	410.6
2003	1		259.9	273.9	300.4
2004				61.2	68.4
2005				71.3	81.1
2006				27.1	31.4
2007				29.0	34.3
Subtotal	17	102.4	4017.3	5555.6	5654.5

(U) The latest approved Acquisition Program Baseline (APB) (15 Oct 01) reflects 16 procurement aircraft. A 17th aircraft was added with the FY03 PB, the JSTARS APB will be updated to reflect this additional aircraft and associated costs.

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Oty	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

## 16b. (U) Program Funding Summary (Cont'd):

.

Appropriation: 3300 - Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
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		<u> </u>		113.4	110.7

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	18	102.4	4017.3	9933.7	9628.0

## 17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	12	12

(U) Percent Total Program Quantities Delivered: 72.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7471

(U) Percent Total Program Expended: 77.6%

(U) Since the last SAR we have delivered seven Joint STARS aircraft to the 93d ACW (all of which were delivered ahead of contract schedule).

## 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The date of the OaS estimate cost for JSTARS is February 2002. OaS costs were based on refurbished Boeing 707 aircraft operating hours at 63 hours per aircraft per month powered by the TF-33B engine. The support concept priced

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## 18a. (U) Operating and Support Costs (Cont'd):

assumes two-level (organizational/depot) support of the Prime Mission Equipment (PME). The airframe support will be Government organizational level support. The remaining support will be accomplished via a Total System Support Responsibility (TSSR) contract with Northrop Grumman (NG). The TSSR contract provides for sustainment of the air vehicle, ground support system, operational and maintenance trainers, integrating supply chain and spares management, system engineering and technical data. NG fully integrates TSSR activities with the USAF blue suit operational-level maintenance personnel to provide seamless weapon system sustainment from flight line to depot. Under the TSSR concept, public/private partnering exists between NG and the Warner Robins Air Logistic Center (WR-ALC) Depot Maintenance Activity Group (DMAG) as an essential requirement for execution of the approved Joint STARS TSSR Acquisition Strategy. This partnering provides for government furnished supplies and services to be performed by the depot as an integral part of NG's performance and is consistent with statutory requirements/policies and with the designation of Joint STARS as a pilot project under Air Force Acquisition Lightning Bolt 99-7, Product Support Partnership. The Operations and Support period for the current estimate has a nine-year Ramp Up (FY96-05) and Steady State to FY23. The Steady State costs presented below were extracted from the latest CLS Brochure assuming a total of 17 aircraft.

There is no antecedent system.

Note: Total OSS Costs below is a Total Ownership cost from 1996-2024 and is based on a 16 aircraft fleet.

	JSTARS	Avg Annual Cost Per
	Annual Costs - First	Antecedent
Cost Element	Year SS FY04	1
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	75.8	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	43.9	N/A
Contractor Support	18.9	N/A
Sustaining Support	42.9	N/A
Indirect Costs	19.9	N/A
Mission Personnel	69.8	N/A
	N/A	N/A
Total	271.2	N/A

b. (U) Costs -- (FY 1998 Constant (Base-Year) Dollars in Millions)

Total OsS Cost	JSTARS	Avg Annual Cost Per
BY\$ (In Millions)	8488.9	N/A
TY\$ (In Millions)	9730.9	N/A

*** UNCLASSIFIED *** Joint STARS, December 31, 2001

18b. (U) Operating and Support Costs (Cont'd):

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## N-10 E-20 REPRO

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: E-2C AEW (HAWKEYE)

## AS OF DATE: December 31, 2001

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- (U) <u>Designation and Nomenclature (Popular Name)</u>: E-2C Hawkeye/Carrier Based Airborne Early Warning Command and Control System
- 2. (U) DoD Component: Navy

## 3. (U) <u>Responsible Office and Telephone Number</u>: PEO(T) Aircraft Programs (PMA-231) CAPT. Norvell L. Lilly

B1dg #2272, Suite 455, NAVAIRSYSCOM Assigned: May 6, 1999 47123 Buse Road Unit IPT DSN 757-7363; COMM (301) 757-7363 Patuxent River, MD 20670-1547 lillynl@navair.navy.mil

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0204152N Project E0463, E2321 PROCUREMENT: (U) APPN 1506 ICN 0195 (Navy) MILCON: (U) PE 0204611N

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E-2C AEW (HAWKEYE), December 31, 2001

## 5. (U) <u>References</u>:

## SAR Baseline (Production Estimate):

(U) The Acquisition Decision Memorandum for E-2C New Production Milestone III was approved 27 October 1994 by ASN RD&A. Approval was granted to begin E-2C Group II full rate production beginning with four aircraft in FY 95.

#### Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated February 17, 2000.

#### 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-125/138/139/145 radar and ALR-73 Passive Detection Systems which allow the E-2C to detect emitters/targets well beyond radar range.

Plans and funding were established for the E-2C Mission Computer Upgrade (MCU) in order to: (1) take advantage of improved sensor and communication capabilities resulting from the Update Development Program (UDP II), (2) exploit emerging Commercial Off-The-Shelf Technologies (COTS), and (3) address supportability issues occurring with the current antiquated tactical computer (which predates the E-2C aircraft). The replacement computer's hardware and software will be integrated into the onboard subsystems encompassing complex sensor inputs and outputs.

## 7. (U) Executive Summary:

(U) Studies initiated in the late 1980's confirmed the need for an upgrade to the current E-2C computer and offered possible upgrade approaches. Funding was identified and a Mission Computer Upgrade (MCU) Milestone IV/II was approved by ASN(RDA) in September 1994. An Engineering and Manufacturing Development (E&MD) contract for MCU development and integration was signed with Grumman Aerospace Corporation in November 1994. Successful first flight of an MCU equipped developmental test aircraft took place January 24, 1997. Low Rate Initial Production (LRIP) approval was granted in August 1997.

#### MISSION COMPUTER UPGRADE (MCU):

The MCU contract was extended until March 15, 2002 to complete Link 11/16 OPSPEC compliance. TECHEVAL was successfully completed in Oct 2000. The Operational Test Readiness Review (OTRR) was conducted and approved. OPEVAL was completed in May 2001. Four deficient areas were identified during OPEVAL. The program office along with Commander Operational Test and Evaluation Force (COTF) have implemented a resolution plan to fix the discrepanies. The MCU milestone III was successfully completed, and the Acquisition Decision

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## 7. (U) Executive Summary (Cont'd):

Memorandum (ADM) for full rate production was signed on September 7, 2001.

E-2C PRODUCTION:

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From FY99 through FY03, the Navy plans to purchase a total of 21 E-2C airframes under a fully-funded, five year, firm-fixed-price multiyear procurement (MYP). In the fiscal year 1999 Defense Authorization and Appropriation Bills, Congress authorized the Secretary of the Navy to enter into a multiyear procurement contract for the E-2C aircraft. The multiyear 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 FMS aircraft, is fully negotiated and priced.

Funding for follow-on production beyond FY03 is included in the FY03 President's Budget.

Note: The APN-1 procurement costs beyond FY06 including the advance procurement dollars in FY05 of \$46.3M represent the Radar Modernization Program (RMP) configuration of the E-2C aircraft, which will be its own Major Defense Acquisition Program and will be reported in a separate SAR once it is officially designated as such. A program element (PE) \$0604234N has been established for the RMP program, and as a result, the APN-1 procurement costs beyond FY06 will be reported in the RMP SAR.

## 8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	No
O6M	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

## 8c. (U) Threshold Breaches (Cont'd):

c. (U) Explanation of Breach:

Procurement threshold breach is due to a funding and quantity increase of two aircraft in FY04 and three aircraft in FY05. RDT&E threshold breach is due to congressional adds in E-2C Improvements including the initiation of the Radar Modernization Program efforts in program element #0204152N. A Program Deviation Report and a revised Acquisition Program Baseline are in process.

9. (U) <u>Schedule</u>:

. .

a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
IOC	APR 1992	APR 1992	APR 1992
Milestone III	JUN 1994	JUN 1994	OCT 1994
FRP Contract Award	JUN 1994	JUN 1994	DEC 1994
FOC	OCT 1994	OCT 1994	OCT 1994
FOT&E	JUN 1997	JUN 1997	JUN 1997
Organic Support Capability Date	JUN 1998	JUN 1998	JUN 1998
Service Depot Support Date	JUN 1999	JUN 1999	JUN 1999
Mission Computer			
Upgrade (MCS)			
Milestone II	SEP 1994	SEP 1994	SEP 1994
Navy Program Review - LRIP I	MAR 1997	MAR 1997	AUG 1997
First Flight of Production Representative Aircraft	SEP 1998	SEP 1998	NOV 1998
Initial Operational Capability (IOC)	JUN 1999	JUN 1999	OCT 1999
Milestone III	NOV 1999	MAY 2001	AUG 2001(Ch-1)

b. Current Change Explanations --

(U) (Ch-1) Milestone III date for MCU was changed from May 2001 to August 2001 to reflect actual occurrence of event.

#### 10. (U) Performance Characteristics:

a. Performance --

		Ap	proved	Demon-	
	Production	Progr	am (APB)	strated	Current
	Estimate (SAR)	Obi/T	hreshold	Perf	<u>Estimate</u>
Take off weight	55000	55000	/ 55000	55000	55000
Length	57 <b>'6</b> "	57' <b>6</b> "	/ 57'6"	57'6 <b>"</b>	57'6"
Span	80'7"	80'7"	/ 80'7"	80'7"	80'7"
Engine					
Number	2	2	12	2	2
Type	T56-A-	T56-A-	/ T56-A-	T56-A-	T56-A-
	427	427	/ 427	427	427
Crew	5	5	/ 5	5	5
Speed (KIAS)					
Max Speed @13,500 f (KIAS)	t 315	315	/ 315	315	315
# 10a. (U) <u>Performance Characteristics (Cont'd)</u>:

. . . .

Cruise Speed @ 24,540 ft.	Production <u>Estimate (SAR)</u> 270	Ap Progr <u>Obj/T</u> 270	proved am (APB) <u>hreshold</u> / 270	Demon- strated <u>Perf</u> 270	Current <u>Estimate</u> 270
Time on Station @200	4.0	4.0	/ 4.0	4.0	4.0
nm (nrs) Service Ceiling (ft) Passive Detection	28100	28100	/ 28100	28100	28100
System Range (nm) (Azimuth (deg) Radar Detection Range (AN/APS-145) (nm)	(b)(1)	N/A N/A	/ N/A / N/A	<b>(6 1)</b>	-
Overwater (C-141		N/A	/ N/A		
(DEP to Target at 200 nm	] ee-1	N/A	/ N/A		
Mission Computer Upgrade (MCS)					
System Weight (1bs) Load Time (sec)	150 45	150 45	/ 300 / 270	192 227	174 243
In-Flight Reload (sec)	20	20	/ 144	3.9	20
Operational Availability	0.97	0.97	/ 0.93	. 98	. 97

b. Current Change Explanations -- None

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E-2C AEW (HAWKEYE), December 31, 2001

## 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Production	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	205.7	379.7	427.6
	Procurement	2422.0	2719.1	3081.3
	Airframe & Changes	(1914.2)		(2197.9)
	Engine & Accessories	(206.2)		(217.1)
	Electronics	(87.5)		(215.0)
	Armament & Other GFE	(5.6)		(11.6)
	Nonrecurring			(62.6)
	Total Flyaway	(2213.5)		(2704.2)
	Other Weapons Sys Cost	(141.1)		(194.4)
	Peculiar Support	(0.0)		(81.1)
	Initial Spares	(67.4)		(101.6)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1994 Base-Year \$	2627.7	3098.8	3508.9
	Escalation	560.2	488.8	403.6
	Development (RDT&E)	(18.2)	(37.7)	(35.4)
	Procurement	(542.0)	(451.1)	(368.2)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	3187.9	3587.6	3912.5

(U) Dollars values (both then-year and base-year) in the SAR and APB baselines and current estimate represent the dollar values of both the E-2C aircraft and MCU end-items. These two end-items have been consolidated into the one end-item as of April 1997.

#### Notes:

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The E-2C program received \$21.5M for engine spares and \$13.5M for E-2C 90-day SHORCAL allowances as part of the Defense Emergency Response Funding (DERF).

Note: The APN-1 procurement costs beyond FY06 including the advance procurement dollars in FY05 of \$46.3M represent the Radar Modernization Program (RMP) configuration of the E-2C aircraft, which will be its own Major Defense Acquisition Program and will be reported in a separate SAR once it is officially designated as such. A program element (PE) #0604234N has been established for the RMP program, and as a result, the APN-1 procurement costs beyond FY06 will be reported in the RMP SAR.

b. (U) Quantity --

Development	(RDT&E)	N/A	N/A	0
Procurement		36	36	41
Total		36	36	41

(U) There are no Low Rate Initial Production (LRIP) quantities approved for the

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# 11b. (U) Total Program Cost and Quantity (Cont'd):

E-2C reprocured aircraft.

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c. (U) Foreign Military Sales --Sales to date are 4 for Israel for a total of \$178.8M, 13 for Japan for a total of \$860.1M, 6 for Egypt for a total of \$734.1M, 4 for Singapore for a total of \$318.3M, and 2 for France for a total of \$529.8M. FMS sales to Taiwan total \$201.5M in support of 4 direct commercial sale (DCS) aircraft.

d. (U) Nuclear Costs --None.

## 12. (U) Unit Cost Summary:

a.	(U) Prog. Acg. Unit Cost (PAUC)	UCR Baseline (FEB_2000_APB)([	Current Estimate Dec 2001 SAR)	Percent <u>Change</u>
	<pre>(1) Cost (FY 1994 BY\$) (2) Quantity (3) Unit Cost</pre>	3098.8 36 86.078	3508.9 41 85.583	-0.58
b.	<pre>(U) Avg. Proc. Unit Cost (APUC)   (1) Cost (FY 1994 BY\$)   (2) Quantity   (3) Unit Cost</pre>	2719.1 36 75.531	3081.3 41 75.154	-0.50

# 13. (U) Cost Variance Analysis:

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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	-13.6	-244.0		-257.6
Quantity	-	-	-	-
Schedule	-	+19.3	-	+19.3
Engineering	+178.4	+146.7	-	+325.1
Estimating	+5.3	-142.5	- 1	-137.2
Other	-	-	-	-
Support	-1.0	+56.7	-	+55.7
Subtotal	+169.1	-163.8	-	+5.3
Current Changes:				
Economic	+0.6	+7.4	-	+8.0
Quantity	-	+360.3	-	+360.3
Schedule	-	+2.2	_	+2.2
Engineering	-	+16.5	-	+16.5
Estimating	+69.4	+143.9		+213.3
Other	-	-	-	-
Support	-	+119.0	-	+119.0
Subtotal	+70.0	+649.3	-	+719.3
Total Changes	+239.1	+485.5	-	+724.6
Current Estimate	463.0	3449.5	-	3912.5

(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	-	-	-	-
Schedule	-	+25.2	-	+25.2
Engineering	+154.7	+126.4	- {	+281.1
Estimating	+6.1	-96.0	– i	-89.9
Other	-	-		-
Support	-	+69.0	-	+69.0
Subtotal	+160.8	+124.6	-	+285.4
Current Changes:				
Quantity	-	+298.5	-	+298.5
Schedule	-	+2.6	-	+2.6
Engineering	-	+13.0	-	+13.0
Estimating	+61.1	+121.0	-	+182.1
Other	-	_	-	- l
Support	-	+99.6	-	+99.6
Subtotal	+61.1	+534.7	-	+595.8
Total Changes	+221.9	+659.3	-	+881.2
Current Estimate	427.6	3081.3	-	3508.9

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# 13b. (U) Cost Variance Analysis (Cont'd):

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	b. (U) Current Change Explanations		
		(Dollars i <u>Base-Year</u>	n Millions) <u>Then-Year</u>
(1)	<u>RDT4E</u> Revised escalation indices. (Economic) Adjustment for Current and Prior Inflation.	N/A -0.5	+0.6 -0.5
	Plus Ups for E-2C Improvements including RMP initiation cost (Estimating)	+61.6	+69.9
	RDT&E Subtotal	+61.1	+70.0
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+7.4
	Total Quantity Variance associated with increase of 5 aircraft.	+308.9	+372.8
	Quantity increase of 5 aircraft from 36 to 41 (Quantity)	+298.5	+360.3
	Allocation to Schedule variance resulting from Quantity Change, (OR) (Schedule)	+2.6	+2.2
	Allocation to Engineering variance resulting from Quantity Change, (OR) (Engineering)	+13.0	+16.5
	Allocation to Estimating variance resulting	-5.2	-6.2
	Adjustment for Current and Prior Inflation.	~5.7	-6.4
	Additional funds to reprice and rephase CEC.	+21.9	+25.6
	Inflation adjustment for Multiyear Shield (Estimating)	-0.2	-0.2
	New Propeller 2000 realignment of funds (Estimating)	+6.7	+7.6
	Addition of funds for parts obsolescence (Estimating)	+27.6	+33.3
	Additional CFE/GFE for new aircraft (OR) (Estimating)	+74.8	+90.0
	Advance Procurement Funding realignment (OR) (Estimating)	+1.1	+0.2
	Adjustment for Current and Prior Inflation. (Support)	-0.9	-0.9
	Change in Initial Spares (Support)	+16.4	+18.8
	Change in Peculiar Support due to additional funds for weapon systems trainer (Support)	+42.2	+49.8
	Change in Other Weapon System Cost due to increase in production support for additional aircraft (QR) (Support)	+27.4	+33.9

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E-2C AEW (HAWKEYE), December 31, 2001

## 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations		
	(Dollars in Base-Year T	Millions) hen-Year
Change in initial spares (QR)(Support)	+14.5	+17.4
Procurement Subtotal	+534.7	+649.3

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		Changes							PAUC
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
88.55	-6.09	-2.01	+0.524	+8.33	+1.86		+4.26	+6.87	95.43

b. (U) Procurement Unit Cost (PUC) History

## Current SAR Baseline to Current Estimate

PUC		Changes							PUC
Prod Est									
	Econ	QLY	Sch	Eng	Est	Oth	Spt	Total	
82.33	-5.77	-1.26	+0.524	+3.98	+0.034		+4.29	+1.80	84.13

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	3912.5
Total Quantity	0	0	36	41
Prog Acg Unit Cost	0.0	N/A	88.5	95.4

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E-2C AEW (HAWKEYE), December 31, 2001

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# 15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E			Initial	Contract Pr	ice
(U) <u>Missio</u>	<u>n Computer Up</u>	<u>grade:</u>	<u>Target</u>	Ceiling	Otv
Northrop-Grum	man Corp, Bet	hpage NY			
N00019-93-C-0	205, CPIAF		\$155.2	N/A	n
Award: Novemb	er 30, 1994			,	Ŭ
Definitized:	November 30,	1994			
Current	Contract Pri	ce	Estimated Pr	ice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	Program	Manager
\$161.2	N/A	0	\$161.2	\$1	.61.2
			Cost Variance	<u>Schedule V</u>	ariance
Previous Cumu	lative Varian	ces	\$1.3	\$0.	7
Cumulative Va	riances To Da	te	<u>\$0,3</u>	\$-0,	1
Net Chang	e		\$-1.0	\$-0.	8

### Explanation of Change:

(U) Cost and aschedule variances are insignificant.

(U) Contract Comments: This contract is completed and this will be the final report.

b. Procurement	Initial	Contract	Price
(U) FY 98 Production A/C:	<u>Target</u>	<u>Ceiling</u>	Otv
Northrop-Grumman Corp, Bethpage NY	-		
N00019-96-C-0195, FFP	\$186.6	N/A	3
Award: December 15, 1996			
Definitized: October 31, 1997			
Current Contract Price	Estimated Pr	rice At Co	mpletion

				ee we eewpreedeen
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	<u>Contractor</u>	Program Manager
\$186.6	N/A	3	\$186.6	\$186.6

Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: The FY98 Congressional plus-up aircraft is not included on this contract. Contract award for the original three FY98 aircraft was in Dec 1996 and negotiated in conjunction with the FY97 aircraft buy as a second lot. Aircraft prices were finalized in August 1997 with funds obligated in October 1997. The plus-up aircraft funds were received in December 1997,

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## 15. (U) Contract Information (Cont'd):

which was too late to take advantage of a quantity buy of four aircraft. The plus-up aircraft is included on the FY99 MYP contract.

(0) <u>FY99-03 E-2C Multivear:</u>	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Oty</u>
Northrop-Grumman Corp, Bethpage NY N00019-97-C-0147, FFP Award: April 26, 1999	\$1293.8	\$1293.8	22
Definitized: September 23, 1999			
Current Contract Price	Estimated Pr	cice At Co	mpletion

Current	Contract Price		Estimated Price	At completion
<u>Target</u>	<u>Ceilina</u>	<u>Otv</u>	Contractor	Program Manager
\$1293.8	\$1293.8	22	\$1293.8	\$1293.8

### Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

#### (U) Contract Comments:

Since the FY98 plus-up aircraft's funds were received in December 1997, which was too late to take advantage of a quantity buy on contract N00019-96-C-0195, this aircraft was included on the FY99-03 E-2C Multiyear procurement Contract (MYP). The entire MYP contract is fully negotiated and priced. The total cost of the MYP contract is \$1,420.5 million which includes \$1,293.8 million for USN aircraft plus \$126.7 million for FMS aircraft.

The FY97 Production contract (N00019-94-C-0049) reported in the previous SAR dated December 31, 1999 is complete, and will not be reported in future SARs.

# 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

# a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	Total
RDT&E	386.5	37.4	19.0	20.1	463.0
Procurement	2296.2	302.0	299.5	551.8	3449.5
MILCON	-		-	-	_
OEM	60%	-	_	-	-
Total	2682.7	339.4	318.5	571.9	3912.5

# b. Annual Summary -- E-2C HAWKEYE

Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Flyaway	Flyaway		
		FY 1994	FY 1994	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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				49.7	55.7
2002				32.9	37.4
2003				16.5	19.0
2004				7.9	9.3
2005				5.4	6.5
2006				2.1	2.5
2007				1.4	1.8
Subtotal				427.6	463.0

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal	01	Flyaway FY 1994 Dollars	Flyaway FY 1994 Dollars	Total Program	Total Program
Iear		NOILEC	rec	Dase-real y	111CH-1041 V
1994					37.0
1995	4		251.2	276.3	289.6
1996	3		180.0	199.1	211.6
1997	4	1.4	259.7	277.4	297.4
1998	4	11.0	261.0	299.7	325.2
1999	3	8.5	184.0	371.0	408.0
2000	3	9.5	192.0	351.4	392.5

## 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		
		FY 1994	FY 1994	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001	5	4.6	296.6	294.4	334.1
2002	5		316.6	262.0	302.0
2003	5		316.0	255.5	299.5
2004	2	13.7	165.8	222.8	265.9
2005	3	13.9	218.7	235.1	285.9
Subtotal	41	62.6	2641.6	3081.3	3449.5

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
L	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	41	62.6	2641.6	3508.9	3912.5

#### 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	Actual
	RDT&E	0	0
	Procurement	17	17

(U) Percent Total Program Quantities Delivered: 41.5%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2289.3
  - (U) Percent Total Program Expended: 58.5%

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --ASSUMPTIONS ARE FOR FLEET SQUADRONS:

Flight Hours Per Aircraft Per Month39.8Number of Aircraft/Squadron4.0Consumption Rate, Gal/Hr392.0POL Cost, JP-5, Per Barrel, FY 97\$44.52Date of estimate 11/01.\$44.52

There is no antecedent program.

No current information is available at this time for the Radar Modernization Program contributions.

# 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

	E-2C HAWKEYE	Avg Annual Cost Per
	Avg Annual Cost Per	(Antecedent)
Cost Element	Squadron	
Mission Pay & Allowances	5.9	0.0
Unit Level Consumption	4.8	0.0
Intermediate Maintenance	1.0	0.0
Depot Maintenance	3.4	0.0
Contractor Support	0.0	0.0
Sustaining Support	2.8	0.0
Indirect Costs	5.2	0.0
Total	23.1	0.0

PVS (To Millions) 4766.3 N/A	Total O&S Cost	Avg Annual Cost Per
	Y\$ (In Millions)	N/A
TYS (In Millions) 6944.6 N/A	Y\$ (In Millions)	N/A

Report Creation Date: 03/26/2002 12:43:42 PM

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### SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: CH-47F (ICH)

# AS OF DATE: December 31, 2001

#### SUBJECT PAGE Cover Sheet Information 1 Mission and Description 2 Executive Summary 2 Threshold Breaches 3 Schedule 4 Performance Characteristics 5 6 Total Program Cost and Quantity 7 Unit Cost Summary 9 Cost Variance Analysis Unit Cost and Other History 11 Contract Information 12 Program Funding Summary 13

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1. Designation and Momenclature (Popular Mame) : CH-47F Improved Cargo Helicopter (ICH)

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## 2. DoD Component : Army

Delivery/Expenditure Information

Operating and Support Costs

## 3. Responsible Office and Telephone Number :

Office of the Project Manager Cargo Helicopters, ATTN: SFAE-AV-CH Building 5678 Redstone Arsenal, AL 35898-5280 LTC Newman D. Shufflebarger Assigned: August 1, 2000 DSN 897-3396; COMM (256) 313-3396 newman.shufflebarger@peoavn.redston e.army.mil

## 4. Program Elements/Procurement Line Items :

RDT&E: PE 0203744A Project D430 PROCUREMENT: APPN 2031 ICN AA0252 (Army)

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CH-47F (ICH), December 31, 2001

## 5. References:

SAR Baseline (Development Estimate) : DAE Approved Acquisition Program Baseline (APB) dated May 19, 1998.

Approved Program :

DAE Approved Acquisition Program Baseline (APB) dated May 19, 1998.

### 6. Mission and Description :

The CH-47F program, currently in Engineering and Manufacturing Development (EMD), is a rebuild of the current CH-47D helicopter with selected upgrades which extends the service life by twenty years, increases operational performance (lift capability and range), and upgrades the cockpit with digital communication/navigation capability allowing interoperability on the digital battlefield. Additionally, the rebuild of the airframe incorporates vibration reduction through stiffening structural components which reduces operating and support cost. The Vice Chief of Staff of the Army has directed incorporation of Full Component Recapitalization, Special Operations Aviation (SOA) aircraft (36 MH-47G aircraft), Global Air Traffic Management (GATM) (civil airspace interoperability), Air Warrior (aviator ensemble), and Digital Source Collector (DSC) (flight data recorder). Continued support, coverage, and sustainment of Maneuver, Fire Support, Air Defense, and Survivability mission areas will be provided by the CH-47F. Its mission is transportation of ground forces, class III/class V supplies, and battle critical cargo in support of all future contingencies.

A Service Life Extension Program, the CH-47F, as a legacy system in the objective force, will sustain the aging CH-47D fleet and bridge the gap until the development of a follow-on aircraft. 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, and repair them 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 into the CH-47F program.

#### 7. Executive Summary :

The CH-47F provides the most cost effective solution to sustain the heavy lift capability. The program has the full support of the Department of the Army and many of the Commanders-in-Chief who depend on the CH-47 for support. Funding is available to complete development and begin the transition to production.

Army Systems Acquisition Review Council (ASARC) Milestone II approval was obtained on 18 December 1997. On 22 April 1998, the Overarching Integrated Product Team (OIPT) Chairman recommended the program for entry into Engineering and Manufacturing Development (EMD) with an Acquisition Category (ACAT) IC designation. On 6 May 1998, the Under Secretary of Defense (Acquisition and Technology) approved the program for entry into EMD with an ACAT IC designation. Milestone Decision Authority was delegated to the Army Acquisition Executive. The Acquisition Decision Memorandum was signed on 19 May 1998. An EMD contract was awarded to Boeing Helicopters on 15 May 1998.

## 7. Executive Summary (Cont'd) :

Boeing has awarded a subcontract to Rockwell Collins for development of the avionics package. Engineering development and manufacturing preparation activities are progressing. Preliminary and Critical Design Reviews are complete. Cost Review Board was conducted 7 January 2002. Army Cost Position (ACP) has been approved for the upcoming ASARC.

# 8. Threshold Breaches :

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	No
Procurement	Yes
MILCON	No
0&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:

The program manager has identified a unit cost breach, procurement cost breach and schedule breach. Prime contractor (Boeing) rate increases, over & above, and material cost growth are the largest contributors. The second largest contributor to the cost increase is Army directed scope growth (Recapitalization, GATM, Air Warrior, and DSC). The Procurement threshold was established in the APB at \$2,506.7M (5% over the objective). The new ACP drives the total program procurement estimate to \$5,240.4M exceeding the threshold and generates a Procurement cost breach. The schedule breach is forecasted due to cost pressure and to incorporate Full Component Recapitalization, SOA aircraft, GATM, Air Warrior, and DSC. The affected dates are detailed in Section 9. A special ASARC to review the breach and rebaseline the program is scheduled for 7 March 2002.

CH-47F (ICH), December 31, 2001

# 9. Schedule:

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a. Milestones --

ORD Approval Milestone II ASARC EMD Contract Award Critical Design Review (CDR) LRIP (#1) Contract Award	Development Estimate (SAR) NOV 1997 NOV 1997 MAR 1998 SEP 1999 DEC 2001	Approved <u>Program (APB)</u> NOV 1997 NOV 1997 MAR 1998 SEF 1999 DEC 2001	Current Estimate NOV 1997 DEC 1997 MAY 1998 SEP 1999 DEC 2002 min 1
Start	FEB 2002	FEB 2002	JUL 2002([h-1])
Finish	MAR 2002	MAR 2002	AUG 2002([h-1])
LRIP (#2) Contract Award	MAR 2003	MAR 2003	DEC 2003([h-1])
LRIP (#1) First Delivery	MAY 2003	MAY 2003	OCT 2004([h-1])
Milestone III ASARC	JAN 2004	JAN 2004	NOV 2004([h-1])
Full Rate Production Contract Award	FEB 2004	FEB 2004	DEC 2004([h-1])
First Unit Equipped	SEP 2004	SEP 2004	FEB 2006([h-1])

First Unit Equipped will be a Heavy Lift Helicopter Company of 14 aircraft.

b. Current Change Explanations --(Ch-1) Cost growth reduced the quantity of affordable LRIP aircraft down to noneconomic level. Additionally, Army has increased the scope of the program and approved Full Component Recapitalization, incorporation of the SOA aircraft, GATM, Air Warrior, and DSC. Combined, this has resulted in the following schedule milestone changes:

NAME FROM		то
LRIP (#1) Contract Award	Dec 2001	Dec 2002
IOTSE Start	Feb 2002	Jul 2002
IOT&E Finish	Mar 2002	Aug 2002
LRIP (#2) Contract Award	Mar 2003	Dec 2003
LRIP (#1) First Delivery	May 2003	Oct 2004
Milestone III ASARC	Jan 2004	Nov 2004
Full Rate Production Contract Award	Feb 2004	Dec 2004
First Unit Equipped	Sep 2004	Feb 2006

### 10. Performance Characteristics :

a. Performance --

		A)	pproved	Demon-	
	Development	Progr	ram (APB)	strated	Current
	Estimate (SAR)	Obj/7	Threshold	Perf	Estimate
Self-deploy w/30 min fuel reserve (nm)	1260	1260	/ 1056	1117	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)	3.5	3.5	/ 3.3	N/A	3.5
(flt hrs)					
Maintenance:					
Total Maintenance Ratio (mmh/flt hr)	9.2	9.2	/ 9.8	N/A	9.2

(1) Performance requirements are to be achieved at 4000 ft above sea level and 95 degrees Fahrenheit.

(2) Confidence level at Milestone III, for Reliability, is 70 percent. Confidence level after 1000 flight hours by FUE unit is 90 percent.

Demonstrated Performance was entered based on the following:

1117 - Self-Deployment was calculated by analysis based on performance data from CH-47F flight test and the prime contractor's historical database. Standard day conditions and optimum altitude were used for the analysis. Converted data to KPP requirements. This analysis will be further supported by flight test. The extended range fuel system (ERFS) will be installed on an EMD aircraft that will be flown cross-country for a minimum distance of 1056 NM.

83.7 - Conducted External Load Gun Lift & Carry Mission at Aberdeen Proving Ground. Actual distance flown = 101NM. Converted data to KPP requirements.

31 - Conducted Troop Carry Mission from Wilmington Flight Test Center in a ballasted 31 troop configuration. Actual distance flight = 125NM. Converted data to KPP requirements.

157 - Same as above.

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# 10b. Performance Characteristics (Cont'd) :

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b. Current Change Explanations -- None

## 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	136.3	136.3	147.8
	Procurement	2387.3	2387.3	5240.4
	Flyaway	(2167.4)		(4784.5)
	Other Weapon System Cost			(406.6)
	Peculiar Support	(172.0)		(0.7)
	Initial Spares	(47.9)		(48.6)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1997 Base-Year \$	2523.6	2523.6	5388.2
	Escalation	591.8	591.8	1325.6
	Development (RDT&E)	(6.5)	(6.5)	(5.9)
	Procurement	(585.3)	(585.3)	(1319.7)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year S	3115.4	3115.4	6713.8
b.	Quantity			
	Development (RDT&E)	2	2	2
	Procurement	300	300	337
	Total	302	302	339

Two years of Low Rate Initial Production (LRIP) for up to 30 aircraft was approved at Milestone II. The President's Budget reflects revised quantities with 7 in FY03, 17 in FY04, 19 in FY05, 26 in FY06, and 24 in FY07. This results in a total of 24 LRIP aircraft.

The funding each fiscal year fluctuates slightly from the ACP's requirement each year. Also, the ACP includes a modifications line that is not included in this program. Modifications/changes to the aircraft on the production line are reflected in this report; but, the changes to fielded aircraft are not. As a result, the procurement current estimate above and in sections that follow, vary slightly from the ACP.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

Total

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# 12. Unit Cost Summary :

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		(MAY	UCR Baseline	(Dec	Curi Estir 2001	rent mate SAP)	Percent
	a. Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1997 BY\$) (2) Quantity (3) Unit Cost		2523.6 302 8.356	1000	531 15	88.2 339 .894	+90.21
	<pre>b. Avg. Proc. Unit Cost (APUC)     (1) Cost (FY 1997 BY\$)     (2) Quantity     (3) Unit Cost</pre>		2387.3 300 7.958		524 15	40.4 337 .550	+95.40
			UCR		Curi	rent	
			Baseline		Estin	nate	Percent
		(MAY	<u>1998 APB)</u>	(Dec	2001	SAR)	Change
	<pre>c. Prog. Acq. Unit Cost (PAUC)</pre>		3115.4 10.316		67: 19	13.8 ,805	+91.98
	d. Avg. Proc. Unit Cost (APUC) (1) Cost (TY\$) (2) Unit Cost		2972.6 9.909		650 19	50.1 .466	+96.45
•	Changes from Previous SAR (DEC 1999) (1) PAUC (BY\$) (2) APUC (BY\$) (3) PAUC Quantity (4) PAUC (TY\$) (5) APUC (TY\$)		Dol	lars/ 8. 8. 10. 9.	Qty 598 211 302 203 812	Pe: +1: +8: +1( +1(	Cent 17.84 11.88 16.22 06.26 01.63
	Initial SAR Information Initial SAR Date (JUN 1998): (1) Program Acquisition Cost (BY\$) (2) Program Acquisition Cost (TY\$)			252 311	2.6 4.4		

g. Unit Cost PAUC Changes --Contractor labor rate increases have resulted in a \$1.4M increase to unit cost. Over & above increased by \$1.3M and material increased by \$1.0M. Full Component Recapitalization added \$2.1M (or 25%).

Unit Cost APUC Changes --As stated above, contractor labor rate increases have resulted in a \$1.4M increase, over & above increased by \$1.3M and material increased by \$1.0M. Full Component Recapitalization added \$2.1M (or 26%).

h. Impact of Perf or Sched Changes --There has been no performance change. The schedule change has resulted in First Unit Equipped being pushed out 17 months, to February 2006.

## 12h. Unit Cost Summary (Cont'd) :

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1. Program Management & Control --Project Manager: LTC Newman D. Shufflebarger, DSN 897-3396, COMM (256) 313-3396 Business Manager: Ms. Patricia Chomskis, DSN 897-0751, COMM (256) 313-0751

Both Government and contractor are adequately staffed. The Program Executive Office assessments and formal semi-annual reviews are scheduled to facilitate and ensure effective management.

j. Cost Control Actions --

To limit exposure the two lots of LRIP aircraft will be through Fixed Price Incentive (FPI) contracts and the full rate production aircraft will be procured utilizing Firm Fixed Price (FFP) contracts. Cost, performance, and schedule tradeoffs are currently an integral part of the EMD and IPF contract execution. Similar tradeoffs will be considered throughout the LRIP phases, as well as value engineering, consistent with Federal Acquisition Streamlining Act (FASA) initiatives and DOD Directives 5000.1 and 5000.2-R (as of 10 May 01). The Government will continue to require standing Cost Integrated Product Teams and that cost be treated as an independent variable over the life cycle of the program. Contract cost data, primarily Cost Performance Reports (CPRs) and Contract Funds Status Reports (CFSRs), are reviewed monthly and quarterly, respectively. The cost data is evaluated in conjunction with other program data such as technical performance measurements, schedules, program reviews, IPT Reports, and test plans. Cost projections are evaluated continuously. The contractor (Boeing) is providing cost information as prescribed by the contracts. Boeing's management information system is fully EVM / CSCS compliant. It utilizes integrated cost and schedule methodology. Information is reported at a broad depth of detail, from summary levels to cost account levels (Integrated Product Team / Work Breakdown Structure intersection), on a weekly basis. The Program Manager, IPT Leaders, Business Management and Cost Account Managers (CAMs) use these reports in a weekly review. This review is structured to manage cost, schedule and estimate-at-completion trends, as well as to facilitate cross-functional program tactical action. Boeing has an initiative underway to provide a fully integrated cost and schedule system on the current CH-47F programs, by year-end 2002. This system, the Integrated Performance Analysis and Reporting / Integrated Performance and Scheduling (IPAR/IPAS) system, will be fully implemented on the CH-47F LRIP and production contracts. The Program Cifice does not rely exclusively on contractually required data for management purposes. The Program Office management information systems infrastructure enables almost real time exchange of cost and technical information with contractors and other government agencies.

# 12k. Unit Cost Summary (Cont'd) :

k. Contract Information (In Millions of Then-Year Dollars) -- None.

1. General Comments -- None.

# 13. Cost Variance Analysis :

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a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	142.8	2972.6	-	3115.4
Previous Changes:				
Economic	-2.5	-110.0	- 1	-112.5
Quantity	-	-	- 1	-
Schedule	-	-3.3	- 1	-3.3
Engineering	-	+18.4	-	+18.4
Estimating	-2.6	-7.8	-	-10.4
Other	-	-	-	-
Support	-	+73.8	-	+73.8
Subtotal	-5.1	-28.9	-	-34.0
Current Changes:				
Economic	+0.6	+0.9	-	+1.5
Quantity		+325.3	-	+325.3
Schedule	+3.4	+74.4	- 1	+77.8
Engineering	-	+1145.3	-	+1145.3
Estimating	+12.0	+1545.2	- *	+1557.2
Other	-	-		-
Support	-	+525.3	-	+525.3
Subtotal	+16.0	+3616.4	-	+3632.4
Total Changes	+10.9	+3587.5	-	+3598.4
Current Estimate	153.7	6560.1	-	6713.8

# 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	-	-	-	-
Schedule	-	-	-	-
Engineering		+10.1	-	+10.1
Estimating	-2.9	-		-2.9
Other	-	-		-
Support		+65.8		+65.8
Subtotal	-2.9	+75.9	-	+73.0
Current Changes:				
Quantity	-	+232.1	- 1	+232.1
Schedule	+2.9	- 1	-	+2.9
Engineering	-	+802.6	-	+802.6
Estimating	+11.5	+1572.3	-	+1583.8
Other	-	-	-	-
Support	-	+170.2	-	+170.2
Subtotal	+14.4	+2777.2	-	+2791.6
Total Changes	+11.5	+2853.1	-	+2864.6
Current Estimate	147.8	5240.4	-	5388.2

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

121	DDMCD		
(1)	Revised escalation indices. (Economic)	N/A	+0.6
	Adjustment for Current and Prior Inflation. (Estimating)	-0.6	-0.6
	Revised Schedule (Schedule)	+2.9	+3.4
	Change in Contractor Labor Rate (Estimating)	+12.1	+12.6
	RDT&E Subtotal	+14.4	+16.0
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+0.9
	Total Quantity Variance associated with increase of 37 units (from 300 to 337).	+227.3	+318.6
	Quantity increase of 37 units. (Quantity)	+232.1	+325.3
	Estimating Change (Estimating)	+326.8	+10.6
	Allocation to Schedule variance resulting from Ouantity Change. (OR) (Schedule)	0.0	+1.0
	Allocation to Engineering variance resulting from Quantity Change. (QR) (Engineering)	-4.8	-10.1
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	0.0	+2.4
	Stretchout of annual procurement buy profile.	0.0	+73.4

(Schedule)

# 13b. Cost Variance Analysis (Cont'd) :

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b. Current Change Explanations --

	(Dollars i	n Millions)
	Base-Year	Then-Year
New Engineering Change (Engineering)	+97.2	+140.5
Adjustment for Current and Prior Inflation. (Estimating)	-1.4	-1.5
Full Component Recapitalization (Engineering)	+710.2	+1014.9
Change in Force Structure and New Training Equipment Requirement (Support)	+406.6	+797.6
Adjustment for Current and Prior Inflation. (Support)	-0.3	-0.3
Change in Initial Spares (Support)	+0.8	+6.0
Change in Peculiar Support Category Alignment (Support)	-236.9	-278.0
Change in Contractor Labor Rate (Estimating)	+471.8	+580.3
Revised estimate for Over & Above due to early units bing in worse condition than originally anticipated. (Estimating)	+438.1	+538.9
Change in Material Cost (Estimating)	+337.0	+414.5
Procurement Subtotal	+2:77.2	-3516.4

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
	T 1 - 1				

PAUC		Changes					PAUC		
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.32	-0.327	-0.164	+0.220	+3.43	+4.56	**	+1.77	+9.49	19.80

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC			· -	Chang	e5	-			PUC
Dev Est									Cir Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Totai	
9.91	-0.324	-0.119	+0.211	+3.45	+4.56	'	+1.78	+9.56	19.47

## 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	NOV 1997	N/A	DEC 1997
Milestone III	N/A	JAN 2004	N/A	NOV 2004
FUE	N/A	SEP 2004	N/A	FEB 2006
Total Cost	N/A	3115.4	N/A	6713.8
Total Quantity	0	302	0	339
Prog Acq Unit Cost	N/A	10.3	N/A	19.8

# 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

•••••

			Initial	Contract Pr.	lce
CH-47F EMI	D:		Target	Ceiling	QLY
Boeing Helico	opters, Philade	lphia PA			
DAAH23-98-C-0	0069, CPIF		\$76.1	N/A	2
Award: May 15	5, 1998				
Definitized:	May 15, 1998				
Current	Contract Pric	e	Estimated Pr	ice At Comp	etion
Target	Ceiling	Qty	Contractor	Program	Manager
\$79.4	N/A	2	\$90.2	\$	91.8
			Cost Variance	Schedule V	ariance
Previous Cum	lative Varianc	es	\$1.8	S 0.	8
Cumulative Va	ariances To Dat	e (12/31/01)	\$-11.8	S-0.	3
Net Chang	ge		\$-13.6	\$0.	5

# Explanation of Change:

With the contract 85% complete, the schedule variance has improved. However, the unfavorable cost variance has steadily deteriorated to a negative \$11.8M since the last SAR. Currently, EMD aircraft #1 is in publications verification and EMD aircraft #2 is undergoing tempest testing.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY96-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	Total
RDT&E	131.8	18.4	3.5	-	153.7
Procurement	66.0	112.7	225.1	6156.3	6560.1
MILCON	-	-	-		-
O&M	-	-		-	-
Total	197.8	131.1	228.6	6156.3	6713.8

b. Annual Summary -- ICH

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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	38.7
2002				17.1	18.4
2003				3.2	3.5
Subtotal	2			147.8	153.7

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 S
2001				61.9	66.0
2002		and the set of the set		104.0	112.7
2003	7	48.4	155.7	204.1	225.1
2004	17		298.6	319.7	359.0
2005	19		284.1	330.5	378.1
2006	26		366.9	379.5	442.5
2007	24		321.0	338.6	402.3
2008	26		356.2	371.7	449.8
2009	27		377.6	411.3	507.1
2010	27		369.1	386.6	485.9
2011	27		368.5	395.6	506.8
2012	28		381.8	397.8	519.1
2013	27		360.6	385.9	513.3

## 16b. Program Funding Summary (Cont'd) :

. . . .

Appropriation: 2031 - Aircraft Procurement, Army

		Flyaway	Flyaway		
1	I	FY 1997	FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
2014	27		361.0	394.5	534.5
2015	26		346.6	373.9	516.4
2016	29		388.4	381.0	536.0
2017				3.8	5.5
Subtotal	337	48.4	4736.1	5240.4	6560.1

		Flyaway	Flyaway	Total	Total
		Dollars	1 Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
Grand Total	335	48.4	4736	.1. 5388.2	6713.8

## 17. Delivery/Expenditure Information :

а.	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): \$ 131.4

Percent Total Program Expended: 2.0%

The amount shown above for expenditures represent disbursements as of 31 Jan 2002. Obligations for the CH-47F program are \$188.5 million as of 31 Jan 2002.

# 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.

This information based on the 30 March 1998 approved Army Cost Position. A new comparison is being developed to depict operating and support costs consistant with the newly approved  $\Lambda$ CP.

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# 18b. Operating and Support Costs (Cont'd) :

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b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Thousands)

	ICH	11-1 2
	Average Annual	Average Annual
Cost Element	Per Aircraft	For Aircrait
Mission Pay & Allowances	426.4	426.4
Unit Level Consumption	101.2	118.5
Intermediate Maintenance	83.9	104.6
Depot Maintenance	180.6	683.3
Contractor Support	0.0	0.0
Sustaining Support	183.0	183.0
Indirect Costs	0.0	0.0
Total	975.1	1515.8

Total O&S Cost	ICH	CH-47D
BY\$ (In Millions)	5850.2	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 3/21/2002 4:19:12 PM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: Javelin

## AS OF DATE: December 31, 2001

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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

A-13 JAVELIN

3. (U) Responsible Office and Telephone Number: Department of Army COL Joh PEO - Tactical Missiles Assigne ATTN: SFAE-MSL-CC DSN 746 RSA, AL 35898-5720 John.We

COL John P. Weinzettle Assigned: September 15, 2000 DSN 746-7194; COMM (256) 876-7194 John.Weinzettle@msl.redstone.army.m il

4. (U) Program Elements/Procurement Line Items: RDT&E:

 (U)
 PE 64611

 PROCUREMENT:
 (U)

 (U)
 APPN 2032
 ICN CA0269 (Army)

 (U)
 APPN 2032
 ICN HO6102 (Army)

 (U)
 APPN 2032
 ICN HO6300 (Army)

 (U)
 APPN 1109
 ICN 038061 (Navy)

CLEATED FOR COUNPERLICATION AS AMENDE MAR 2 6 2002 DEPARTMENT OF DE LAUS

Classified by: ou line SCG, PEO Tactical Missiles detail of March 1999 Downgrade instructions; Declassify (THIS PAGE IS UNCLASSIFIED) - 1 -

02-C-0621

## 5. (U) References:

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> SAR Baseline (Production Estimate): (U) AAE Approved Acquisition Program Baseline (APB) dated September 18, 1997.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 2, 2001.

## 6. (U) Mission and Description:

(U) The Javelin system is a medium range, imaging infrared, fire-and-forget, manportable, antitank weapon system developed for the U.S. Army and U.S. Marine Corps (USMC) to meet the Combat Developer's (CBTDEV's) requirements as specified in the Joint Service Operational Requirement (JSOR), dated 12 December 1988. Javelin satisfies an operational requirement to provide increased reliability, survivability, higher hit/kill probability, and greater effective range against current and future armored threats. The JAVELIN tactical system is composed of two major items: a tactical round and a Command Launch Unit (CLU). Javelin training devices include the Missile Simulation Round (MSR), Basic Skills Trainer (BST), and the Field Tactical Trainer (FTT). The missile, sealed in a disposable launch tube assembly, is comprised of the seeker, guidance electronics, warhead and fuze, propulsion unit, and the control actuator system. The missile is classified as a "wooden round", i.e., having no field level repair and an expected minimum shelf life of ten years. The CLU consists of an integral visible day telescope and a long-wavelength infrared nightsight with wide and narrow fields of view. The CLU is used for battlefield surveillance, target acquisition, missile launch, and damage assessment. The Javelin may be used at the gunner's discretion in either top attack (the normal mode of operation) or direct mode (used for engaging targets under cover). The system is capable of defeating conventional and reactive armor in day/night engagements in excess of the design requirement of 2,000 meters. The Javelin soft launch capability enables firing from enclosures or covered fighting positions which reduce the gunner's vulnerability to counterfire. A secondary capability against helicopters and bunkers has been demonstrated but will not inhibit the primary mission of defeating armored targets. The Javelin will replace the Dragon.

7. (U) Executive Summary:

(U) This Selected Acquisition Report (SAR) is being submitted to document the significant accomplishments for the Javelin program since the last SAR submitted to Congress. During this reporting period, the Javelin Project Office was responsible for managing the joint Army/Marine Corps Javelin Weapon System. This included continuing the production, and fielding/deployment phases of the acquisition cycle.

The Army fielded Javelin to Units in Korea, Italy, Fort Drum, NY, Fort Lewis, WA, Fort Bragg, NC, and Fort Campbell, KY. The Marines fielded Javelin to Units in 29 Palms, CA, Camp Pendleton, CA, Camp Lejeune, NC, and Kaneohe Bay, HI. Missile production and deliveries resumed in May 2000 after resolution of technical issues with the warhead initiation module, discovered during Army

## 7. (U) Executive Summary (Cont'd):

initiated initial production testing. A second Javelin multi-year contract covering four production years was negotiated and signed in Aug 2000. Project Manager change of command was successfully completed in Sep 2000. The Army began accepting Full Rate Production 1 (FRP1) missiles in Oct 2000. The Javelin Project Office successfully demonstrated a CAPS Generation 2.5 device in Oct 2000, as a risk reduction effort in the continuing development of a production CAPS Generation 3 device. The Army programmed funding required to equip Interim Brigade Combat Teams (IBCT). The Government signed three Foreign Military Sales (FMS) cases and two FMS test cases.

Management of the Javelin Weapon System transferred to the Close Combat Missile Systems (CCMS) Project Office, after the Army deactivated the Javelin Project Office in July 2001. Round deliveries have been delayed due to test failures resulting from a malfunction of the common electronic safe, arm, and fire device. Deliveries are expected to resume in April 2002.

### 8. (U) Threshold Breaches:

a. (U) Acguisition 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) <u>Schedule:</u> a. Milestones --

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d. Hildeoneo			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	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 Oual Test			
Start	JUN 1990	JUN 1990	JUN 1990
Complete	DEC 1993	DEC 1993	DEC 1993
Training Force Dev Test and			
Experimentation (FDT&R)			
Start	FER 1993	FRR 1993	PPR 1993
Complete	APR 1993	1993	ADR 1993
Prototype Delivery	NOV 1992	NOV 1992	NOV 1992
TOTLE	NOV 1992		NOV 1992
Start	CPD 1993	SED 1993	500 1993
Complete	DEC 1993	DEC 1002	DEC 1993
LETE Decision (DNR)	DEC 1993	JBC 1995	DEC 1993
IPID I Contract Award	JUN 1994	JUN 1994	JUN 1994
IRIP I CONTRACT AWARD	NAD 1005	JUN 1994 MND 1095	JUN 1994
Exir II CONCIACT AWARD	PAR 1995	MAR 1995	MAR 1995
Prist Larie Delivery	001 1995	001 1995	001 1995
Prod Verification Test	NO11 1 005	NO14 1005	
Start	NOV 1995	NOV 1995	NOV 1995
Complete	APR 1996	APR 1996	APR 1996
LRIP III CONTRACT AWARD	FEB 1996	FEB 1996	FEB 1996
LARIP II Delivery	OCT 1996	OCI. 1996	OCT. 1996
Limited User Test			
Start	APR 1996	APK 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	JUL 2003
Milestone IIIB (DAB)	N/A	N/A	N/A

(U) ACRONYMS:

ASARC - Army Systems Acquisition Review Council

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Javelin, December 31, 2001

9a. (U) Schedule (Cont'd):

DAB - Defense Acquisition Board DSARC - Defense Systems Acquisition Review Council FDT&E - Force Development Testing & Experimentation FSD - Full Scale Development IOT&E - Initial Operational Test & Evaluation IOC - Initial Operational Capability LRIP - Low Rate Initial Production

b. Current Change Explanations 🔗 None

# 10. (U) Performance Characteristics:

a. Performance --



(U) ACRONYMS:MTBOMF - Mean Time Between Operational Mission Failures.MTTR - Mean Time To Repair.

Objectives/thresholds/current estimates are at MS III except P(k/e) and Missile operational reliability. Values shown are objectives representing desired performance and minimum acceptable thresholds.

1. (U) Full lethality must be met at both minimum and maximum range.

2. (U) Probability of hit given a reliable round P(h/reliable round). Hit probabilities are specified for 7 km visibility (day/night) in benign

## 10a. (U) Performance Characteristics (Cont'd):

environments. Must hit a fully exposed standard NATO target  $(2.3m H \times 2.3m W \times 4.6m L)$  stationary or moving (crossing velocity up to 20 km/hr) at all ranges (min to max). The hit probability must be attained given any attack azimuth or elevation angle (relative to target) given a shot with a reliable system.

3. (U) Probability of kill given a reliable shot P(k/s). A reliable shot is defined by a reliable launch and reliable flight. The P(k/s) must be attained against both stationary and evasively maneuvering targets at all ranges (min to max).

4. (U) Probability of kill given an engagement opportunity P(k/e). Values shown are defined at 1200 meters in fog oil or white phosphorous against a specific threat target.

5. (U) Missile Operational Reliability is established at system maturity which is three years after MSIII (May 00).

b. Current Change Explanations -(U) (Ch-1) CLU MTBOMF estimate changed from 204 to 214 based on CLU reliability data from both testing and field usage.

# 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Production	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
	Development (RDT&E)	877.0	872.6	874.7
	Procurement	2914.1	3177.3	3254.4
	Round Flyaway	(2018.1)		(2275.5)
	CLU Flyaway	(516.8)		(603.7)
	Total Flyaway	(2534.9)		(2879.2)
	Other Weapon System	Cos (51.1)		(78.0)
	Training Devices	(245.5)		(254.6)
	Plant Closure	(16.6)		(10.0)
	Total Other Wpn Sys	(313.2)		(342.6)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(66.0)		(32.6)
	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	4129.1
	Escalation	134.9	61.6	90.6
	Development (RDT&E)	(-109.7)	(-106.8)	(-106.6)
	Procurement	(244.6)	(168.4)	(197.2)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	3926.0	4111.5	4219.7

(U) Values shown include USMC program.

b. (U) Quantity --

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Development	(RDT&E)	48	57	57
Procurement		<u>28453</u>	24472	<u>25794</u>
Total		28501	24529	25851

Note: Excludes 165 RDT&E prototypes from the SAR Baseline and 154 from the Current Estimate that are not considered fully configured.

(U) A system is comprised of a round, a Command Launch Unit (CLU), four Training Devices and initial spares. The round is the designated unit of measure. Of the total procurement quantity shown above, 2585 rounds (FY94-703, FY95-872, and FY96-1010 or 9.1% of total) were produced during low rate initial production (LRIP).

c. (U) Foreign Military Sales --Javelin FMS sales include the following:

Country	Round Oty	<u>Total Case</u>
Australia	12	\$2.1M
Australia	5	\$0.4M
Norway	10	\$1.4M
Lithuania	74	\$9.6M

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# 11c. (U) Total Program Cost and Quantity (Cont'd):

Jordan		115	\$15.1M
United	Kingdom	14	\$4.4M

d. (U) Nuclear Costs --None.

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## 12. (U) Unit Cost Summary:

a.	(II) Prog. Acg. Unit Cost (PAUC)	UCR Baseline <u>(MAR 2001 APB)(Dec</u>	Current Estimate 2001 SAR)	Percent <u>Change</u>
	<pre>(1) Cost (FY 1997 BY\$) (2) Quantity (3) Unit Cost</pre>	4049.9 24529 0.165	4129.1 25851 0.160	~3.03
b.	<ul> <li>(U) Avg. Proc. Unit Cost (APUC)</li> <li>(1) Cost (FY 1997 BY\$)</li> <li>(2) Quantity</li> <li>(3) Unit Cost</li> </ul>	3177.3 24472 0.130	3254.4 25794 0.126	-3.08

# 13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	767.3	3158.7	-	3926.0
Previous Changes:				
Economic	+1.5	-81.8	-	-80.3
Quantity		-147.2	-	-147.2
Schedule	-	-14.9	-	-14.9
Engineering	+7.0	-	-	+7.0
Estimating	-11.4	+146.3	-	+134.9
Other	-	-	-	-
Support	-	-5.7	-	-5.7
Subtotal	-2.9	-103.3		-106.2
Current Changes:				
Economic	-	+12.3	-	+12.3
Quantity	-	+231.4	-	+231.4
Schedule	-	-4.4	-	-4.4
Engineering	-	-	-	-
Estimating	+3.7	+164.1	-	+167.8
Other	-	-	-	-
Support	-	-7.2	-	-7.2
Subtotal	+3.7	+396.2	-	+399.9
Total Changes	+0.8	+292.9	-	+293.7
Current Estimate	768.1	3451.6		4219.7

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# 13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	877.0	2914.1		3791.1
Previous Changes:				
Quantity	j -	-95.9	i –	-95.9
Schedule				-
Engineering	+7.3	-	-	+7.3
Estimating	-13.0	+99.8		+86.8
Other	-	-	-	-
Support	-	+5.0	-	+5.0
Subtotal	-5.7	+8.9		+3.2
Current Changes:				
Quantity	-	+208.1		+208.1
Schedule	- 1	-	-	-
Engineering	-	-	-	-
Estimating	+3.4	+132.4	-	+135.8
Other	-	-	-	-
Support	-	-9.1		-9.1
Subtotal	+3.4	+331.4		+334.8
Total Changes	-2.3	+340.3	-	+338.0
Current Estimate	874.7	3254.4		4129.1

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

		<u>0400 AV91</u>	A 1 / VIA A 9 9 9 4
(1)	<u>RDT&amp;E</u> Additional development for Javelin P3I. (Estimating)	+3.4	+3.7
	RDT&E Subtotal	+3.4	+3.7
(2)	<u>Procurement</u> Revised escalation indices. (Economic) Adjustment for Current and Prior Inflation.	N/A ~9.6	+12.3 -10.1
	(Estimating) Total Quantity Variance associated with increase in quantity of 3436 rounds from 22358 to 25794 and 357 CLUs from 4510 to 4867.	+222.5	+258.4
	Quantity Variance for Round (Quantity) Quantity Variance for CLU (Quantity) Allocation to Schedule variance resulting	+182.9 +25.2 0.0	+203.1 +28.3 -3.9
	Allocation to Estimating variance resulting	+29.8	+31.6
	Allocation to Schedule variance resulting from CLU Quantity Change. (QR) (Schedule)	0.0	-3.8

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# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations		
	(Dollars in	Millions)
	Base-Year T	<u>hen-Year</u>
Allocation to Estimating variance resulting	+2.8	+3.6
from CLU Quantity Change. (QR) (Estimating)		
Stretchout of annual procurement buy profile.	0.0	+3.3
705 Army missiles moved from the second		
multi-year to FY04. (Schedule)		
Estimating change due to acquisition strategy	+57,3	+/8./
Estimating Change due to acquisition strategy	+52 1	+60 3
changes for CLUs (Estimating)	TJC.1	+00.5
Adjustment for Current and Prior Inflation.	-1.4	-1.4
(Support)		
Change in Initial Spares methodology from 7%	-16.1	-17.9
of CLU hardware to 3%. (Support)		
Change in data due to increased hardware	+1.8	+2.2
procurement. (Support)		
Revised estimate of Training Devices due to	-2.8	-2.6
reduced contract price of Basic Skills		
Trainer. (Support)	6 0	7 1
Revised estimate for Plant Closure. (Support)	-0.0	- / . I + 2 7
increase in bardware procurement (OR) (Suppor	+ ) + J	+2.7
Increase in Interim Contractor Support	+33	+3.8
estimate to include transition to Organic		2.0
Depot. (Support)		
Revised estimate of program support in	+10.6	+13.1
fielding only years. (Support)		
	0.0	0.0
Procurement Subtotal	+331.4	+396.2

QR = Quantity related changes.

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Javelin, December 31, 2001

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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

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PAUC		Changes							
Init Est		P							
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.056	-0.008	+0.029	+0.029	+0.002	+0.022		+0.008	+0.082	0.138

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC		Changes								
Prod Est		Cur								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.138	-0.003	+0.017	-0,001		+0.012			+0.025	0.163	

b. (U) Procurement Unit Cost (PUC) History

Initial	SAR	Baseline	to	Current	SAR	Bascline	
							DUO

PUC		Changes							PUC
Init Est		F							
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.048	-0.006	-0.006 +0.017 +0.025 +0.001 +0.019 +0.007 +0.063							

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.111	-0.003	+0.016	-0.001		+0.012		-0.001	+0.023	0.134

# c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	JUN 1996	JUN 1996
Total Cost	N/A	3936.5	3926.0	4219.2
Total Quantity	N/A	70631	28501	25851
Prog Acg Unit Cost	N/A	0.1	0.1	0.2

Javelin, December 31, 2001

# 15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement (U) <u>Multivear I:</u>	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Otv</u>
TI/Martin Joint Venture, Tuscon AZ DAAH01-97-C-0209, FFP Award: May 31, 1997	\$745.0	N/A	6492
Definitized: N/A			
Constant Contained Define	Destructure D		

Current	: Contract Pri	ce	Estimated Pric	ce At Completion
<u>Target</u>	<u>Ceilina</u>	<u>Otv</u>	<u>Contractor</u>	Program Manager
\$762.2	N/A	6745	\$762.2	\$762.2

## Explanation of Change:

(U) The Multiyear I contract price changes are as follows:

\$745.0 Initial Price + 1.0 Initial spares for revised CLU configuration + 17.3 Option for 253 rounds - 1.0 Change in configuration of Basic Skills Trainer - 0.1 Definitization of P00043 for missile changes \$762.2 Current Price

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. Pricing data shown is for all three years of this contract. The annual Target (equals Ceiling) in millions and quantities are as follows: Program Year 1) \$193.2M & 1161 Rounds; Program Year 2) \$176.0M & 1274 Rounds; Program Year 3) \$393.0M & 4310 Rounds. Program Years 1, 2, & 3 are funded and awarded.

(U) <u>Multive</u>	ar II:	Tuscop A7	Initial	Contract F	rice
Rauthoop/IM_IC	int Venture		<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
DAAHO1-00-C-0108, FFP Award: August 7, 2000 Definitized: N/A			\$1236.0	N/A	11805
Current	Contract Pric	ce	Estimated P:	rice At Com	pletion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	<u>Progra</u>	<u>m Manager</u>
\$1238.4	N/A	11827	\$1238.4	\$1	238.4

Explanation of Change:

None.

## 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. The current Multiyear II contract price has been adjusted (from \$1236M to \$1238.4M) to include an option for 22 rounds, an initial spares option, royalty payments on FTT Student Stations, and an FMS sale of 4 CLUs and 1 Basic Skills Trainer.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY86-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	Total
RDT&E	762.8	2.8	0.5	2.0	768.1
Procurement	2289.1	415.1	254.5	492.9	3451.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3051.9	417.9	255.0	494.9	4219.7

b. Annual Summary -- Javelin

Appropriation: 2040 - Research, Development, Test + Eval, Army

	γ- <u> </u>	Flyaway	Flyaway		
		FY 1997	FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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	i			5.9	5.9
1998				7.4	7.5
1999				3.9	4.0
2000				1.8	1.9

# 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2040 - Research, Development, Test + Eval, Army

· · · · · · · · · · · · · · · · · · ·		Flyaway	Flyaway		
		FY 1997	FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001				0.5	0.5
2002				2.6	2.8
2003				0.5	0.5
2004				0.9	1.0
2005				0.9	1.0
Subtotal	57			874.7	768.1

Appropriation: 1109 - Procurement, Marine Corps

		Flyaway	Flyaway		
		FY 1997	FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997	141	0.7	28.7	37.7	38.2
1998	380	1.7	45.1	56.3	57.8
1999	741	5.2	65.5	79.8	83.2
2000	986	0.8	78.3	89.6	94.9
2001	305		25.5	28.1	30.2
2002				0.9	1.0
2003				1.0	1.1
2004				0.1	0.1
2005				0.1	0.1
Subtotal	2553	8.4	243.1	293.6	306.6

Appropriation: 2032 - Missile Procurement, Army

		Flyaway	Flyaway		-
		FY 1997	FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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	114.5	133.7	137.2
1999	3569	21.0	278.3	327.4	341.5
2000	2392	6.8	229.9	329.3	348.6
2001	2776	2.5	275.2	302.1	324.9
2002	4139	0.7	364.9	379.0	414.1
2003	1725		208.6	227.9	253.4
2004	1368		140.9	167.3	189.5
2005	1451		125.6	131.7	152.0
2006				16.3	19.2

## 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 S
2007	1322		98.6	100.2	120.0
2008				9.8	12.0
2009					
Subtotal	23241	98.5	2529.5	2960.8	3145.0

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Army	23298	98.5	2529.5	3835.5	3913.1
Navy	2553	8.4	243.1	293.6	306.6
Grand Total	25851	106.9	2772.6	4129.1	4219.7

## 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	57	57
	Procurement	5643	4927

(U) Percent Total Program Quantities Delivered: 19.3%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2475.8
  - (U) Percent Total Program Expended: 58.7%

(U) Procurement deliveries include Army and Marine Corps rounds for FY94 through FY98. FY99 deliveries have been delayed due to test failures resulting from a malfunction of the common electronic safe, arm, and fire device. Deliveries are expected to resume in April 02.

# 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The Javelin system support concept is consistent with existing Army policy as follows:

(1) Command Launch Unit (CLU) is a 3 level organic support concept. Unit level is responsible for visual inspection, exterior cleaning, battery replacement and troubleshooting thru the Built In Test (BIT) capability. Removal/replacement of components will be accomplished at the Direct Support (DS) level. Depot level capability will exist for complete overhaul/repair of the unit.

# 18a. (U) Operating and Support Costs (Cont'd):

(2) Maintenance of the round is a "wooden round" concept.

(3) Contractor Logistics Support (CLS) of training devices will be used for the life of the system.

Interim Contractor Support (ICS) for 2-Board CLU supply support and maintenance above unit level will be utilized for the first 60 months. CLU repair will consist of complete repair of the CLU's economically repairable circuit cards, assemblies, and components. Missile repair (resulting from surveillance checks) will be performed by the system's prime contractor.

Fielding began in June 1996. The CLU sustainment period covers 20 years of operation, maintenance, and modification. Military pay and allowances represent over 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 reparables, replenishment consumables, transportation, petroleum, oil, and lubricants plus ammunition/missiles. Intermediate Maintenance is field maintenance civilian labor. Depot Maintenance includes publications, civilian labor and material. Interim contractor support for the system and contractor logistics support for training devices make up the Contractor Support costs. Sustaining Support consists of system software maintenance, training device software maintenance, modifications/kits, system test and evaluation and demilitarization. Indirect Support includes system specific replacement training, costs associated with permanent change of station, and base operations.

Data source: Javelin - Project Office Estimate, updated December 2001, certified by AMCOM Cost Analysis, average over 13 years fully fielded (i.e. no ramp up or down) (sustainment years (FY 07 through FY 19)), Army only; Antecedent ~ DRAGON II Life Cycle Cost Estimate, dated August 1984, 20 years sustainment, Army only.

	Javelin	DRAGONII (ANTECEDENT)
	Avg Annual Cost for	Avg Annual Cost for
Cost Element	Javelin Program	DRAGON Program
Mission Pay & Allowances	78.4	103.8
Unit Level Consumption	12.1	26.0
Intermediate Maintenance	0.0	0.4
Depot Maintenance	0.5	24.2
Contractor Support	11.9	0.0
Sustaining Support	4.0	5.4
Indirect Costs	13.5	40.1

b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

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# 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

	Javelin	DRAGONII (ANTECEDENT)
	Avg Annual Cost for	Avg Annual Cost for
Cost Element	Javelin Program	DRAGON Program
Total	120.4	199.9

Total O&S Cost	Javelin	DRAGONII (ANTECEDENT)
BY\$ (In Millions)	2408.0	3998.0
TY\$ (In Millions)	4596.8	7632.1

Report Creation Date: 05/02/2002 9:52:25 AM

## SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: MH-60S

# AS OF DATE: December 31, 2001

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- 1. Designation and Nomenclature (Popular Name): MH~60S FLEET COMBAT SUPPORT HELICOPTER
- 2. DoD Component: Navy

N-16 MH-605

3. <u>Responsible Office and Telephone Number</u>: Air ASW, Assault and Special Mission CAPT William Shannon Program (PMA-299), 47123 Buse Road Assigned: September 22, 2000 Unit IPT, Suite 156 DSN 757-5409; COMM 301-757-5409 Patuxent River, MD 20670-1547 shannonwe@navair.navy.mil

## 4. Program Elements/Procurement Line Items: RDT4E: PE 0604212N Project H1709, H2415, H2772, H2773 PE 0604216N Project H3053 PROCUREMENT: APPN 1506 ICN 024000 (Navy) APPN 1810 ICN 424800 (Navy)

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# 5. References:

SAR Baseline (Development Estimate): DAE Approved Acquisition Program Baseline (APB) dated July 8, 1998.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated October 12, 2000.

### 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 added the primary missions of Combat Search and Rescue (CSAR), Special Warfare Support (SWS), Anti-Surface Warfare (ASUW), and CV Plane Guard/SAR. Annex B to the MH-60S ORD adds Airborne Mine Countermeasures (AMCM) as a primary mission for the MH-60S. The AMCM mission will provide Carrier Battle Groups (CVBGs) and Amphibious Readiness Groups (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:

Completion of OPEVAL occurred on March 7, 2002. The two month delay from a January 2002 completion, as reflected in the 30 SEP 01 SAR, to March 2002 resulted from the inability to schedule fleet assets for OPEVAL shipboard testing. A proposed revised APB update reflecting these changes is in the approval process.

In January 2001, the MH-60S completed TECHEVAL at the Naval Rotary Wing Aircraft Test and Evaluation Squadron (NRWATS) at NAWC-AD Patuxent River, Md. Additional development testing continued and Instrument Meteorological Conditions (IMC) certification occurred through August 2001. Correction of deficiencies found late in the testing process caused a two-month delay for entry into OPEVAL, subsequently causing the OPEVAL completion, MSIII, and IOC dates to be delayed.

In response to the Navy's May 19, 2000 request, HQ USAF/XP (DoD Executive Agent for MDS designator program) approved the redesignation of the CH-60S to the MH-60S effective February 6, 2001.

In December 2000, an Acquisition Decision Memorandum (ADM) was issued by ASN(RDA) to revise the acquisition strategy to incorporate changes due to additional aircraft procurement quantities (72); addition of AMCM cost, schedule, and performance parameters; and a schedule change due to the addition of common cockpit testing to the MH-60S program.

## 7. Executive Summary (Cont'd):

The Mission Need Statement (MNS) for a HC Helicopter, serial number M059-88-94, was approved and validated in November 1994. An Analysis of Alternatives, the HC Cost and Operational Effectiveness Analysis (COEA), was approved by CNO and ASN (RDA) on May 10, 1996. Threat assessment details can be found in the Naval Strike and Air Warfare Systems (NAVSAW) Threat Assessment (U), Vol. 1, aircraft, ONI-TA-017-00 (S/NF) dated October 2000. The MH-60S Operational Requirements Document (ORD) with Annex A Combat Search and Rescue Helicopter (Serial No. 484-88-98) was approved on April 27, 1998.

On January 8, 1999, the Secretary of Defense directed the U.S. Navy to develop and deploy an organic mine warfare capability. As part of the Navy's strategy, the MH-60S was tested for suitability and a revision to the MH-60S ORD was approved in May 2000 to add the AMCM mission as a requirement (Annex B, Serial No. 559-85-00).

The Defense Acquisition Board (DAB) approved Engineering Manufacturing Development (MSII) on July 8, 1998.

### 8. Threshold Breaches:

	Acquisition	Program	Baseline	(200) .
а.	Acquisition	Program	Baserine	(APD):

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:

	Breach			
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

c. Explanation of Breach:

A schedule deviation has occurred due to the delayed commencement of OPEVAL. Deficiencies were discovered late in developmental test that would have negatively affected a recommendation for fleet introduction from the

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MH-60S, December 31, 2001

## 8c. Threshold Breaches (Cont'd):

operational testers. Those deficiencies occurred in the Avionics Operational Program software and have been corrected and tested in the production-representative software release to be used for OPEVAL. Based on the 30 Sep 00 SAR, the current estimates for Operational Evaluation Complete changed from May 2001 to Jan 2002 (8 month delay); for MS-III (NAV SAE FRP) from Oct 2001 to Jun 2002 (8 month delay); and for IOC from Dec 2001 to Aug 2002 (8 month delay).

# 9. <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
MS-II/LRIP	APR 1998	APR 1998	JUL 1998
Common Cockpit Critical Design Review	JUN 1998	JUN 1998	JUL 1998
LRIP First Flight	JUL 1999	JUL 1999	JAN 2000
Technical Evaluation Complete	MAR 2000	JAN 2001	JAN 2001
Operational Evaluation Complete	JUL 2000	MAY 2001	MAR 2002(Ch-1)
MS-III (NAV SAE FRP)	SEP 2000	OCT 2001	JUN 2002
IOC	DEC 2001	DEC 2001	AUG 2002
LRIP 3 Contract Award	N/A	FEB 2001	JUN 2001
AMCM Phase 1 Static Tow Test and OEI	N/A	DEC 1999	DEC 1999
Test			
AMCM Phase II Dynamic Tow Test	N/A	JAN 2000	JAN 2000
AMCM Phase III AN/AQS-20 Tow	N/A	SEP 2000	OCT 2000
Demonstration			
AMCM Interim Process Review I	N/A	MAY 2000	MAY 2000
AMCM Interim Process Review II	N/A	JUN 2001	DEC 2001(Ch-2)
AMCM Interim Process Review III	N/A	MAR 2004	MAR 2004
AMCM IOC	N/A	MAR 2005	SEP 2005
CSAR IOC	N/A	MAR 2006	MAR 2006

# b. Current Change Explanations --

(Ch-1) Completion of OPEVAL occurred on March 7, 2002. The two month delay from a January 2002 completion, as reflected in the SEP 30 2001 SAR to March 2002, resulted from the inability to schedule fleet assets for OPEVAL shipboard testing.

(Ch-2) AMCM Interim Process Review II changed from October 2001 to December 2001 due to delays in preparing for MH-60S OPEVAL entry. Date change was within threshold for milestone.

## 10. Performance Characteristics:

a. Performance --

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a. reriormance				5		
	Development	Progr	proved am (APB)	Demon- strated	Current	-
	Estimate (SAR)	Obj/T	hreshold	Perf	Estimat	te
*Airspeed-Vmax (KIAS)	175	175	/ 150	154	154	
*Amphibious SAR Mission Radius (nm)	150	150	/ 50	50	50	(Ch-1)
*VERTREP Endurance (hrs)	3	3	/ 2	1+45	1+45	(Ch-2)
*VERTREP, External (1bs)	5,500	5,500	/ 5,500	6,000	8,000	(Ch-3)
*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	300	300	/ 200	TBD	200	
(nm)						
*SWS Mission Radius (nm)	300	300	/ 200	TBD	200	
*CV Plane Guard/SAR Mission Radius (nm)	200	200	/ 100	TBD	200	
*AMCM Free Flight	N/A	150	/ 120	TBD	150	
*AMCM Hover Endurance	N/A	90	/ 75	TBD	90	
*AMCM Tow Endurance	N/A	75	/ 60	TBD	60	
*AMCM Hot Temp Tow Endurance (105 deg F)	N/A	45	/ 30	TBD	35	(Ch-4)
*AMCM Tow Turns (25 knot wind)/(deg/sec)	N/A	1.5	/ 1.0	3.0	3.0	
*AMCM Wind Speed (TOW) (KIAS)	N/A	30	/ 25	25	25	

(*) Asterisk denotes Key Performance Parameter (KPP).

ACRONYMS: SAR - Search and Rescue KIAS - Knots Indicated Airspeed VERTREP - Vertical Replenishment VOD - Vertical On Board Delivery MTBF - Mean Time Between Failures MTTR - Mean Time to Repair CSAR - Combat Search and Rescue SWS - Special Warfare Support CV - Carrier

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# 10b. Performance Characteristics (Cont'd):

1.1.1

b. Current Change Explanations --(Ch-1)The Amphibiious SAR has changed from TBD to 50 due to developmental test demonstrated value.

(Ch-2) The VERTREP endurance has changed from TBD to 1+45 due to revised analysis from developmental test. The draft revised ORD alters the technical threshold for VERTREP mission endurance to 1+45 hours.

(Ch-3) The VERTREP External (lbs) has changed from 8,800 to 8,000 due to revised analysis.

(Ch-4) AMCM Hot Temp Tow Endurance has changed from 45 to 35 due to revised analysis.

## 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	71.0	235.5	261.0
	Procurement	2698.0	4419.6	4441.7
	Flyaway	(2188.7)		(3804.2)
	Non-Recurring Flyaway	(28.6)		(33.2)
	Total Flyaway	(2217.3)		(3837.4)
	Other Wpn System Costs	; (7.2)		(8.2)
	Other Support	(241.9)		(261.4)
	Total Other Wpn Sys	(249.1)		(269.6)
	Peculiar Support	(97.4)		(239.8)
	Initial Spares	(134.2)		(94.9)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1998 Base-Year \$	2769.0	4655.1	4702.7
	Escalation	385.0	724.4	684.8
	Development (RDT&E)	(1.0)	(11.8)	(14.6)
	Procurement	(384.0)	(712.6)	(670.2)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	3154.0	5379.5	5387.5
b.	Quantity			
	Development (RDT&E)	1	0	0
	Procurement	165	237	237
	Total	166	237	237

An additional LRIP Lot of 15 aircraft, which was above the normal 10% threshold, was approved by the DAB memorandum dated December 20, 2000.

# 11c. Total Program Cost and Quantity (Cont'd):

- c. Foreign Military Sales -- None.
- d. Nuclear Costs -- None.

# 12. Unit Cost Summary:

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	UCR Baseline (OCT 2000 APB)(Dec	Current Estimate 2001 SAR)	Percent
a Prog. Acg. Unit Cost (PAUC)	<u></u>		
(1) Cost (FY 1998 BY\$)	4655.1	4702.7	
(2) Quantity	237	237	
(3) Unit Cost	19.642	19.843	+1.02
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1998 BY\$)	4419.6	4441.7	
(2) Ouantity	237	237	
(3) Unit Cost	18.648	18.741	+0.50

# 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	72.0	3082.0	-	3154.0
Previous Changes:				
Economic	+0.6	-33.2	-	-32.6
Quantity	-	+1094.3	-	+1094.3
Schedule	-	-10.6	~	-10.6
Engineering	+31.7	+21.3	-	+53.0
Estimating	+90.1	+15.2	-	+105.3
Other	-	-	-	-
Support	-	+198.1	-	+198.1
Subtotal	+122.4	+1285.1	-	+1407.5
Current Changes:				
Economic		-41.3	-	-41.3
Quantity	-	+61.7	~	+61.7
Schedule		+11.5	-	+11.5
Engineering	+83.6	+222.0	~	+305.6
Estimating	-2.4	+538.6	-	+536.2
Other	-	-	-	- 1
Support	-	-47.7	-	-47.7
Subtotal	+81.2	+744.8	-	+826.0
Total Changes	+203.6	+2029.9	~	+2233.5
Current Estimate	275.6	5111.9	-	5387.5

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# 13a. Cost Variance Analysis (Cont'd):

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Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	71.0	2698.0	-	2769.0
Previous Changes:				
Quantity	-	+878.9	-	+878.9
Schedule	-	-	-	-
Engineering	+29.9	+19.7	-	+49.6
Estimating	+86.2	+28.5	-	+114.7
Other	-	+	-	- 1
Support	-	+157.3	-	+157.3
Subtotal	+116.1	+1084.4	-	+1200.5
Current Changes:				
Quantity	-	+48.3	-	+48.3
Schedule	-	-	-	-
Engineering	+76.2	+185.3	-	+261.5
Estimating	-2.3	+459.4	-	+457.1
Other	-	~	-	-
Support	-	-33.7		-33.7
Subtotal	+73:9	+659.3	-	+733.2
Total Changes	+190.0	+1743.7	_	+1933.7
Current Estimate	261.0	4441.7		4702.7

b. Current Change Explanations --

	D. Ourrent ondrige Diprenetions	(Dollars in <u>Base-Year</u> T	Millions) hen-Year
(1)	RDT&E Addition of AMCM capability (Engineering)	+71.4	+78.5
	Addition of Carriage Stream Tow and Recovery	+4.B	+5.1
	Revised estimate to reflect actuals data (Estimating)	-2.3	-2.4
	RDT&E Subtotal	+73.9	+81.2
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-41.5
	Economic adjustment for negative program change. (Economic)	N/A	+0.2
	Total Quantity Variance associated with increase of 4 aircraft from 233 to 237.	+48.3	+61.7
	Stretchout of annual procurement buy profile.	0.0	+11.5
	Increase in contractor Rates and hours estimated per aircraft. (Estimating)	+453.1	+529.0
	Change in estimating to reflect prior year actual data including funds	-17.2	-18.1

reprogrammed into RDT&E (Estimating)

+75.0

0.0

# 13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --(Dollars in Millions) Base-Year Then-Year +23.5 +27.7 Change in estimating to reflect updated GFE/Material Costs (Estimating) Addition of AMCM Ancillary Kits/Aircraft Mods +60.6 in APN (Engineering) Correction to recategorize AMCM Mission Kits 0.0 from OPN support to OPN engineering (Engineering) +124.7 +147.0

(Support)	-124.7	-147.0
Realignment of AMCM Mission Kits from OPN to APN	0.0	0.0
(Engineering)	+133.8	+153.9
(Engineering)	-133.8	-153.9
Decrease in Weapon System Support (Support)	-1.4	-0.9
Change in Initial Spares (Support)	+31.4	+35.1
Increase in Peculiar Support for PGSE and trainers (Support)	+58.5	+61.7
Increase in Other support (Support)	+2.5	+3.4
Procurement Subtotal	+659.3	+744.8

# 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current	SAR	Baseli	ne to	Current	Estimate	

PAUC	Changes							PAUC	
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
19.00	-0.312	-0.815	+0.004	+1.51	+2.71		+0.635	+3.73	22.73

## b. Procurement Unit Cost (PUC) History

# Current SAR Baseline to Current Estimate

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PUC	Changes								PUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	T
18.68	-0.314	-0.805	+0.004	+1.03	+2.34		+0.635	+2.89	21.57

## 14c. Unit Cost and Other History (Cont'd):

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c. Schedule, Cost, and Quantity History

1	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	<u>N/A</u>	N/A	N/A	N/A
Milestone II	N/A	APR 1998	N/A	JUL 1998
Milestone III	N/A	SEP 2000	N/A	JUN 2002
IOC	N/A	DEC 2001	N/A	AUG 2002
Total Cost	N/A	3154.0	N/A	5387.5
Total Quantity	0	0	0	237
Prog Acq Unit Cost	N/A	0.0	N/A	22.7

# 15. Contract Information (Then-Year Dollars in Millions):

a. Procurement	Initial	Contract Pr	ice
MH-60S Production Lot II:	Target	Ceiling	Qty
Sikorsky Aircraft Co., Stratford CT			
DAAJ09-97-C-0005, FFP	\$153.0	N/A	14
Award: March 28, 2000			
Definitized: June 30, 2001			
Current Contract Price	Estimated Pr	rice At Comp	letion
Target Ceiling Qty	Contractor	Program	Manager
\$185.7 N/A 16	\$185.7	\$1	85.7

# Explanation of Change:

The current contract price changed from \$160.3 to \$185.7 at definitization to include 2 Congressionally added aircraft.

Cost and Schedule variance reporting is not required on this FFP contract.

#### Contract Comments:

This letter contract for Lot II production was awarded on March 28, 2000. Definization occurred in June 2001. The Army letter contract includes both the Black Hawk base price plus the MH-60S ECP. This contract incorporates an ECP to the Army contract which converts Army Black Hawks to a Navy MH-60S configuration.

This contract is more than 90% complete and will no longer be reported.

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# 15. Contract Information (Cont'd):

MH-60S Prod Lot III:		Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Qty</u>	
DAAJ09-97-C-00 Award: June 28 Definitized: J	craft Company, Stratford CT 0005, FFP 28, 2001 June 28, 2001		\$170.0	N/A	15
Current <u>Target</u> \$170.0	Contract Price Ceiling N/A	<u>Qty</u> 15	Estimated P Contractor \$170.0	rice At Con Progra	mpletion am Manager \$170.0

Explanation of Change:

None.

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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)

Appropriation	Prior <u>Years</u> (FY97-01)	Budget <u>Year</u> (FY02)	Budget Year (FY03)	Balance To <u>Complete</u> (FY04-13)	<u>Total</u>
RDT&E	146.5	54.4	23.2	51.5	275.6
Procurement	856.8	273.3	372.2	3609.6	5111.9
MILCON	-	-	-	-	-
O&M	-	~	-	-	-
Total	1003.3	327.7	395.4	3661.1	5387.5

b. Annual Summary -- MH-60S

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway Fy 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				6.9	6.9
1998				29.5	29.7
1999				36.2	36.8
2000				40.9	42.3
2001				29.3	30.8
2002				51.0	54.4
2003				21.4	23.2
2004				18.3	20.2

# 16b. Program Funding Summary (Cont'd):

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Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Flyaway	Flyaway		]
		FY 1998	FY 1998	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2005				11.7	13.1
2006				10.5	12.0
2007				5.3	6.2
Subtotal				261.0	275.6

# Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flvaway		
		FY 1998	FY 1998	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998	1	11.1	16.0	29.2	29.7
1999	5		130.8	133.4	137.7
2000	16		331.2	344.9	361.6
2001	15		211.8	307.7	327.8
2002	13		187.6	252.6	273.3
2003	15	22.1	287.2	338.4	372.2
2004	13		287.5	364.1	407.8
2005	22		346.2	391.3	446.5
2006	26		444.3	474.9	552.3
2007	27		479.0	503.0	596.0
2008	26		413.0	440.7	532.1
2009	26		395.5	414.5	510.0
2010	26		237.5	321.3	402.9
2011	6		36.6	86.4	110.4
2012				20.7	26.9
2013				18.6	24.7
Subtotal	237	33.2	3804.2	4441.7	5111.9

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002					
2003					
2004			- <u>-</u>		
2005					
2006					
2007					
2008					
2009					
2010			L		

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### 16b. Program Funding Summary (Cont'd):

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Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1998 Dollars Nonrec	Flyaway FY 1998 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal					

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	237	33.2	3804.2	4702.7	5387.5

### 17. Delivery/Expenditure Information:

a.	Deliveries To Date	Plan	Actual
	RDT&E	0	0
	Procurement	26	26

Percent Total Program Quantities Delivered: 11.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 648.9

Percent Total Program Expended: 12.0%

### 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 two hundred thirty seven MH-60S aircraft, with an operational service life period covering 30 years. The estimated costs do not include the AMCM or Armed Helo Missions. The estimate utilizes the Office of the Secretary of Defense Cost Analysis Improvement Group (OSD CAIG) Work Breakdown Structure for Operating and Support of Aircraft Systems. Estimating relationships were established from analogy to operating H-60 aircraft in the U.S. Navy inventory (HH-60H, SH-60B, SH-60F) and/or to the current Legacy aircraft (H-1, H-3, H-46) performing the missions to be assumed by the MH-60S. This estimate is based on average annual cost per squadron for a 10 plane squadron. The life cycle cost estimate is a working estimate and will be updated for MSIII.

Additional Notes: The addition of 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. Future SAR reports will reflect MH-60S O&S cost

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# 18a. Operating and Support Costs (Cont'd):

estimates only.

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b. Costs -- (FY 1998 Constant (Base-Year) Dollars in Millions)

	MH-60S	KH-60H
	Average Annual Cost	Average Annual Cost
Cost Element	10 A/C Per Squadron	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	нн-бон
BY\$ (In Millions)	20206.0	21579.0
TYS (In Millions)	33927.0	36684.0

Report Creation Date: 03/26/2002 1:53:52 PM

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- DOD-Z CHEM DEMIL

# SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: Chem Demil

INDEX

AS OF DATE: December 31, 2001

SUBJECT Cover Sheet Information Mission and Description Executive Summary Threshold Breaches Schedule Performance Characteristics Total Program Cost and Quantity Unit Cost Summary Cost Variance Analysis Unit Cost and Other History Contract Information Program Funding Summary Delivery/Expenditure Information	PAGE 1 2 3 12 14 21 24 26 34 38 40 44 56 57	PINGTOM Manager for Chemical Demilikarization
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------	--------------------------------------------------

- Designation and Nomenclature (Popular Name) : Chemical DemitTarization Program
- 2. DoD Component: Army

2.0

3. Responsible Office and Telephone Number :

SFAE-CD-Z APG, MD 21010-4005 Mr. James L. Bacon Assigned: July 1, 1997 DSN 584-3447; COMM 410-436-3447 james.bacon@pmcd.apgea.army.mil

4. Program Blements/Procurement Line Items : RDT4E: PE 779117000 PROCUREMENT: APPN 0390 ICN APPN (DCA/DNA) MILCON: PE 0708007A PE 0708007D O&M: PE 778137000

CLEARED FOR OPEN PUBLICATION

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DIRECTORATE FOR FREEDOM OF HILDRMANDN AND SECURITY REVIEW DEPARTMENT OF DEFENSE

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Chem Demil, December 31, 2001

## 5. <u>References</u>:

CSD

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SAR Baseline (Production Estimate): DAE Approved Acquisition Program Baseline (APB) dated March 31, 1998.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated March 31, 1998.

NSCMD

SAR Baseline (Production Estimate): DAE Approved Acquisition Program Baseline (APB) dated March 31, 1998

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated March 31, 1998.

#### 6. Mission and Description:

### CHEMICAL DEMILITARIZATION PROGRAM

The Chemical Demilitarization Program (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 provides funding for the Chemical Stockpile Emergency Preparedness Project (CSEPP). The Program structure reflected in the current Acquisition Program Baseline (APB) dated March 31, 1998, contains two end items that reflect two major mission areas: Chemical Stockpile Disposal (CSD) and Non-Stockpile Chemical Materiel Disposal (NSCMD). Under this structure, CSDP, ATAP, and CSEPP funding are reported as elements of the Program's CSD end item, and NSCMP is reported as the NSCMD end item.

### CHEMICAL STOCKPILE DISPOSAL END ITEM

Chemical Stockpile Disposal Project

The CSDP mission is to demilitarize the unitary stockpile of lethal chemical agents and munitions stored in the continental United States (CONUS) and, formerly, at Johnston Island (JI) in the Pacific. 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, established in 1994, is responsible for identifying viable alternatives to incineration, planning for implementation of the requirements, and managing the activities of the various organizations involved in accomplishing this mission. On January 17, 1997, the Defense Acquisition Executive (DAE) authorized the U.S. Army to prepare an environmental impact analysis (National

### 6. Mission and Description (Cont'd):

Environmental Policy Act [NEPA] documentation) of the proposal to construct pilot plants to demonstrate alternative technologies of neutralization (hydrolysis), followed by either on-site or off-site post-treatment, for nerve agent VX at Newport Chemical Depot (NECD), IN, and mustard agent at Aberdeen Proving Ground (APG), MD.

Chemical Stockpile Emergency Preparedness Project

The CDP provides funding for CSEPP. CSEPP is an effort that is complementary to both CSDP and ATAP to enhance protection of the civilian population, the workers involved in the destruction effort, and the environment during storage activities and destruction of the U.S. chemical weapons stockpile. The 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. The Assistant Secretary of the Army (Installations and Environment) (ASA[I&E]) has policy direction and oversight authority for CSEPP.

#### NON-STOCKPILE CHEMICAL MATERIEL DISPOSAL END ITEM

Non-Stockpile Chemical Materiel Product

The NSCMP was established as a result of House Appropriations Report 101-822, which accompanied the fiscal year (FY) 1991 Department of Defense Appropriations Act. NSCMP activities are divided into five categories: binary chemical warfare materiel (CWM) disposal, destruction of former U.S. chemical weapons production facilities, miscellaneous CWM disposal, recovered CWM disposal, and research, development, and acquisition of disposal systems. NSCMP also provides storage and transportation planning and disposal support to remediation activities being conducted at active Department of Defense installations and at formerly used defense sites.

### 7. Executive Summary:

This Selected Acquisition Report (SAR) details impacts to cost, schedule, and performance since last reported in the December 1999 SAR. This report, together with the-Annual Status Reports on the Disposal of Chemical Weapons and Materiel for FYs 2000 and 2001, provides a complete status of the CDP as of the submission of the FY 2003 President's Budget. Where possible, significant events that have occurred since December 31, 2001 are included in order to provide the most current and timely information available.

The CDP continues to progress toward the elimination of U.S. chemical weapons and materiel, while complying with Chemical Weapons Convention (CWC) requirements.

In May 2001, the DAE redesignated the CDP from an Acquisition Category (ACAT) 1C (component) program to an ACAT 1D (Defense Acquisition Board [DAB]) program, with the U.S. Army as executive agent. In December 2001, the Secretary of the Army directed ASA(I&E) to assume all policy, program direction, and oversight

### 7. Executive Summary (Cont'd):

for CDP planning, programming, and budgeting. This also included direct supervision of the Program Manager for Chemical Demilitarization (PMCD).

On July 5, 2001, the United States achieved the CWC international treaty milestone: "20% U.S. Category 1 Chemical Weapons Destroyed," nearly 10 months ahead of the requirement. This is a significant accomplishment, as the United States is the first CWC member nation to destroy 20 percent of its declared stockpile of chemical agents.

On March 5, 2002, the NSCMP achieved the CWC international treaty and Program milestone: "Initially Declared Category 3 Chemical Weapons 100% Destroyed". All known Category 3 materiel has been destroyed, including 80,825 initially and supplementally declared items and 38 recently discovered items that are in the process of being declared. Category 3 Chemical Weapons includes unfilled munitions and devices, and equipment specifically designed for use directly in conjunction with chemical agent employment.

A Defense Acquisition Board (DAB) Program review of the CDP was conducted on September 6, 2001. The purpose of the DAB was to review the cost, schedule, and performance status of CSDP (excluding the Pueblo and Blue Grass Chemical Agent Disposal Facilities), ATAP, NSCMP, and CSEPP. In addition, an updated Life Cycle Cost Estimate (LCCE), closure of CSD facilities, and CWC treaty compliance were addressed, and PM Assembled Chemical Weapons Assessment (ACWA) provided a status update. An Acquisition Decision Memorandum (ADM) documenting the DAB results, including approval of revised schedule and cost estimates, was published on September 26, 2001.

An updated APB has been drafted that incorporates guidance included in the September 26, 2001 ADM. Discussion and coordination of the revised APB are ongoing. The document was distributed at the Programmatic/Acquisition Working-level Integrated Product Team meeting on January 26, 2002. After all reviews are complete, the document will be finalized for PM review and signature, and subsequently forwarded through Headquarters, Department of the Army to the DAE for approval.

Heightened security measures (including deployment of U.S. Army soldiers to augment installation security forces) have been implemented due to the September 11, 2001, terrorist attacks on New York and the Pentagon.

### CHEMICAL STOCKPILE DISPOSAL PROJECT

The CSDP continues with the elimination of the U.S. stockpile of unitary chemical agents and munitions, while ensuring maximum protection to the communities surrounding the disposal facilities, the workers involved in the destruction effort, and the environment. As of March 10, 2002, the Johnston Atoll Chemical Agent Disposal System and the Tooele Chemical Agent Disposal Facility together have destroyed 8,079 tons of chemical agent and 1,341,727 munitions, representing 25.6 percent of the original U.S. national chemical stockpile (measured in tons of chemical agent).

Chem Demil, December 31, 2001

## 7. Executive Summary (Cont'd):

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Johnston Atoll Chemical Agent Disposal System (JACADS)

In August 2000, JACADS personnel began the disassembly of the Dunnage Incinerator (DUN) Pollution Abatement System (PAS), the first step in pre-closure activities for JACADS. DUN PAS removal was completed in March 2001. Disassembly/removal of the DUN PAS is a significant accomplishment and provided the public tangible evidence of JACADS closure activities.

JACADS completed its primary mission on November 29, 2000, when the last of the 13,302 VX agent-filled land mines was successfully demilitarized. This completed the destruction of the unitary stockpile originally stored at JI (to include those munitions transported to JACADS from the Federal Republic of Germany and the Solomon Islands). In total, over 400,000 munitions and bulk containers, and over 4 million pounds of agent were successfully destroyed at JACADS.

On January 16, 2001, the JACADS Site Project Manager certified that all accountable quantities of chemical agent at JACADS had been destroyed. This event signified the completion of the JACADS milestone: "Begin Closure".

The U.S. Army Chemical Activity Pacific (USACAP) Termination of Surety celebration was held on April 11, 2001, marking the completion of USACAP's 30-year mission of providing continuous command and control of the security, storage, and transport of chemical agent munitions on JI.

JACADS began a Carbon Micronization System (CMS) mini-performance test on January 25, 2002. The full performance test is expected to begin in late March 2002. This technical approach, once proven, will be used for the disposal of agent-contaminated charcoal secondary waste at all baseline CSDP facilities.

Tooele Chemical Agent Disposal Facility (TOCDF)

On April 12, 2001, TOCDF surpassed the 10 million-pound milestone for GB nerve agent destroyed in the Liquid Incinerators. This represented 82 percent of the GB-filled chemical munitions and more than 36 percent of the overall chemical agent at Deseret Chemical Depot, UT.

On June 10, August 14, and December 25, 2001, TOCDF workers safely disposed of the last of the regularly-configured GB nerve agent-filled 105mm projectiles; GB-filled M55 rockets; and GB-filled MK-116 "Weteye" bombs; respectively, in the DCD, UT, stockpile. These are significant accomplishments, and signify the Program's commitment to reducing risk. The elimination of all Weteye bombs, specifically, is a major accomplishment as it is the first munition type to be safely and completely eliminated from the U.S. chemical stockpile.

On February 5, 2002, workers at TOCDF destroyed the last of the GB-filled 155mm projectiles, and the remaining reject and leaker 105mm projectiles in the DCD, UT, stockpile. Processing was halted at TOCDF on February 6, 2002, while the Winter Olympic Games were being held in the Salt Lake City, UT area, and resumed on February 25, 2002. The remaining GB-filled, mercury-contaminated

### 7. Executive Summary (Cont'd):

TCs were processed through TOCDF.

The GB destruction campaign at TOCDF was completed on March 7, 2002, when GB agent from the last drained TC was destroyed. The GB destruction campaign at TOCDF began on August 22, 1996, to destroy the U.S. Army's largest stockpile of GB agent (more than 12 million pounds - twice the amount of GB stored at the eight other continental United States stockpile sites combined). DCD's GB stockpile consisted of 928,906 individual items, including rockets, bombs, projectiles, and bulk containers. With the complete destruction of the GB agent at TOCDF, 44 percent of the DCD stockpile and over 25 percent of the U.S. stockpile of chemical agent has been destroyed. Treaty certification of the completion of the campaign will be obtained after the facility is decontaminated. Planning is ongoing for a GB destruction completion ceremony, to be held in early 3Q FY 2002 (April-June).

Changeover activities in preparation for the VX nerve agent campaign have begun. TOCDF is currently processing miscellaneous and secondary waste through the Metal Parts Furnace (MPF). Initial decontamination of critical equipment and rooms, including the Rocket Shear Machine and the Explosive Containment Rooms has commenced. TOCDF is working with the State of Utah's Division of Solid and Hazardous Waste to resolve comments on the VX Agent Trial Burn Plan and with the Environmental Protection Agency (EPA) to obtain site-specific Toxic Substances Control Act interim approval for VX rocket operations. The VX inventory consists of approximately 1,356 tons of agent in M55 rockets, landmines, projectiles, and bulk containers.

Anniston Chemical Agent Disposal Facility (ANCDF)

Construction of ANCDF was officially completed on June 8, 2001. Systemization of ANCDF continues in preparation for the LIC surrogate trial burn (STB) in 2Q FY 2002 (January-March). The initial ignition of the LIC primary and secondary burners was successfully conducted the week of September 17, 2001.

On December 17, 2001, the ANCDF Systems Contractor (SC) successfully operated the Pollution Abatement System Filter System (PFS). ANCDF is the first incineration facility to operate the PFS, a secondary pollution abatement system that filters gaseous effluents from the incinerators through carbon beds before release to the atmosphere.

The Anniston Munitions Center, the Anniston Chemical Activity, and the Anniston Army Depot completed removing propellant and re-palletizing 4.2-inch HD/HT mortar rounds on July 30, 2001. Completion of this activity brings to conclusion a 6-year reconfiguration project that also included 105mm GB and HD/HT projectiles. These munitions are now prepared for processing through ANCDF.

Umatilla Chemical Agent Disposal Facility (UMCDF)

Construction of UMCDF was officially completed on August 13, 2001. Systemization of UMCDF continues in preparation for the start of chemical agent

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## 7. Executive Summary (Cont'd):

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operations. Fourteen of 45 system demonstrations have been completed en route to furnace start up and STBs.

Work continues on the UMCDF Continuous Emission Monitoring System (CEMS), which is used to monitor emissions in the furnace PAS common stack. Actions to complete its design, permit modification, and implementation are the critical path for the start of agent operations.

Pine Bluff Chemical Agent Disposal Facility (PBCDF)

PBCDF continues with construction, and has started systemization activities. As of February 10, 2002, construction at PBCDF is approximately 75 percent complete. Construction of the Laboratory and Personnel Support Complex buildings is complete. A total of 44 of 154 systems have been turned over for systemization.

On December 6, 2001, the Washington Demilitarization Company reached a construction safety milestone of 1,150 days (over 4.9 million work hours) before experiencing its first lost work day accident. This is a significant safety record for the CDP and a construction safety record for the State of Arkansas.

Pueblo Chemical Agent Disposal Facility (PUCDF)

The PMCD site-specific NEPA process is on schedule to support a DAB review and technology decision for Pueblo. A Record of Decision (ROD) will be signed after the release of the final Environmental Impact Statement (EIS) (scheduled for 3Q FY 2002 [April-June]) and a waiting period of at least 30 days.

Technology-neutral infrastructure projects continue to be awarded for work at Pueblo Chemical Depot, CO. These projects are required regardless of the technology selected.

Blue Grass Chemical Agent Disposal Facility (BGCDF)

As part of the effort to identify alternatives for disposal of the Blue Grass Army Depot stockpile, PMCD developed schedules and spending plans for a BGCDF baseline incineration approach. The preliminary draft EIS was completed in 1Q FY 2002 (October-December). Resolution of Operational Security and legal issues has been completed; the release of the preliminary draft EIS for Blue Grass is scheduled for late 2Q FY 2002 (January-March). The DAB review and technology decision for Blue Grass are targeted for 4Q FY 2002 (July-September). A Record of Decision (ROD) will be signed after the release of the final EIS (scheduled for 3Q FY 2002 [April-June]) and a public comment period of at least 30 days.

ALTERNATIVE TECHNOLOGIES AND APPROACHES PROJECT

ATAP is proceeding with implementation of neutralization-based chemical demilitarization facilities at the two bulk-only agent storage locations:

# 7. Executive Summary (Cont'd):

APG-Edgewood Area, MD, and NECD, IN.

Aberdeen Chemical Agent Neutralization Facility (ACANF)

This facility has been renamed. Formerly it was known as the Aberdeen Chemical Agent Disposal Facility (ABCDF).

ACANF construction commenced on July 27, 2000. Equipment procurement and construction activities continued through 2000 and 2001, as the project pursued an on-site biotreatment option, while investigating off-site capabilities as a potential cost and risk reduction measure. A NEPA environmental assessment to address these proposed agent destruction capabilities was completed in July 2001. The final environmental assessment and finding of no significant impact was issued on December 19, 2001.

The Project Manager and the Contracting Officer issued a limited stop work order (LSWO) to the ACANF site on November 29, 2001, in order to provide time for a decision on a proposed plan to accelerate the stockpile destruction at Aberdeen. On January 9, 2002, the U.S. Army announced that it was working with State of Maryland and Environmental Protection Agency (EPA) officials to expedite the destruction of the mustard agent stockpile stored at APG, MD.

On January 18, 2002, the Maryland Department of the Environment (MDE) executed a Consent Order to permit construction in support of the accelerated ACANF project for mustard agent destruction. Under the accelerated program, the mustard agent could be destroyed as much as 3 years ahead of the current schedule.

Public meetings were conducted on January 16 and 17, 2002, at Edgewood, MD, and Chestertown, MD, respectively, to discuss the accelerated destruction plan with the local communities. Numerous information sessions also have been conducted with elected officials from surrounding communities.

An ADM was signed by the Under Secretary of Defense for Acquisition, Technology and Logistics on February 1, 2002. This ADM replaces the Milestone III Decision that had been required for the ACANF, and allows agent destruction operations to begin after the destruction facility has passed the Pre-Operational Safety Inspection and the ASA(I&E)/(Environment, Safety, and Occupational Health [ESOH]) Operational Readiness Evaluation.

During a trip to The Hague the week of February 11, 2002, a U.S. delegation presented Detailed Facility Information (DFI) for the accelerated disposal program and provided a briefing to the Technical Secretariat. The U.S. delegation included representatives from the State Department; Office of the Secretary of Defense, Defense Threat Reduction Agency; SBCCOM; and PM Alternative Technologies and Approaches.

Newport Chemical Agent Disposal Facility (NECDF) - Site activities continue to focus on design completion and construction.

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## 7. Executive Summary (Cont'd):

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The supercritical water oxidation (SCWO) Engineering Scale Test (EST) for NECDF concluded on February 14, 2001, and confirmed the ability of SCWO to mineralize VX hydrolysate. The EST revealed some design and fabrication issues that were to be addressed in full-scale design, or required additional verification during SCWO Developmental Testing (SDT) (originally scheduled to begin in 2Q FY 2002 [January-March]). However, based on ACWA SCWO tests with VX surrogate, and preliminary indications that off-site hydrolysate disposal at a commercial treatment, storage, and disposal facility (TSDF) may be a more viable approach, SDT planning, design, and procurements have temporarily been placed on hold. The hold will be in effect until additional Assembled Chemical Weapons Assessment (ACWA) tests and the TSDF study are completed in 2Q FY 2002 (January-March).

An environmental assessment, including a public hearing, will be completed to evaluate off-site disposal of hydrolysate. The assessment is projected for completion by 3Q FY 2002 (April-June).

A proposed accelerated agent destruction project, similar to the one being implemented at Aberdeen, was briefed to the Governor of Indiana and Indiana environmental regulators the week of January 20, 2002. Testing related to the proposed accelerated project is being conducted at the Chemical Agent Munitions Disposal System (Oquirrh Mountain Facility) and DCD, UT. All testing is expected to be completed in 3Q FY 2002 (April-June).

NON-STOCKPILE CHEMICAL MATERIEL PRODUCT

The NSCMP continues to plan, prepare, and execute the disposal of U.S. CWM that is not part of the unitary chemical stockpile, in compliance with the CWC and other assigned missions.

The NSCMP achieved the CWC international treaty and Program milestone "Initially Declared Category 3 Chemical Weapons 100% Destroyed" on March 5, 2002 with the destruction of 38 recently discovered items. All known Category 3 materiel has been destroyed, including 80,825 initially and supplementally declared items and those 38 recently discovered items that are in the process of being declared. Category 3 Chemical Weapons include unfilled munitions and devices, and equipment specifically designed for use directly in conjunction with chemical agent employment.

Final approval of the ROD for the NSCMP Programmatic Environmental Impact Statement (PEIS) for Transportable Treatment Systems was given by the Secretary of the Army on September 10, 2001. Publication in the Federal Register is pending action by the U.S. Army Secretariat.

Mobile Munitions Assessment System (MMAS) - MMAS was developed in two phases. MMAS Phase 2 was approved to conduct suspect CWM assessment operations in July 2000. Operational testing (OT) of MMAS Phase 1 upgrades was completed in October 2001, and operational approval is pending. MMAS tools were used to assess the non-stockpile CWM in storage at Pine Bluff Arsenal (PBA), AR, during the period of August 2000 to February 2001. The MMAS was exhibited at the

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# 7. Executive Summary (Cont'd):

Department of Energy Homeland Security display in November 2001, and is being considered as a capability for homeland defense.

Rapid Response System (RRS) - The RRS received operational approval for chemical agent identification set (CAIS) disposal operations in February 2001, following developmental testing/operational testing (DT/OT) at DCD, UT. RRS completed disposal of the 58 overpacks containing CAIS components in storage at DCD in May 2001. Planned improvements and modifications to the RRS are pending. The RRS is available to dispose of recovered CAIS.

Explosive Destruction System (EDS) - The EDS is being developed in two phases. The first EDS Phase 1 Unit was approved for disposal operations in January 2002, following DT at Porton Down, United Kingdom and OT at APG, MD. It deployed to Rocky Mountain Arsenal, CO, and destroyed six GB-filled M139 bomblets in January-February 2001, and four additional bomblets recovered during clearance operations in July 2001. It is available to dispose of recovered suspect chemical munitions. The second EDS Phase 1 Unit is at APG, MD for OT. The third EDS Phase 1 Unit, and first EDS Phase 2 Unit are being fabricated by the Sandia National Laboratories.

Munitions Management Device, Version 1 (MMD-1) - The Product Manager for Non-Stockpile Chemical Materiel (PMNSCM) terminated MMD-1 testing, due to cost, performance, and program efficiency issues.

Munitions Assessment and Processing System (MAPS) - The MAPS will dispose of explosively configured recovered CWM at APG, MD. The MAPS research, development, and demonstration Resource Conservation and Recovery Act (RCRA) permit from MDE became effective in April 2001. A \$6.2M contract was awarded in May 2001 as part of a \$12.9M firm fixed price contract for construction of the MAPS facility. Construction work began in September 2001. Equipment for the facility is being fabricated. MAPS is scheduled to be available for use in FY 2004.

Pine Bluff Non-Stockpile Facility (PBNSF) - PBNSF will meet requirements for recovered CWM disposal at PBA, AR. The Notice of Intent (NOI) to prepare an EIS and begin the public scoping process was published in the Federal Register on August 8, 2001. A public scoping meeting was held at PBA in October 2001. A contract to complete the design of PBNSF was awarded in December 2001. PBNSF will include a non-incineration means to dispose of neutralent and secondary waste. The facility will be available for use in FY 2006.

Technology Test Program - NSCMP testing of technologies for disposing of neutralent and secondary wastes from non-stockpile chemical materiel (NSCM) treatment continues. Technologies being tested include: persulfate oxidation, solidification, wet air oxidation, plasma arc, batch SCWO, Cerox, and ultraviolet oxidation.

Former Production Facilities (FPF) - In March 2000, the program met the CWC requirement to destroy 40% of Initially Declared Schedule 1 Production Facilities by no later than April 2001. Destruction of the Pilot Plant Complex

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### 7. Executive Summary (Cont'd):

at APG, MD was completed in February 2000. Destruction of the former VX production facility at NECD, IN, continued through 2000 and 2001. As of December 31, 2001, 55% of Initially Declared Schedule 1 Production Facilities have been destroyed and destruction plans are being developed for destruction of the Integrated Binary Facility at PBA, AR.

Empty Ton Container Disposal (Miscellaneous CWM) - Construction of a Temporary Environmental Enclosure to house the empty TC treatment and disposal operation at PBA, AR, was completed in January 2002. Disposal of the empty TCs at PBA is scheduled for FYs 2002 through 2007.

Chemical Sample Destruction (Miscellaneous CWM) - Disposal of an initial group of chemical samples at APG, MD, was completed in October 2000. Additional groups of chemical samples were disposed of at APG in October and December 2001. Quantities of chemical samples are scheduled for destruction at APG each year through FY 2006. Plans are being developed to dispose of the chemical samples stored at other locations using co-located chemical stockpile disposal facilities.

Remediation Coordination and Support - NSCMP coordinates storage and transportation for and executes disposal of CWM recovered during remediation activities at military installations, Base Realignment and Closure facilities, and formerly used defense sites.

NSCMP-supported remediation and/or recovery operations continued throughout 2000 and 2001 at locations around the United States. Significantly, remediation activities at Defense Distribution Depot, Memphis, TN, and at the Former Defense Distribution Depot, Ogden, UT, resulted in the discovery of CAIS. Recovery operations at the Lauderick Creek area of APG, MD, began in 2000, and continued throughout 2001. The NSCMP supported U.S. Army Corps of Engineers (USACE) remediation of additional locations at the former Camp American University, Spring Valley, Washington, D.C., in May 2001. Remediation continues.

OTHER PROGRAMMATIC AREAS

Public Outreach

The Public Outreach and Information effort continues to support the U.S. Army's mission to destroy chemical warfare materiel. Utilizing the resources at PMCD headquarters at APG-Edgewood Area, MD, PMCD outreach offices, U.S. Army Public Affairs Offices at the chemical stockpile storage locations in the CONUS, and information repositories at NSCM locations, PMCD has: globally elevated the identity, increased the visibility, and strengthened the credibility of the Program; provided a "one-voice" (safety, partnership, and oversight) chemical demilitarization message to external and internal audiences by providing increased awareness, understanding, and involvement in the PMCD mission; and enhanced the coordination between PMCD and the U.S. Army Soldier and Biological Chemical Command, the Department of the Army, the Department of Defense, and Federal, state, and local regulatory personnel. Recent surveys have found that

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## 7. Executive Summary (Cont'd):

public awareness of PMCD's outreach efforts has increased, and that the public remains generally trustful of the program.

Legal Issues

The CDP has experienced legal challenges to permits at its facilities. To date, all permits have been upheld due to PMCD's compliance with environmental and safety requirements.

### 8. Threshold Breaches:

CSD

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	Yes
O&M	Yes
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	No

c. Explanation of Breach: SCHEDULE

The CDP has deviated from its currently approved APB dated March 31, 1998. The Program Manager's Current Estimates (PMCEs) for milestones for both CSDP and ATAP reflect current estimates that are beyond APB threshold values. These schedules were presented at the DAB Program review on September 6, 2001, and approved in the September 26, 2001 ADM. (See Section 9, CSD Schedule, for details.)

COST

The PMCD LCCE was updated as part of the DAB Program review on September 6, 2001. The estimates presented at the DAB indicate that there are threshold breaches of the currently approved (March 1998) APB Program Acquisition Costs for: Research, Development, Test & Evaluation (RDT&E); Procurement (PROC);

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### 8c. Threshold Breaches (Cont'd):

Military Construction (MILCON); and Operations and Maintenance (O&M). Additionally, the Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) exceed the Nunn-McCurdy thresholds for unit cost growth. The estimates presented at the DAB are fully funded in the FY 2003 President's Budget.

An updated APB is being prepared that addresses both cost and schedule revisions presented at the DAB.

### PERFORMANCE

On May 8, 2000, and agent emmission was detected from the Tooele Chemical Agent Disposal Facility (TOCDF) common incinerator stack at a level above the State of Utah Department of Environmental Quality (DEQ) permitted limit. At the time, this constituted a threshold breach of the APB Chemical Stockpile Disposal End Itme Milestone: "Chemical Agent Release". No injuries or exposures occurred. The State of Utah DEQ verified all corrective actions and granted TOCDF final approval to resume full rate processing on September 20, 2000. This incident was reported to the Congress previously, and performance parameters are currently within APB threshold parameters.

#### NSCMD

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	No
0&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: SCHEDULE

The PMCE for the NSCMD milestones: "Disposal of CWM (non-CWC)" and "Storage, Transportation, Disposal of CWM in Support of Remediation/Emergency Operations" have been revised from May 2007 (APB threshold date) to September 2009. The

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# 8c. Threshold Breaches (Cont'd):

schedules were extended through FY 2009 to provide systems and crews for future chemical weapons recovery response at the request of the House Armed Services Committee. The current estimate is based on the latest date for completion of the last planned program mission: the completion of post-CWC-milestone rubble removal activities at two FPF demolition sites in September 2009.

### COST

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A threshold breach of the approved Program Acquisition Cost for Development (RDT&E) occurred in conjunction with submission of the FY 2001 President's Budget.

The updated estimate presented at the DAB Program Review on September 6. 2001, indicates that there is a threshold breach of the currently approved (March 1998) APB Program Acquisition Cost for PROC. Additionally, the PAUC and APUC exceed the Nunn-McCurdy thresholds for unit cost growth. The estimates presented at the DAB are fully funded in the FY 2003 President's Budget.

An updated APB is being prepared that addresses both cost and schedule revisions presented at the DAB Program review.

### 9. <u>Schedule</u>:

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	Production		Approved		Current	
	Estimat	e (SAR)	Progra	m (APB)	Esti	mate
CHEMICAL STOCKPILE DISPOSAL PROJECT (CSDP)						
Chemical Weapons Convention						
Compliance CWC (Entry into Force is						
04/29/97) /2						
1% U.S. Category 1 Chemical Weapons	; JAN	1994	JAN	1994	JAN	1994
Destroyed						
20% U.S. Category 1 Chemical Weapor	IS MAY	2002	MAY	2002	JOL	2001(Cn-1)
Destroyed						
45% U.S. Category 1 Chemical Weapor	15 MAY	2004	MAY	2004	APR	2004 (Ch-2)
Destroyed						
100% U.S. Category 1 Chemical Weapo	ons MAY	2007	MAY	2007	TBD	(Cn-3)
Destroyed						
CAMDS Testing	SEP	1979	SEP	1979	SEP	1979
DAB Program Review	MAR	1995	MAR	1995	MAR	1995
JOHNSTON ATOLL (JACADS)						1005
JACADS Construction	SÉP	1985	SEP	1985	SEP	1985
Begin Operations	JUL	1990	JUL	1990	JUL	1990
Begin Closure	SEP	2000	SEP	2000	JAN	2001(Cn-4)
TOOELE (TOCDF)						1000
Submit RCRA/CAA Permit Application:	s oct	1988	OCT	1988	OCT	1399
Systems Contract Award/Start Const	. OCT	1989	OCT	1989	OCT	TA8A

# 9a. <u>Schedule (Cont'd)</u>:

CSD

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	Production		Approved		Current	
	<u>Estimat</u>	e (SAR)	Progra	am (APB)	Esti	imate
Begin Systemization	SEP	1993	SEP	1993	SEP	1993
Begin Operations	AUG	1996	AUG	1996	AUG	1996
Begin Closure	OCT	2003	OCT	2003	FEB	2008(Ch-5)
ANNISTON (ANCDF)						
Submit Updated RCRA/CAA Permit	FEB	1995	FEB	1995	FEB	1995
Applications						
Systems Contract Award/Start Const.	FEB	1996	FEB	1996	FEB	1996
Begin Operations	JAN	2002	JAN	2002	OCT	2002(Ch-6)
Begin Closure	NOV	2005	NOV	2005	MAY	2011(Ch-7)
UMATILLA (UMCDF)						
Submit Updated RCRA/CAA Permit	SEP	1995	SEP	1995	SEP	1995
Applications						
Systems Contract Award/Start Const.	FEB	1997	FEB	1997	FEB	1997
Begin Operations	FEB	2002	FEB	2002	AUG	2003(Ch-8)
Begin Closure	JUN	2005	JUN	2005	JAN	2011(Ch~9)
PINE BLUFF (PBCDF)						
Submit RCRA/CAA Permit Applications	JUL	1995	JUL	1995	JUN	1995
Begin Construction M+1	TBD		TBD		FEB	1999
Begin Operations M+54	TBD		TBD		FEB	2004(Ch-10)
Begin Closure M+94	TBD		TBD		NOV	2009 (Ch-11)
PUEBLO (PUCDF)						
Submit Updated RCRA/CAA Permit	OCT	1995	OCT	1995	OCT	1995
Applications						
Begin Construction M+1	TBD		TBD		TBD	
Begin Operations M+55	TBD		TBD		TBD	
Begin Closure M+84	TBD		TBD		TBD	
BLUE GRASS (BGCDF)						
Submit RCRA/CAA Permit Applications	DEC	1995	DEC	1995	DEC	1995
Begin Construction M+1	TBD		TBD		TBD	
Begin Operations M+55	TBD		TBD		TBD	
Begin Closure M+77	TBD		TBD		TBD	
ALTERNATIVE TECHNOLOGIES AND APPROACH	ES					
PRODUCT						
ABERDEEN (ABCDF)						
Milestone 0	AUG	1994	AUG	1994	AUG	1994
Milestone I/II (Pilot Scale)	DEC	1996	DEC	1996	DEC	1996
Milestone III (Operations)	JAN	2004	JAN	2004	FEB	2002(Ch-12)
NEWPORT (NECDF)						
Milestone 0	AUG	1994	AUG	1994	AUG	1994
Milestone I/II (Pilot Scale)	DEC	1996	DEC	1996	DEC	1996
Milestone III (Operations)	MAY	2004	MAY	2004	MAY	2008(Ch-13)

1. Schedule parameters for CSDP and ATAP have been included under the CSD end item.

2. CWC Milestone Information:

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9a. <u>Schedule (Cont'd)</u>: CSD

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a. The CWC entered into force on April 29, 1997 for the nations that ratified the CWC prior to this date. The United States Congress ratified the CWC 5 days earlier, on April 24, 1997. While the start date for the CWC purposes is April 1997, the United States met some CWC requirements earlier than April 1997.

b. The CWC groups chemicals by toxicity and commercial utility by segregation into separate schedules (Annex on Chemicals, Part B, Schedule of Chemicals). Part A of the Schedules lists toxic chemicals and Part B lists Precursors.

c. The CWC divides chemical weapons into three categories based on the schedule of chemicals previously described:

- Category 1 - Chemical weapons on the basis of Schedule 1 chemicals and their parts and components.

- Category 2 - Chemical weapons on the basis of all other chemicals and their parts and components.

- Category 3 - Unfilled munitions and devices, and equipment specifically designed for use directly in conjunction with employment.

While the majority of the Category 1 Chemical Weapons are attributed to CSD, NSCMD also has declared Category 1 Chemical Weapons. The United States currently has no declared Category 2 Chemical Weapons.

3. The "M" equals the month that the environmental permit applications are approved by the state. "M+" is that date plus the cumulative number of months by phase (for example, construction, operations, closure) after issuance of the environmental permits by the state.

4. Objective and threshold dates for PUCDF and BGCDF will be established pending a decision on the destruction technology to be implemented. "M" dates shown for these facilities assumed an incineration-based disposal process.

b. Current Change Explanations --(Ch-1) The CWC international treaty milestone: "20% U.S. Category 1 Chemical Weapons Destroyed" was achieved on July 5, 2001, nearly 10 months ahead of the CWC-mandated schedule.

MILESTONE		FROM	τO
20% U.S. C	ategory 1		
Chemical W	leapons Destroyed	MAY 02	JUL 01

(Ch-2) As entry into force (EIF) of the CWC occurred near the end of the

#### 9b. <u>Schedule (Cont'd)</u>: CSD

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month (April 29, 1997), CWC-related dates in the APB were adjusted to reflect the first day of the following month (May). The same adjustment was made when reflecting current estimates for CWC-related milestones that had not yet occurred. To eliminate confusion, all dates previously adjusted have been changed to reflect the same month as that in which EIF occurred (April). Similar adjustments have been made in the revised APB that is currently being prepared.

MILESTONE		FROM	то
45% U.S. Ca	ategory 1		
Chemical We	eapons Destroyed	MAY 04	APR 04

(Ch-3) The CWC milestone: "100% Category 1 Chemical Weapons Destroyed" reflects the current requirement to complete destruction no later than 10 years after EIF (e.g., April 2007). Treaty provisions allow for a one-time five-year extension to this milestone, extending the time available for disposal to April 2012. However, an extension has neither been applied for nor granted. The current estimate for this milestone reflects "TBD" (to be determined).

MILESTONE	FROM	то
100% Category 1		
Chemical Weapons Destroyed	MAY 07	TBD

(Ch-4) In January 2001, the JACADS Site Project Manager certified that all accountable quantities of chemical agent at JACADS had been destroyed. This event signified the completion of the JACADS milestone: "Begin Closure," the final APB milestone associated with this facility.

MILESTONE	FROM	TO
JOHNSTON ATOLL (JACADS)		
Begin Closure	SEP 00	JAN 01

(Ch-5 through 11) The operations schedules for the Tooele, Anniston, Umatilla, and Pine Bluff Chemical Agent Disposal Facilities were reassessed for the DAB Program review on September 6, 2001. The schedules were revised using actual processing rates demonstrated at JACADS and TOCDF; new/emerging environmental regulations; and the actual condition of the stockpile. The PMCE for the following CSD milestones has been revised to reflect the following:

(Ch-5)	MILESTONE	FROM	TO
	TOOELE (TOCDF)		
	Begin Closure	OCT 03	FEB 08

#### 9b. <u>Schedule (Cont'd)</u>: CSD

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(Ch-6)	MILESTONE	FROM	то	
	Begin Operations	JAN 02	OCT	02
(Ch-7)	MILESTONE ANNISTON (ANCDF)	FROM	то	
	Begin Closure	NOV 05	MAY	11
(Ch-8)	MILESTONE UMATILLA (UMCDF)	FROM	то	
	Begin Operations	FEB 02	AUG	03
(Ch-9)	MILESTONE UMATILIA (UMCDF)	FROM	TO	
	Begin Closure	JUN 05	JAN	11
(Ch-10)	MILESTONE PINE BLUEE (PBCDE)	FROM	то	
	Begin Operations	AUG 03	FEB	04
(Ch-11)	MILESTONE PINE BLUFF (PBCDF)	FROM	TO	
	Begin Closure	DEC 06	NOV	09

(Ch-12) The DAE signed an ADM on February 1, 2002, that replaces the Milestone III Decision that had been required for ACANF. This decision allows mustard agent destruction operations to begin after the destruction facility has passed the Pre-Operational Safety Inspection and the ASA(I&E)/(ESOH) Operational Readiness Evaluation, provided requirements for safety and environmental compliance and communication with necessary Federal, state, and local entities, including the DAE and Congress, is accomplished.

MILESTONE	FROM	то
ABERDEEN (ACANF)		
Milestone III (Operations)	JUN 05	FEB 02

(Ch-13) The NECDF milestone: "Milestone III (Operations)" has been revised from May 2004 to May 2008, due to delays in design completion, construction issues, and holds on procurement associated with post-treatment equipment. A proposed accelerated agent destruction Project, similar to the one being

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### 9b. <u>Schedule (Cont'd)</u>:

CSD

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implemented at Aberdeen, was briefed to the Governor of Indiana and Indiana environmental regulators the week of January 20, 2002.

MILESTONE	FROM	TO
NEWPORT (NECDF)		
Milestone III (Operations)	MAY 04	MAY 08

#### NSCMD

a. Milestones --

	Produ	iction	Appi	oved	Curi	rent
NON-STOCKPILE CHEMICAL MATERIEL DISPOSAL PROJECT (NSCMD)	Estimat	<u>e (SAR)</u>	Progra	<u>un (APB)</u>	ESC	Intalle
Chemical Weapons Convention						
Compliance (Entry Into						
Force is 29 April 97)						
Initially Declared Category 1						
Chemical Weapons (Other than Binar	v)					
100% Destroyed (EIF + 10 yrs)	MAY	2007	MAY	2007	APR	2007(Ch-1)
Initially Declared Category 3						
Chemical Weapons						
Begin Destruction (EIF + 1 yr)	MAY	1998	MAY	1998	NOV	1997
100% Destroyed (EIF + 5 yrs)	MAY	2002	MAY	2002	MAR	2002(Ch-2)
Initially Declared Category 1						
Chemical Weapons (Binary)						
Excess Binary "Other" or Non-key	MAY	1999	MAY	1999	MAR	1999
Chemical destroyed (EIF + 2 yrs)						
100% Destroyed (EIF + 10 yrs)	MAY	2007	MAY	2007	APR	2007(Ch-3)
Initially Declared Schedule 1						
Production Facilites						
Begin Destruction (EIF + 1 yr)	MAY	1 <b>99</b> 8	MAY	1998	APR	1998
100% Destroyed Period 3 (EIF +	MAY	2007	MAY	2007	APR	2007 (Ch-4)
10 yrs)						
Initially Declared Schedule 2						
Production Facilities						
Begin Destruction (EIF + 1 yr)	MAY	1998	MAY	1998	FEB	1998
100% Destroyed (EIF + 5 yrs)	MAY	2002	MAY	2002	AUG	1999
Disposal of CWM (non CWC)	MAY	2007	MAY	2007	SEP	2009(Ch-5)
Storage, Transportation, Disposal o	of MAY	2007	MAY	2007	SEP	2009(Ch-6)
CWM in Support of Remediation/						
Emergency Operations						

1. While the majority of the Category 1 Chemical Weapons are attributed to the CSD, NSCMD also has declared Category 1 Chemical Weapons. The United States currently has no declared Category 2 Chemical Weapons.

2. The April 2007 date reflects the proposed funding cut off of the

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#### 9a. <u>Schedule (Cont'd)</u>: NSCMD

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Chemical Agent and Munitions Destruction, Army appropriation (CAMD/A) funds for purposes of the currently-approved APB.

b. Current Change Explanations -

(Ch-1) As EIF of the CWC occurred near the end of the month (April 29, 1997), CWC-related dates in the APB were adjusted to reflect the first day of the following month (May). The same adjustment was made when reflecting current estimates for CWC-related milestones that had not yet occurred. To eliminate confusion, all dates previously adjusted have been changed to reflect the same month as that in which EIF occurred (April). Similar adjustments have been made in the revised APB that is currently being prepared. The following NSCMD CWC-related milestones have been revised accordingly:

MILESTONE	FROM	TO
Initially Declared Category 1		
Chemical Weapons (Other than Binary)		
100% Destroyed	MAY 07	APR 07

(Ch-2) The NSCMP achieved the CWC international treaty and Program milestone: "Initially Declared Category 3 Chemical Weapons 100% Destroyed" On March 5, 2002. All known Category 3 materiel has been destroyed, including 80,825 initially and supplementally declared items and 38 recently discovered items that are in the process of being declared. Category 3 Chemical Weapons includes unfilled munitions and devices, and equipment specifically designed for use directly in conjunction with chemical agent employment.

MILESTONE	FROM	то
Initially Declared Category 3 Chemical Weapons		
100% Destroyed	MAY 07	MAR 02

(Ch-3 and 4) As EIF of the CWC occurred near the end of the month (April 29, 1997), CWC-related dates in the APB were adjusted to reflect the first day of the following month (May). The same adjustment was made when reflecting current estimates for CWC-related milestones that had not yet occurred. To eliminate confusion, all dates previously adjusted have been changed to reflect the same month as that in which EIF occurred (April). Similar adjustments have been made in the revised APB that is currently being prepared. The following NSCMD CWC-related milestones have been revised accordingly:

(Ch-3) MILESTONE	FROM	TO
Initially Declared Category 1		
Chemical Weapons (Binary)		
100% Destroyed	MAY 07	APR 07

### 9b. <u>Schedule (Cont'd)</u>: NSCMD

(Ch-4) MILESTONE	FROM	TO
Initially Declared Schedule 1 Production Facilities		
100% Destroyed Period 3	MAY 07	APR 07

(Ch-5 and 6) The PMCE for the following NSCMD milestones have been revised from May 2007 to September 2009. The schedules were extended through FY 2009 to provide systems and crews for future chemical weapons recovery response at the request of the House Armed Services Committee. The current estimate is based on the latest date for completion of the last planned program mission: the completion of post-CWC-milestone rubble removal activities at two FPF demolition sites in September 2009. This revision applies to the following milestones:

(Ch-5) MILESTONE Initially Declared Schedule 2 Production Facilities	FROM	TO
Disposal of CWM (non-CWC)	MAY 07	SEP 09
(Ch-6) MILESTONE Storage, Transportation, Disposal of CWM in Support of	FROM	TO
Remediation/Emergency Operations	MAY 07	<b>SEP 09</b>

### 10. Performance Characteristics:

#### CSD

#### a. Performance --

		Approved	Demon-	
	Production	Program (APB)	strated	Current
	Estimate (SAR)	<u>Obj/Threshold</u>	Perf	Estimate
CHEMICAL STOCKPILE DISPOSAL PROGRAM				
Environmental Laws &	Meets or	Meets or/ Meets or	TBD	Meets or
Regulations	Exceeds	Excecds / Exceeds		Exceeds
	State	State / State		State
	and/or	and/or / and/or		and/or
	Federal	Federal / Federal		Federal
	Rqmts	Rqmts / Rqmts		Romis
Safety and	Moote or	Monte or/ Mente or	ראיזי	Moots or
Occupational Laws	Fyceode	Exceede / Exceede		Freeda
and Regulations	Chaba	Exceeds / Exceeds		Exceeds
and Regulations	State	State / State		State
	and/or	and/or / and/or		and/or
	Federal	Federal / Federal		Federal

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#### 10a. Performance Characteristics (Cont'd): CSD

	Production <u>Estimate (SAR)</u> Regmts	Approved Program (APE) <u>Obj/Threshold</u> Regmts / Rqmts	Demon- strated <u>Perf</u>	Current <u>Estimate</u> Reqmts
Chemical Agent Release	0	0 / 0 /	TBD	(Note 2) 0 (Notes 385)
Chemical Agent Exposure	0	0 / 0	TBD	0 Notes (4&5)

#### ACRONYMS

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GB - Nerve Chemical Agent H/HD/HT - Mustard Blister Chemical Agent VX - Nerve Chemical Agent

1. "Meets environmental laws and regulations" means the facility is operating in compliance with all conditions specified in environmental permits and applicable laws and regulations. The threshold is breached if violation of law or regulation warrants a stop-work order issued by the State or the EPA.

2. "Meets safety and occupational health laws and regulations" means the facility is operating in compliance with the conditions specified in safety and occupational health laws and regulations. The threshold is breached if a violation warrants a stop-work order issued by the State.

3. a. CSD: The term "Chemical Agent Release" is defined as an event involving:

1. Confirmed agent release above the 72-hour general population time weighted average (TWA) measure at a perimeter monitoring station with the disposal facility as the identified source. The 72-hour general population TWA values are:

GB - 0.000003 mg/m3 VX - 0.000003 mg/m3 H/HD/HT - 0.0001 mg/m3

2. Confirmed point source (stack) agent release above the allowable stack concentration (ASC). The ASC values are:

GB - 0.0003 mg/m3 VX - 0.0003 mg/m3 H/HD/HT - 0.03 mg/m3

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#### 10a. Performance Characteristics (Cont'd): CSD

3. Clinical symptoms of agent exposure to one or more individuals.

b. NSCMD: A "Chemical Agent Release" is defined as an event involving a chemical release above the applicable Federal, state, or local restriction, with the processing system (for example, the RRS, the MMAS, etc.) as the confirmed source of the chemical release.

4. A "Chemical Agent Exposure," as defined by DA PAM 40-173 and DA PAM 40-8, refers to an individual exhibiting clinical signs or symptoms of having been exposed to chemical agent.

5. Number of events

b. Current Change Explanations -- None

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#### NSCMD

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a. Performance --

NON-STOCKPILE CHEMICAL MATERIEL DISPOSAL PROJECT	Production Estimate (SAR)	Approved Program (APB) <u>Obi/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Environmental Laws & Regulations	Meets or Exceeds State and/or Pederal Rqmts	Meets or/ Meets or Exceeds / Exceeds State / State and/or / and/or Federal / Federal Rgmts / Rgmts	TBD	Meets or Exceeds State and/or Federal Rqmts (Note 1)
Safety and Occupational Laws and Regulations	Meets or Exceeds State and/or Federal Regmts	Meets or/ Meets or Exceeds / Exceeds State / State and/or / and/or Federal / Federal Regmts / Rgmts	TBD	Meets or Exceeds State and/or Federal Romts (Note 2)
Chemical Agent Release	0	0 / 0	TBD	0 (Notes 3&5)
Chemical Agent Exposure	0	0 / 0	TBD	0 (Notes 4&5)

Note: Approved Program Demonstrated Performance and Current Estimate parameters are explained in the notes accompanying the CSD portion of this section. The performance parameters are identical for CSD and NSCMD.

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10b. Performance Characteristics (Cont'd): NSCMD

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b. Current Change Explanations -- None

### 11. <u>Total Program Cost and Quantity</u> (Dollars in Millions): CSD

		Production	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estímate
	Development (RDT&E)	720.0	720.0	1303.7
	Procurement	2442.3	2442.3	2784.7
	Flyaway	(2442.3)		(2784.7)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	1521.4	1521.4	1760.5
	Acquisition O&M	7583.1	<u>7583.1</u>	13053.7
	Total FY 1994 Base-Year \$	12266.8	12266.8	18902.6
	Escalation	1614.4	1614.4	3186.7
	Development (RDT&E)	(99.4)	(99.4)	(183.5)
	Procurement	(174.1)	(174.1)	(250.3)
	Construction (MILCON)	(144.7)	(144.7)	(201.4)
	Acquisition O&M	(1196.2)	(1196.2)	<u>(2551.5)</u>
	Total Then Year \$	13881.2	13881.2	22089.3

German retrograde and Johnston Atoll leave are included in O&M funding.

b. Quantity ---

Development	(RDT&E)	0	0	0
Procurement		9	9	9
Total		9	9	9

Total Quantity is defined as 9 (8 Continental U.S. demilitarization facilities and the Johnston Atoll Chemical Agent Disposal System on Johnston Atoll in the Pacific).

The PMCD LCCE was updated as part of a DAB Program review held September 6, 2001.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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### 11a. Total Program Cost and Quantity (Cont'd):

NSCMD

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		Production	Approved	Current
a.	Cost	<u>Estimate (SAR)</u>	<u>Program (APB)</u>	Estimate
	Development (RDT&E)	241.2	241.2	398.1
	Procurement	70.2	70.2	85.4
	Flyaway	(70.2)		(85.4)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		
	Initial Spares	(0.0)		
	Construction (MILCON)	0.0	0.0	19.8
	Acquisition O&M	892.9	_892,9	888.9
	Total FY 1994 Base-Year	\$ 1204.3	1204.3	1392.2
	Escalation	224.8	224.8	220.5
	Development (RDT&E)	(29.9)	(29.9)	(53.2)
	Procurement	(12.4)	(12.4)	(11.9)
	Construction (MILCON)	(0.0)	(0.0)	(3.4)
	Acquisition O&M	(182.5)	(182.5)	(152.0)
	Total Then Year \$	1429.1	1429.1	1612.7
b.	Quantity			
1	Development (RDT&E)	0	0	0
	Procurement	6	6	6
1	Total	6	6	6

Total Quantity is defined as 6 (two Rapid Response Systems, one Munitions Assessment and Processing System, and three Explosive Destruction System Phase 2 Units).

The PMCD LCCE was updated as part of a DAB Program review held September 6, 2001.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

### 12. Unit Cost Summary:

CSD

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			UCR		Curi	rent	
			Baseline		Estin	mate	Percent
		(MAR	1998 APB	) (Dec	2001	SAR)	Change
	a. Prog. Acq. Unit Cost (PAUC)						
	(1) Cost (FY 1994 BY\$)		12266.8		1890	02.6	
	(2) Quantity		9			9	
	(3) Unit Cost		1362.978		2100	. 289	+54.10
	b. Avg. Proc. Unit Cost (APUC)						
	(1) Cost (FY 1994 BY\$)		2442.3		278	84.7	
	(2) Quantity		9			9	
	(3) Unit Cost		271.367		309	.411	+14.02
			UCR		Curi	rent	
			Baseline		Estir	nate	Percent
		(MAR	<u>1998 APB</u>	) (Dec	2001	SAR)	<u>Change</u>
	c. Prog. Acq. Unit Cost (PAUC)						
	(1) Cost $(TYS)$		13881.2		2208	89.3	
	(2) Unit Cost		1542.356		2454	.367	+59.13
	d Ave Deep Unit Oret (ADUO)						
	d. AVG. Proc. Unit Cost (APUC)		2616 4		207		
	(1) COSC (115) $(2) Unit Cost$		2010.4		205	35.0	
	(2) Unit Cost		290./11		331		+10.00
0	Changes from Previous SAR (DEC 1999)		Do	llare/	Otv	Per	cent
с.	(1) PAUC (BYS)	,	20	889	500	+ T	
	(2) APUC (BYS)			94	655	+4	14 08
	(3) PAUC Quantity			24.	0		0.00
	(4) PAUC (TYS)			1138.	089	+ 8	36.46
	(5) APUC (TYS)			67.	700	+2	25.12
f.	Initial SAR Information						
	Initial SAR Date (DEC 1997):						
	(1) Program Acquisition Cost (BYS	\$)		1388	1.2		
	(2) Program Acquisition Cost (TYS	5)		261	6.4		

g. Unit Cost PAUC Changes --Program cost estimates reflect the schedule approved by the Defense Acquisition Executive in September 2001. Those schedules project completion of disposal operations at six chemical stockpile sites between 2007 and 2011. Schedules for the Pueblo, CO, and Blue Grass, KY sites will be published once the technology decisions are made, now projected for the third quarter of FY 2002 and the first quarter of FY 2003, respectively.

Most Significant Cost And Schedule Drivers Are:

Revised processing rates based on operational experience at Johnston
 Island and Tooele Facilities
 Disposal facility operations extensions

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#### 12g. Unit Cost Summary (Cont'd): CSD

CSD

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Stockpile condition (e.g., gelled chemical agent in rockets, mustard frothing and solidification, heavy metal contamination in ton containers)
Changing and new environmental and monitoring requirements
Facility closure requirements
Labor increases
Increased equipment and construction costs
Technology immaturity
Design evolution and inefficiencies
Increased emergency preparedness costs

- Congressionally-mandated testing of alternative disposal processes and restrictions on preparations for disposal operations at several stockpile sites.

Unit Cost APUC Changes --Increase in program cost is due to schedule extensions at CSDP and ATAP sites.

h. Impact of Perf or Sched Changes --Revised schedule estimates based on actual processing rates demonstrated at JACADS and TOCDF; new/emerging environmental regulations and the actual condition of the stockpile have resulted in extensions to operations and closure dates as described in Section 9b.

Acceleration efforts at ACANF may result in the destruction of the bulk mustard agent stockpile at Aberdeen as much as 3 years ahead of the original schedule. A proposed accelerated destruction effort for the bulk VX agent at Newport Chemical Depot similar to the one for Aberdeen is being evaluated.

i. Program Management & Control --Mr. James L. Bacon, Program Manager for Chemical Demilitarization

COL Christopher F. Lesniak, Project Manager for Chemical Stockpile Disposal

Mr. Kevin J. Flamm, Project Manager for Alternative Technologies and Approaches

Mr. Anthony J. Strasavich, Chief, Resource Management Office

Ms. Diana L. Frederick, Chief, Program Evaluation and Integration Office

j. Cost Control Actions --

In May 2001 the DAE re-designated the CDP from an ACAT 1C (component) program to an ACAT 1D (DAB) program, with the Army as executive agent, and directed that a DAB Program review of the total chemical demilitarization effort be held.

After the DAB, the DAE issued an ADM that approved the revised program schedule and cost estimates commensurate with the Cost Analysis Improvement

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#### 12j. Unit Cost Summary (Cont'd): CSD

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Group's (CAIG's) estimate for all demilitarization sites except for Pueblo, CO and Blue Grass, KY. A DAB and technology decision for Pueblo and Blue Grass are scheduled for March 2002 and July 2002, respectively.

In December 2001, the Secretary of the Army directed the Assistant Secretary of the Army (Installations and Environment) to assume all policy, program direction, and oversight for CDP planning, programming, and budgeting. This also included direct supervision of PMCD.

Also, the program will provide information to OSD that will be used to report the Army's progress in maintaining the schedule and cost estimate after the completion of each fiscal quarter as required by PL 107-117.

k. Contract Information (In Millions of Then-Year Dollars) --

- (1) Contractor(s): EG&G Defense Matl's
- (2) Contract Title: TOCDF Sys Contractor
- (3) Contract Number: DACA87-89-C-0076
- (4) Actual Cost of Work Performed (ACWP) to date: 786.5
- (5) Percent contract completed (BCWP/target cost): 73.99
- (6) Variances:

	Cost Var	iance	Schedule Var	iance
	(\$/8)		(\$/%)	
Baseline Report	\$-8.3/	-1.68	\$-2.3/	-0.46
Previous SAR	\$-11.6/	-1.87	\$-2.5/	-0.40
Current Values	\$-11.1/	-1.43	\$-7.0/	-0.89
Change from the Baseline Report	\$-2.8/	+0.25	\$-4.7/	-0.43
Change from the Previous SAR	\$0.5/	+0.44	\$-4.5/	-0.49

Explanation of Variances --

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the Systems Contractor (SC) that reflect the estimates presented at the September 6, 2001 DAB.

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

(1) Contractor(s): Westinghouse
 (2) Contract Title: ANCDF Systems Contract
 (3) Contract Number: DAA-09-96-C-0018
 (4) Actual Cost of Work Performed (ACWP) to date: 470.5
 (5) Percent contract completed (BCWP/target cost): 63.52

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#### 12. Unit Cost Summary (Cont'd): CSD

(6) Variances:

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		Cost Var	iance	Schedule Var	iance
		(\$/%)		(\$/%)	
Baseline Report		\$0.2/	+1.52	\$-0.7/	-5.04
Previous SAR		\$0.2/	+0.46	\$-2.7/	-5.86
Current Values		Ş-0.5/	-0.11	\$-2.2/	-0.47
Change from the Base	eline Report	\$-0.7/	-1.63	\$-1.5/	+4.57
Change from the Prev	ious SAR	\$-0.7/	-0.57	\$0.5/	+5.39

Explanation of Variances --

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

(1) Contractor(s): Washington Demil Co.
(2) Contract Title: UMCDF Systems Contract
(3) Contract Number: DAAA09-97-C-0025
(4) Actual Cost of Work Performed (ACWP) to date: 523.4
(5) Percent contract completed (BCWP/target cost): 59.91
(6) Variances:
Cost Variance Schedule Variance

	(\$/%)		(\$/考)	J
Baseline Report	\$1.0/	+2.18	\$-5.6/	-10.87
Previous SAR	\$5.0/	+1.95	\$-36.6/	-12.51
Current Values	\$1.8/	+0.34	\$-1.2/	-0.23
Change from the Baseline Report	\$0.8/	-1.84	\$4.4/	+10.64
Change from the Previous SAR	\$-3.2/	-1.61	\$35.4/	+12.28

Explanation of Variances ---

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

(1) Contractor(s): Washington Demil Co.
(2) Contract Title: PBCDF Systems Contract
(3) Contract Number: DAAA09-97-C0098
(4) Actual Cost of Work Performed (ACWP) to date: 272.3
(5) Percent contract completed (BCWP/target cost): 38.02

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12. Unit Cost Summary (Cont'd): CSD

(6) Variances:

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(o) Farfances.				
	Cost Variance		Schedule Variance	
	(\$/%)		(\$/%)	
Baseline Report	N/A		N/A	
Previous SAR	\$0.7/	+1.51	\$-0.4/	-0.86
Current Values	\$8.8/	+3.13	\$-1.4/	-0.50
Change from the Baseline Report	\$8.8/	+3.13	\$-1.4/	-0.50
Change from the Previous SAR	\$8.1/	+1.62	\$-1.0/	+0.36

Explanation of Variances --

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

(1) Contractor(s): Bechtel National Inc.

(2) Contract Title: ABCDF Systems Contract

(3) Contract Number: DAAA09-98-C-0080

(4) Actual Cost of Work Performed (ACWP) to date: 246.0

(5) Percent contract completed (BCWP/target cost): 42.03

(6) Variances:

(0) variances.				
	Cost Va	riance	Schedule Var	iance
	(\$/%	)	(\$/%)	
Baseline Report	N/A		N/A	
Previous SAR	\$-16.7/	-50.30	\$-2.1/	-5.95
Current Values	\$0.4/	+0.16	\$1.2/	+0.49
Change from the Baseline Report	\$0.4/	+0.16	\$1.2/	+0.49
Change from the Previous SAR	\$17.1/	+50.46	\$3.3/	+6.44

Explanation of Variances ---

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

(1) Contractor(s): Parsons Infra & Tech Grp

- (2) Contract Title: NECDF System Contract
- (3) Contract Number: DAAA09-99-C-0016

(4) Actual Cost of Work Performed (ACWP) to date: 172.4

(5) Percent contract completed (BCWP/target cost): 23.66

12. Unit Cost Summary (Cont'd): ĊSD

(6) Variances:

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(0) Variances:		
	Cost Variance	Schedule Variance
	(\$/%)	(\$/%)
Baseline Report	N/A	N/A
Previous SAR	\$-2.6/ -12,04	\$-4.9/ -18.49
Current Values	\$-2.2/ -1.29	\$-7.3/ -4.11
Change from the Baseline Report	\$-2.2/ -1.29	\$-7.3/ -4.11
Change from the Previous SAR	\$0.4/ +10.75	\$-2.4/ +14.38

Explanation of Variances --

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

(1) Contractor(s): Washington Demil Co.

- (2) Contract Title: JACADS Operator & Maint.(3) Contract Number: DAAA09-96-C-0081
- (4) Actual Cost of Work Performed (ACWP) to date: 526.8
- (5) Percent contract completed (BCWP/target cost): 74.77
- (6) Variances:

(0) fur rundes.				
	Cost Va	riance	Schedule Var	riance
	(\$/%	(\$/%)		)
Baseline Report	\$2.5/	+1.87	\$-1.4/	-1.03
Previous SAR	\$-1.2/	-0.38	\$-3.2/	-1.00
Current Values	\$1.0/	+0.19	\$-3.6/	-0.68
Change from the Baseline Report	t \$-1.5/	-1.68	\$-2.2/	+0.35
Change from the Previous SAR	\$2.2/	+0.57	\$-0.4/	+0.32

Explanation of Variances --

The cost and schedule variances since the previous report are not significant. The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

Impact of Variances on Contract -- None.

Impact of Variances on Unit Costs -- None.

1. General Comments ---The Government is in the process of negotiating revised schedules with the SC that reflect the estimates presented at the September 6, 2001 DAB.

### 12a. Unit Cost Summary (Cont'd):

NSCMD

		UCR	Current		
		Baseline	Estimate	Percent	
		(MAR 1998 APB) (Dec	2001 SAR)	<u>Change</u>	
	a. Prog. Acq. Unit Cost (PAUC)				
	(1) Cost (FY 1994 BY\$)	1204.3	1392.2		
	(2) Quantity	6	6		
	(3) Unit Cost	200.717	232.033	+15,60	
	D. Avg. Proc. Unit Cost (APUC)				
	(1) Cost (FY 1994 BY\$)	70.2	85.4		
	(2) Quantity	6	6		
	(3) Unit Cost	11.700	14.233	+21.65	
		UCR	Current		
		Baseline	Estimate	Percent	
		(MAR 1998 APB) (Dec	2001 SAR)	Change	
	C. Prog. Acq. Unit Cost (PAUC)	1420 1	1610 7		
	(1) COSC (115) (2) Unit Cost	1447.1 779 107	1012.7	.12 05	
	(2) UNIC COSE	230.105	200./03	+12.00	
	d Aug Prog Unit Cost (ADUC)				
	a, AVG. Proc. Unit Cost (APUC)	97 6	07 7		
	(1) COSE (TIS)	12 767	16 217	17 80	
	(2) UNIT COSE	13-101	10.21/	+17.00	
~	Changes from Provious SAR (DEC 1999)	Dollars		rcent	
е.	(1) DATIC (DVC)	DOTIGIS	280 +	20 38	
	(1) PAUC (BI3) $(2) A DIIC (BV$)$	22	066 +	16 98	
	(2) AFUC (BIS)	4	.000 +	0.00	
	(3) PAUC QUARTIES $(A)$ DATE $(TY\xi)$	48	500 +	22 02	
	(4) PROC (115) (5) ADUC (TV\$)	30	380 +	17 20	
	()) AFUC (113)	2		17.20	
F	Initial SAR Information				
L .	Initial SAR Date (DEC 1994):				
	(1) Program Acquisition Cost (BYS	3) 93	91.7		
	(2) Program Acquisition Cost (TYS	12	07.6		
	(-,				
α.	Unit Cost PAUC Changes				
3.	Increased development and operationa	al costs for PBNSF,	Binary ch	emicals,	PBA
	TCs, the EDS, and additional CWM dis	sposal R&D efforts.	-		
		-			
	Unit Cost APUC Changes				
	New requirements for EDS and addition	on of MAPS facility			
	-				
h.	Impact of Perf or Sched Changes				
	Program extended from FY 2007 to FY	2009.			
ì.	Program Management & Control				
	Mr. James L. Bacon, Program Manager	for Chemical Demil	itarizatio	n	

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### 12i. Unit Cost Summary (Cont'd): NSCMD

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LTC Christopher M. Ross, Product Manager for Non-Stockpile Chemical Materiel

Mr. Anthony J. Strasavich, Chief, Resource Management Office

Ms. Diana L. Frederick, Chief, Program Evaluation and Integration Office

j. Cost Control Actions ---

In May 2001 the DAE re-designated the CDP from an ACAT 1C (component) program to an ACAT 1D (DAB) program, with the Army as executive agent, and directed that a DAB Program review of the total chemical demilitarization effort be held.

After the DAB, the DAE issued an ADM that approved the revised program schedule and cost estimates commensurate with the Cost Analysis Improvement Group's (CAIG's) estimate.

In December 2001, the Secretary of the Army directed the Assistant Secretary of the Army (Installations and Environment) to assume all policy, program direction, and oversight for CDP planning, programming, and budgeting. This also included direct supervision of PMCD.

Also, the program will provide information to OSD that will be used to report the Army's progress in maintaining the schedule and cost estimate after the completion of each fiscal quarter as required by PL 107-117.

k. Contract Information (In Millions of Then-Year Dollars) -- None.

1. General Comments --

The Non-Stockpile Chemical Materiel Product currently has no contracts that meet or exceed the \$40 million threshold requirement referenced in Section 15 of this report; therefore, section 12(k) does not apply to this end item.

# 13. <u>Cost Variance Analysis</u>: Summary - All end items

et 12

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	0&M	TOTAL
Production Estimate	1090.5	2699.0	1666.1	9854.7	15310.3
Previous Changes:					
Economic	-32.9	-26.7	-26.0	-253.7	-339.3
Quantity	_		-	-	-
Schedule		-2.4	-	-	-2.4
Engineering	-	- (	-		
Estimating	+193.6	-579.8	+95.0	-1502.5	~1793.7
Other	-	-	-	+8.7	+8.7
Support	-	-	. –	-	-
Subtotal	+160.7	-608.9	+69.0	-1747.5	-2126.7
Current Changes:					
Economic	+2.5	+2.7	+6.2	-12.1	-0.7
Quantity	-	-	-	-	-
Schedule	+454.4	+253.0	+92.5	+3078.1	+3878.0
Engineering	-	-	-	-	-
Estimating	+230.4	+786.5	+151.3	+5472.9	+6641.1
Other	-	+	-	-	- 1
Support				-	-
Subtotal	+687.3	+1042.2	+250.0	+8538.9	+10518.4
Total Changes	+848.0	+433.3	+319.0	+6791.4	+8391.7
Current Estimate	1938.5	3132.3	1985.1	16646.1	23702.0

Summary (FY 1994 Constant (Base Year) Dollars in Millions)

	RDT&E	PRÓC	MILCON	0&M	TOTAL
Production Estimate	961.2	2512.5	1521.4	8476.0	13471.1
Previous Changes:					
Quantity	-	-	-	-	- '
Schedule	-	-	-	-	–
Engineering	-	-	-	_	-
Estimating	+165.9	-491.2	+66.3	-1155.8	-1414.8
Other	-	-	-	+7.6	+7.6
Support	-	-	-	-	
Subtotal	+165.9	-491.2	+66.3	~1148.2	-1407.2
Current Changes:					
Quantity	-	-		-	
Schedule	+388.3	+205.0	+78.1	+2443.5	+3114.9
Engineering	-	-	-	_	-
Estimating	+186.4	+643.8	+114.5	+4171.3	+5116.0
Other	-	-	-	-	
Support		~			
Subtotal	+574.7	+848.8	+192.6	+6614.8	+8230.9
Total Changes	+740.6	+357.6	+258.9	+5466.6	+6823.7
Current Estimate	1701.8	2870.1	1780.3	13942.6	20294.8

### 13. Cost Variance Analysis (Cont'd):

CSD

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	0&M	TOTAL
Production Estimate	819.4	2616.4	1666.1	8779.3	13881.2
Previous Changes:					
Economic	-26.4	-24.0	-26.0	-220.6	-297.0
Quantity	- 1	-	-	-	-
Schedule	- 1	-	-	_	-
Engineering	-	-	_	-	-
Estimating	+8.5	-585.3	+91.9	-1246.1	-1731.0
Other	-	-	-	+8.7	+8.7
Support		-	-	-	-
Subtotal	-17.9	-609.3	+65.9	-1458.0	-2019.3
Current Changes:					
Economic	+2.3	+2.9	+6.2	-9.6	+1.8
Quantity	' -	-	-	-	-
Schedule	+454.4	+251.5	+92.5	+3078.1	+3876.5
Engineering		-	-	-	-
Estimating	+229.0	+773.5	+131.2	+5215.4	+6349.1
Other	-	-	<u> </u>	-	-
Support	-	-	-	-	-
Subtotal	+685.7	+1027.9	+229.9	+8283.9	+10227.4
Total Changes	+667.8	+418.6	+295.8	+6825.9	+8208.1
Current Estimate	1487.2	3035.0	1961.9	15605.2	22089.3

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#### 13a. <u>Cost Variance Analysis (Cont'd)</u>: CSD

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Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	720.0	2442.3	1521.4	7583.1	12266.8
Previous Changes:					
Quantity	-	-	-	-	- 1
Schedule	-		-		-
Engineering	-	-	-	-	-
Estimating	+8.0	-494-0	+63.6	-944.6	-1367.0
Other	- 1	-	-	+7.6	+7.6
Support	-	-	-	-	-
Subtotal	+8.0	-494.0	+63.6	-937.0	-1359.4
Current Changes:					
Quantity	-	-	-	-	_
Schedule	+388.3	+205.0	+78.1	+2443.5	+3114.9
Engineering	-	-	-	-	-
Estimating	+187.4	+631.4	+97.4	+3964.1	+4880.3
Other	-	-	-		-
Support	-	-	-	-	-
Subtotal	+575.7	+836.4	+175.5	+6407.6	+7995.2
Total Changes	+583.7	+342.4	+239.1	+5470.6	+6635.8
Current Estimate	1303.7	2784.7	1760.5	13053.7	18902.6

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year (1) <u>RDT&E</u> Revised escalation indices (Economic) N/A +2.3 -2.9 -3.2 Adjustment for current and prior inflation (Estimating) Adjustment for prior year actuals (Estimating) -2.0 -2.2 Adjustment to account for CAIG estimate +192.4 +234.3 (Estimating) Extended operations at ACANF and NECDF +388.3 +454.4 (Schedule) -0.1 +0.1 Realignment of funds (Estimating) +575.7 +685.7 RDT&E Subtotal

(2) <u>Procurement</u>

-	Revised escalation indices (Economic)	N/A	+2.9
	Stretchout of annual procurement buy profile.	0.0	+6.6
	(Schedule)		
	Additional Schedule variance. (Schedule)	+205.0	+244.9
	Adjustment for current and prior inflation	-3.2	-3.6
	(Estimating)		
	Adjustment for prior years actuals.	+71.9	+82.7
	(Estimating)		

### **13b. <u>Cost Variance Analysis (Cont'd)</u>:** CSD

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	b. Current Change Explanations		
		(Dollars :	in Millions)
		Base-Year	<u>Then-Year</u>
	Adjustment to account for CAIG estimate (Estimating)	+113.5	+153.0
	Increased estimate for CSEPP due to extended schedule at various sites. Equipment being replaced sooner, due to shorter than planned life expectancy (Estimating)	+85.4	+102.2
	Management realignment of funds. (Estimating)	+363.8	+439.2
	Procurement Subtotal	+836.4	+1027.9
(3)	MILCON		
	Revised escalation indices (Economic)	N/A	+6.2
	Adjustment for current and prior inflation (Estimating)	-4.4	-4.8
	Adjustment to account for CAIG estimate (Estimating)	+39.0	+49.1
	Adjustment for prior year actuals (Estimating)	-33.7	-37.2
	Management realignment of funds. (Estimating)	+96.5	+124.1
	Adjustment due to schedule increases. (Schedule)	+78.1	+92.5
	MILCON Subtotal	+175.5	+229.9
(4)	<u>O&amp;M</u>		
	Revised esclation indices (Economic)	N/A	-9.6
	Adjustment for current and prior inflation (Estimating)	-13.4	-14.9
	Adjustment due to schedule increases. (Schedule)	+2443.5	+3078.1
	Adjustment for prior years actuals. (Estimating)	+63.6	+68.6
	Adjustment to account for CAIG estimate (Estimating)	+2391.8	+3233.9
	Increase in JACADS closure estimate. (Estimating)	+222.7	+257.7
	Management realignment of funds. (Estimating)	+1299.4	+1670.1
	O&M Subtotal	+6407.6	+8283.9

## 13. Cost Variance Analysis (Cont'd):

NSCMD

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a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	271.1	82.6	-	1075.4	1429.1
Previous Changes:					
Economic	-6.51	-2.7	- 1	-33.1	-42.3
Quantity		- '	-	-	-
Schedule	-	-2.4	-	~	-2.4
Engineering			-	-	-
Estimating	+185.1	+5.5	+3.1	-256.4	-62.7
Other	-	-	+		-
Support	-	-	-	-	
Subtotal	+178.6	+0.4	+3.1	-289.5	-107.4
Current Changes:					
Economic	+0.2	-0.2	-	-2.5	-2.5
Quantity	-	-	-	-	-
Schedule	-	+1.5	-		+1.5
Engineering	1 –	-	-	- (	-
Estimating	+1.4	+13.0	+20.1	+257.5	+292.0
Other	-	-	-		-
Support	-	_			-
Subtotal	+1.6	+14.3	+20.1	+255.0	+291.0
Total Changes	+180.2	+14.7	+23.2	~34.5	+183.6
Current Estimate	451.3 (	97.3	23.2	1040.9	1612.7

+12.4

+14.3

### 13a. <u>Cost Variance Analysis (Cont'd)</u>: NSCMD

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Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&È	PROC	MILCON	MaO	TOTAL
Production Estimate	241.2	70.2	- !	892.9	1204.3
Previous Changes:			1		
Quantity		- 1		_	-
Schedule	-		-	-	_
Engineering	i _	_	_ 1	-	-
Estimating	+157.9	+2.8	+2.7	-211.2	-47.8
Other			-	-	-
Support	_ 1	-	-	-	_
Subtotal	+157.9	+2.8	+2.7	-211.2	-47.8
Current Changes:		T			
Quantity		-	-	-	_
Schedule	-	- ,	-	-	-
Engineering		-	- !	-	-
Estimating	-1.0	+12.4	+17.1	+207.2	+235.7
Other	-	-		- ,	-
Support			-	-	-
Subtotal	-1.0	+12.4	+17.1	+207.2	+235.7
Total Changes	+156.9	+15.2	+19.8	-4.0	+187.9
Current Estimate		85.4	19.8	888.9	1392.2

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year (1) <u>RDT&E</u> Revised escalation indices (Economic) N/A +0.2 Adjustment for current and prior inflation -1.4 -1.5 (Estimating) Extended technology research programs from +0.4 +2.9 April 2007 to September 2009 (Estimating) +1.6 -1.0 RDT&E Subtotal (2) Procurement Revised escalation indices (Economic) N/A -0.2 Stretchout of annual procurement buy profile 0.0 +1.5 (Schedule) Adjustment for current and prior inflation -0.2 -0.2 (Estimating) Addition of the MAPS facility at APG, MD +13.2 +12.6 (Estimating)

- Procurement Subtotal
- (3) MILCON

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### 13b. Cost Variance Analysis (Cont'd): NSCMD

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b. Current Change Explanations --

	Addition of the PBNSF at PBA, AR (Estimating)	(Dollars Base-Year +17.1	in Millions) <u>Then-Year</u> +20.1
	MILCON Subtotal	+17.1	+20.1
(4)	<u>O&amp;M</u>		
	Revised escalation indices (Economic)	N/A	-2.5
	Adjustment for current and prior inflation (Estimating)	-1.6	-1.7
	Additional funds necessary for the disposal of TCs and binary chemicals at PBA, AR; NECD, IN, FPF destruction; chemical sample destruction; increased emergency response capability; and the extension of the program from April 2007 to September 2009 (Estimating	+208.8	+259.2
	O&M Subtotal	+207.2	+255.0

### 14. Unit Cost and Other History (Then-Year Dollars in Millions): CSD

### a. Program Acquisition Unit Cost (PAUC) History

#### Current SAR Baseline to Current Estimate

PAUC	Changes								PAUC
Prod Est					-				Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1542.36	-32.80	+0.004	+430.72		+513.12	+0.967	-	+912.01	2454.37

### b. Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate PUC Changes PUC Prod Est Cur Est Sch Est Econ Qty Eng Oth Spt Total -2.34 +0.001 +27.94 -- +20.91 +46.51 337.22 290.71 --

### 14c. <u>Unit Cost and Other History (Cont'd)</u>: CSD

#### c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	JAN 2004	FEB 2002
IOC	N/A	SEP 1995	MAR 1998	DEC 1999
Total Cost	N/A	11903.0	13881.2	22089.3
Total Quantity	N/A	9	9	9
Prog Acq Unit Cost	N/A	1322.6	1542.4	2454.4

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### a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes							PAUC	
Prod Est		c						Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
238.18	-7.47		-0.150		+38.22	<b>-</b> -		+30.60	268.78

### b. Procurement Unit Cost (PUC) History

### Current SAR Baseline to Current Estimate

PUC	C Changes							PUC	
Prod Est							Cur Est		
	Econ Qty Sch Eng Est Oth Spt Total								
13.77	-0.483	+0.003	-0.150		+3.08			+2.45	16.22

### c. Schedule, Cost, and Quantity History

[	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate (PdE)	Estimate
Milestone 1	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	SEP 1995	MAR 1998	DEC 2001
Total Cost	N/A	1207.6	1429.1	1512.7
Total Quantity	N/A	1	6	6
Prog Acq Unit Cost	N/A	1207.6	238.2	268.8

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### 15. Contract Information (Then-Year Dollars in Millions):

a. Procurement			Initial	Contract Pi	tice
TOCDF Sys (	<u>Contractor:</u>		Target	Ceiling	Otv
EG&G Defense 1	Matl's, Tooele	e, UT			
DACA87-89-C-0	076, CPAF		\$211.0	N/A	1
Award: July 2:	1, 1989				-
Definitized:	July 21, 1989				
Current	Contract Prie	ce	Estimated P	rice At Comp	oletion
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	Contractor	Program	Manager
\$1149.0	N/A	l	\$1119.3	\$12	203.2
			Cost Variance	e Schedule \	<u>/ariance</u>
Previous Cumu!	lative Variand	ces	\$-11.6	\$-2.	. 5
Cumulative Var	riances To Dat	te (12/30/01)	<u>\$-11.1</u>	\$-7.	0
Net Change	Э		\$0.5	S-4.	. 5

### Explanation of Change:

The target price is the current contract value through MOD P00227 including fee.

The cost and schedule variances since the previous report are not significant.

Contract Comments: The PM's and Contractor's estimated price at completion will be revised to match the operational schedules outlined in Section 9 of this report. The Government is in the process of negotiating these schedules with the Systems Contractor (SC).

ANCDF Syst	ems Contract:		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Otv</u>
DAA-09-96-C+0 Award: Februa	018, FFP/CPAF ry 29, 1996		\$575.8	N/A	1
Definitized:	February 29, 1	996			
Current	Contract Pric	e	Estimated H	rice At Comp	letion
<u>Target</u> \$762.1	<u>Ceiling</u> N/A	Oty 1	<u>Contractor</u> \$1288.4	<u>Program</u> \$13	Manager 56.8

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### 15. Contract Information (Cont'd):

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	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$0.2	\$-2.7
Cumulative Variances To Date (12/31/01)	\$-0.5	<u> </u>
Net Change	\$-0.7	\$0.5

#### Explanation of Change:

This is a Cost Plus Award Fee (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 P0064.

The cost and schedule variances since the previous report are not significant.

Contract Comments: The PM's and Contractor's estimated price at completion matches the operational schedules explained in Section 9 of this report. The Government is in the process of negotiating these schedules with the SC.

Note: Westinghouse is part of the Washington Group International.

			Initial	. Contract Pr	ice
UMCDF Syst	tems Contract:		Target	Ceiling	Otv
Washington De	amil Co., Umati	illa, OR			
DAAA09-97-C-0	0025, FFP/CPAF		\$566.8	N/A	1
Award: Februa	ary 10, 1997				
Definitized:	February 10, 1	1997			
Curron	- Contract Brid		Entimated D	mico Nr. Com	letion
Current	CONCLACE FIIG		Estimated P	TICE WE COMP	recton
Target	<u>Ceilina</u>	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$905.2	N/A	1	\$901.0	\$9	80.3

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$5.0	\$-36.6
Cumulative Variances To Date (12/28/01)	\$1.8	
Net Change	\$-3.2	\$35.4

#### Explanation of Change:

This is a CPAF contract with a FFP element for construction. The target price is the current contract value through FFP MOD A00163 and CPAF MOD P0060.

The cost variance since the previous report is not significant. The schedule variance net change reflects a rebaseline due to milestone changes to the start of operations that are explained in Section 9 of this report.

Contract Comments: The PM's and contractor's estimated price at completion will be revised to match the operational schedules contained in Section 9 of this report. The

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#### 15. Contract Information (Cont'd):

Government is in the process of negotiating these schedules with the SC.

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			Initial	Contract Pr	ice
PBCDF Svs	tems Contract:		Target	<u>Ceilina</u>	Oty
Washington D	emil Co., Pine	Bluff AR			
DAAA09-97-C0	098, FFP/CPAF		\$511.6	N/A	1
Award: July	25, 1997				
Definitized:	July 25, 1997				
Curren	t Contract Prio	ce	Estimated Pr	ice At Comp	letion
Target	Ceiling	Oty	<u>Contractor</u>	Program	Manager
\$765.4	N/A	1	\$763.2	\$7	65.4
			Cost Variance	Schedule V	<u>ariance</u>
Previous Cum	ulative Variand	ces	\$0.7	\$-0.	4
Cumulative Va	ariances To Dat	te (12/28/01)	\$8.8	\$-1.	3
Net Chan	qe		\$8.1	\$-0.	9

#### Explanation of Change:

This is a CPAF contract that, originally, had an FFP element for construction. The FFP construction portion of the contract has been converted to a cost reimbursable effort. Definitization of this action is ongoing, and is expected to be completed in 3Q FY 2002 (April-June). The target price is the current contract value through FFP MOD A00208 and CPAF MOD P0103.

The cost and schedule variances since the previous report are not significant.

Contract Comments: The PM's and contractor's estimated price at completion will be revised to match the operational schedules contained in Section 9 of this report. The Government is in the process of negotiating these schedules with the SC.

ABCDF Syst	ems Contract:			Initial <u>Target</u>	. Contract P: <u>Ceiling</u>	rice <u>Oty</u>
Bechtel National Inc., San Francisco, DAAA09-98-C-0080, CPAF Award: October 2, 1998 Definitized: October 2, 1998		CA	\$305.6	N/A	1	
Current <u>Target</u> \$616.1	Contract Pric <u>Ceiling</u> N/A	e <u>Otv</u> 1		Estimated F <u>Contractor</u> \$619.7	Price At Comp <u>Progra</u> \$	pletion <u>m Manager</u> 661.9

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### 15. Contract Information (Cont'd):

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	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-16.7	\$-2.1
Cumulative Variances To Date (12/23/01)	\$0.4	<u>\$1.2</u>
Net Change	\$17.1	\$3.3

Explanation of Change:

The target price is the current contract value through MOD P00042.

The cost and schedule variances since the previous report are not significant.

NECDE Syst	em Contract:	agadona Ch	Initial <u>Target</u>	Contract Pri <u>Ceiling</u>	ice <u>Otv</u>
DAAA09-99-C-0	016, CPAF	asadena CA	\$296.5	N/A	1
Award: Februa	iry 18, 1999			,	
Definitized:	February 18, 1	999			
Current	: Contract Pric	e	Estimated P:	rice At Compl	letion
Target	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	Manager
\$748.5	N/A	1	\$750.3	\$84	14.7
			Cost Variance	e <u>Schedule Va</u>	<u>ariance</u>
Previous Cum	lative Varianc	es	\$-4.9	\$-2.6	5
Cumulative Va	iriances To Dat	e (12/28/01)	<u>\$-2.2</u>	\$-7.3	3
Net Chang	le		\$2.7	5-4.7	7

### Explanation of Change:

The target price is the current contract value through MOD P00022.

The cost and schedule variances since the previous report are not significant.

b. O&M <u>JACADS Oper</u> Washington Der	<u>rator &amp; Maint</u> nil Co., Johns	ton Island	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
DAAA09-96-C-00 Award: Septemb Definitized: S	081, CPAF ber 28, 1996 September 28,	1996	<u>\$9.3</u>	N/A	1
Current Target \$742.0	Contract Pric Ceiling N/A	oty 1	Estimated P <u>Contractor</u> \$727 9	rice At Comp <u>Program</u> \$7	oletion Manager 142 0

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Chem Demil, December 31, 2001

#### 15b. Contract Information (Cont'd):

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$-1.2	\$-3.2
Cumulative Variances To Date (12/28/01)	<u>\$1.0</u>	<u>\$-3.6</u>
Net Change	\$2.2	\$-0.4

### Explanation of Change:

This contract is negotiated yearly with the SC. It was initially funded (\$9.3M) to reflect efforts required only in FY 1996. The previous report (December 31, 1999) reported a Current Contract Price target of \$451.2M, reflecting the cumulative value of FYs 1996 through 2000, plus the estimated cost of FY 2001. The increase in this report from \$451.2M in the target and ceiling price to \$742.0M reflects the cumulative value of FYs 1996 through 2002, plus the estimated cost of authorized unpriced work for FY 2003 and 2004. The target price is the current contract value through MOD P0087.

### 16. Program Funding Summary (Current Estimate in Millions of Dollars):

#### Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY88-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-19)	Total
RDT&E	795.7	179.8	302.6	660.4	1938.5
Procurement	1852.3	164.2	213.3	902.5	3132.3
MILCON	1099.4	177.5	167.6	540.6	1985.1
O&M	4583.7	731.4	974.2	10356.8	16646.1
Total	8331.1	1252.9	1657.7	12460.3	23702.0

#### CSD

1 1

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY88-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-19)	<u>Total</u>
RDT&E Procurement MILCON O&M	549.6 1807.7 1096.3 4304.6	151.6 147.9 176.5 675.2	252.2 213.3 148.7 870.3	533,8 866.1 540.4 9755.1	1487.2 3035.0 1961.9 15605.2
Total	7758.2	1151.2	1484.5	11695.4	22089.3

### 16a. Program Funding Summary (Cont'd):

NSCMD

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a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY92-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-09)	Total
RDT&E	246.1	28.2	50.4	126.6	451.3
Procurement	44.6	16.3		36.4	97.3
MILCON	3.1	1.0	18.9	0.2	23.2
O&M	279.1	56.2	103.9	601.7	1040.9
Total	572.9	101.7	173.2	764.9	1612.7

b. Annual Summary -- CSD

Appropriation: 0400 - RDT&E, Defense Agencies

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				14.2	13.9
1993				6.5	6.5
1994				24.6	25.0
1995				9.1	9.4
1996				21.2	22.2
1997				21.9	23.5
1998	-			24.1	26.5
1999		1		89.7	99.6
2000				130.7	145.9
2001				125.0	141.2
2002		1		132.0	151.6
2003		1	1	218.6	252.2
2004		1		167.3	196.4
2005				178.9	213.9
2006				40.9	49.8
2007				28.0	34.7
2008				30.8	39.0
2009					
2010		1	1		
2011		-			
2012			1		
2013	1				
2014	1	1	1		
2015			1		1
2016		1			

### 16b. Program Funding Summary (Cont'd): CSD

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Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
2017					
2018				and the second sec	· · · · · · · · · · · · · · · · · · ·
2019					
Subtotal				1303.7	1487.2

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal	Otv	Flyaway FY 1994 Dollars	Flyaway FY 1994 Dollars	Total Program Base-Year S	Total Program
1988	Ach	MONTEC	117.3	117.3	96.4
1989			49.1	49.1	43.8
1990	1		78.4	78.4	72.2
1991			120.7	120.7	114.8
1992			154.3	154.3	150.9
1993			237.8	237.8	237.7
1994			45.6	45.6	46.4
1995			188.2	188.2	195.1
1996	1		214.6	214.6	225.2
1997			151.7	151.7	162.6
1998			64.4	64.4	70.8
1999			99.1	99.1	110.1
2000		and the second sec	165.6	165.6	184.9
2001	2	- Specific and a second s	85.7	85.7	96.8
2002	1		128.8	128.8	147.9
2003	1		184.9	184.9	213.3
2004	3		108.7	108.7	127.6
2005			133.8	133.8	160.0
2006			164.5	164.5	200.4
2007			100.9	100.9	125.3
2008			42.7	42.7	54.0
2009			37.2	37.2	48.0
2010			28.9	28.9	37.9
2011			25.8	25.8	34.5
2012			18.4	18.4	25.1
2013		a frinder og for ander og	17.3	17.3	24.0
2014			7.4	7.4	10.5
2015			4.6	4.6	6.6
2016			5.4	5.4	7.5
2017		and the second	2.9	2.9	4.3
2018		angilit to a			
2019					

#### 16b. Program Funding Summary (Cont'd): CSD

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal		9	2784.	7 2784.7	3035.0

There are recurring flyaway dollars for years with no quantities, due to the complexity of the program and the length of time required to procure a demilitarization facility.

Appropriation: 0500 - Military Construction, Defense Agencies

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				99.7	107.3
1998				79.4	86.5
1999				67.7	74.7
2000				153.5	173.0
2001				133.2	151.9
2002				151.9	176.5
2003				125.8	148.7
2004				155.9	187.7
2005				147.1	180.5
2006				92.5	115.6
2007				42.2	53.7
2008				2.2	2.9
ubtotal				1294.5	1504.9

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				18.1	16.0
1989				76.7	69.6
1990				6.4	6.0
1991				93.1	90.5
1992				142.2	141.5
1993				9.9	10.0
1994				119.6	123.4
Subtotal				466.0	457.0

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#### 16b. Program Funding Summary (Cont'd): CSD

In the table above, prior to Fiscal Year 1998, Total Program Dollars in both Base-Year and Then-Year columns were identified as Chemical Agents and Munitions Destruction, Defense.

Appropriation: 0100 - Operation & Maintenance, Defense Agencies

Fiscal		Flyaway FY 1994 Dollars	Flyaway FY 1994 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1988				118.1	97.0
1989				131.5	117.3
1990				189.1	174.1
1991				181.2	172.3
1992				211.1	206.5
1993				261.3	261.1
1994				265.1	270.0
1995				332.1	344.4
1996				310.8	326.2
1997				439.3	470.9
1998				346.5	381.1
1999				377.7	419.6
2000				453.2	506.0
2001				493.9	558.1
2002				588.1	675.2
2003				754.4	870.3
2004				708.7	832.0
2005				695.4	831.3
2006				795.6	969.2
2007				832.2	1033.1
2008				928.5	1174.5
2009				892.9	1151.0
2010				761.6	1000.3
2011				570.5	763.5
2012				408.5	557.2
2013				368.8	512.6
2014				213.5	302.4
2015				150.3	216.9
2016				104.3	153.4
2017				71.7	107.4
2018	The second s			68.4	104.5
2019				29.4	45.8
2020					
ubtotal				13053.7	15605.2

#### 16b. Program Funding Summary (Cont'd): CSD

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	9		2784.7	18436.6	21632.3
Army				466.0	457.0
Grand Total	9		2784.7	18902.6	22089.3

b. Annual Summary -- NSCMD

Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				5.6	5.7
1995				10.7	11.1
1996				29.3	30.7
1997				29.9	32.1
1998			~	33.5	36.8
1999				34.7	38.6
2000				33.5	37.4
2001				47.5	53.7
2002				24.6	28.2
2003				43.7	50.4
2004				31.5	37.0
2005				33.5	40.0
2006				20.2	24.6
2007				9.8	12.2
2008				5.1	6.4
2009				5.0	6.4
Subtotal				398.1	451.3

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994			4.5	4.5	4.6
1995			3.2	3.2	3.3
1996	1		11.9	11.9	12.5
1997			5.4	5.4	5.8
1998			0.8	0.8	0.9
1999			3.8	3.8	4.2
2000			4.1	4.1	4.6
2001			7.7	7.7	8.7
2002			14.2	14.2	16.3
2003	1				

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#### 16b. Program Funding Summary (Cont'd): NSCMD

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Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004			0.4	0.4	0.5
2005			0.9	0.9	1.1
2006	1		20.2	20.2	24.6
2007	2		8.1	8.1	10.0
2008	1				
2009			0.2	0.2	0.2
Subtotal	6		85.4	85.4	97.3

There are recurring flyaway dollars for years with no quantities, due to the complexity of the program and the length of time required to procure a demilitarization capability.

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 \$
2001				2.7	3.1
2002				0.9	1.0
2003				16.0	18.9
2004					
2005					
2006					
2007					
2008				0.2	0.2
ubtotal				19.8	23.2

Appropriation: 0100 - Operation & Maintenance, Defense Agencies

Fiscal Year	OLY	Flyaway FY 1994 Dollars Nonrec	Flyaway FY 1994 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				2.2	2.2
1993				6.1	6.1
1994				20.4	20.8
1995				10.5	10.9
1996				17.0	17.8
1997				29.3	31.4
1998				43.4	47.7

### 16b. Program Funding Summary (Cont'd): NSCMD

Appropriation: 0100 - Operation & Maintenance, Defense Agencies

Fiscal		Flyaway FY 1994 Dollars	Flyaway FY 1994 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-rear S	Then-rear 5
1999			i	60.2	66.9
2000				31.1	34.7
2001				35.9	40.6
2002				48.9	56.2
2003				90.1	103.9
2004				110.7	129.9
2005				102.2	122.2
2006			i	99.5	121.2
2007				93.4	116.0
2008				44.4	56.2
2009				43.6	56.2
Subtotal				888.9	1040.9

		Flyaway	Fl	yaway	Total	Total
		Dollars	Do	llars	Program	Program
Service	Oty	Nonrec	]	Rec	Base-Year \$	Then-Year S
OSD	6			85.4	1372.4	1589.5
Army			I .		19.8	23.2
Grand Total	6		I – –	85.4	1392.2	1612.7

### 17. Delivery/Expenditure Information:

CSD

6.4

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	2	2

Percent Total Program Quantities Delivered: 22.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 7070.9 Percent Total Program Expended: 32.0%

N/A

17. Delivery/Expenditure Information (Cont'd): NSCMD

NSCMD

a. Deliveries To Date

s To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	1	1

Percent Total Program Quantities Delivered: 16.7%

b. Total Expenditures To Date (In Millions of Dollars): \$471.5

Percent Total Program Expended: 29.2%

N/A

#### 18. Operating and Support Costs: CSD

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 Millions)

	CSD	To Complete Program
	FX88-FX95	FY96-FY05
Cost Element		
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	0.0	0.0

Total O&S Cost	CSD	To Complete Program
BY\$ (In Millions)	N/A	N/A
TYS (In Millions)	N/A	N/A

# AF-4 B-18 CMUP

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: B-1B CMUP

AS OF DATE: December 31, 2001

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 (U) <u>Designation and Nomenclature (Popular Name)</u>: B-1B Conventional Mission Upgrade Program (Computer Upgrade/DSUP)

2. (U) DOD Component: USAF

 3. (U) Responsible Office and Telephone Number: ASC/YD Col Michael M. Miller B-1 System Program Office Assigned: May 25, 2001 2690 Loop Road West, Room 104 DSN 785-3281; COMM (937) 255-3281 WPAFB, OH 45433-7148 MichaelM.Miller@wpafb.af.mil
 4. (U) Program Florents (Program Florents (Progr

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0604226F PROCUREMENT: (U) APPN 3010 ICN 0101126F (Air Force) O&M: (U) PE 0101126F CLEARED

CLEARED FOR OPEN PUBLICATION

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

Classified by: One CAF 357-92 (SAC 007-92), IT B, Rev 2, 23 Apr 97 Downgrade instructions: Sector of Source 23 Apr 97 Declassify on: Sector Data Marked "OADA", date of source 23 Apr 97

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#### 5. (U) <u>References</u>:

Computer Upgrade

SAR Baseline (Development Estimate): (U) DAE Approved Acquisition Program Baseline (APB) dated January 25, 1995.

Approved Program:

(U) SAE Approved Acquisition Program Baseline (APB) dated August 10, 2000.

DSUP

<u>SAR Baseline (Development Estimate)</u>: (U) DAE Approved Acquisition Program Baseline (APB) dated April 14, 1997.

<u>Approved Program</u>: (U) SAE Approved Acquisition Program Baseline (APB) dated December 6, 2000.

#### 6. (U) Mission and Description:

(U) In the January 1992 publication of The Bomber Roadmap, the Secretary of the Air Force designated the B-1B as the backbone of the bomber force. In the August 1992 Mission Need Statement and the April 1993 Operational Requirements Document, HQ ACC specified the need for an improved conventional mission capability on the B-1B. This will primarily be accomplished via the Conventional Mission Upgrade Program (CMUP)-- three major upgrades to the aircraft.

(U) The first upgrade will enhance the capability of the B-lB Lancer to perform near precision attacks against all but heavily defended targets deep in enemy airspace during conventional operations. The requirement is satisfied with a material solution to provide the B-lB with improved lethality through the integration of near precision conventional weapons such as the Joint Direct Attack Munition (JDAM). As part of the advanced munitions integration, implementation of MIL-STD-1760 electrical interconnect system, communication upgrades and the Global Positioning System (GPS) are included. The upgrade is a modification program integrating predominantly non-developmental items (NDI) to enhance aircraft conventional mission capabilities. This upgrade is more than 90% complete and is no longer addressed in the B-l CMUP SAR.

(U) The Computer Upgrade is the major element of the next step of CMUP. 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 (SP-103A) 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

#### 6. (U) Mission and Description (Cont'd):

improve reliability and maintainability; and 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.

(U) The existing ALQ-161 defensive system, designed and optimized for the strategic nuclear mission (i.e., low altitude penetration against specific air defense threats) has limited effectiveness in the B-1B's conventional mission. Therefore, the last phase of CMUP (Defensive System Upgrade Program (DSUP)) will remove most of the ALQ-161 system and replace it with an upgraded AN/ALR-56M radar warning receiver and the RF Countermeasures (RFCM) portion of the Navy's Integrated Defensive Electronic Countermeasures (IDECM) program, which includes a techniques generator and a fiber optic towed decoy (FOTD). An NDI low band transmitter for on-board jamming will be installed to provide the requisite threat coverage. These new systems will significantly improve situational awareness and the survivability of the B-1B in the medium and high altitude regimes where most conventional missions will be conducted. These enhancements are required to maximize the effectiveness of the new weapons capability provided under CMUP. Additionally, these modifications will reduce annual Operating & Support (O&S) costs approximately \$50M per year.

(U) 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 Operating & Maintenance (O&M) funds are included to capture the dependency of the development upgrades upon the sustainment activities.

#### 7. (U) Executive Summary:

(U) This SAR reflects the significant change to the B-1 force structure as implemented in FY02 President's Budget (PB). B-1 force structure was consolidated, with the B-1 fleet basing moving from five main operating bases to two and reducing fleet size from 93 to 60 aircraft. The ensuing savings will be used to enhance the lethality, survivability, and supportability of the B-1 fleet.

Due to the reduction in quantity, Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) show significant increases. B-1 CMUP has also incurred cost growth due to increased software Interim Contractor Support (ICS), increased depot labor rates, and cost growth of DSUP components. This cost growth is included in the current estimate for cost and detailed in Sections 12 and 13 of this SAR. Factoring out the quantity reduction impact, the B-1 System Program Office (SPO) calculated B-1 CMUP cost growth due to fact of life increases at approximately 21% to Average Procurement Unit Cost (APUC).

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#### 7. (U) Executive Summary (Cont'd):

An APB was approved March 7, 2002, to adjust the quantity and account for the fact of life increases.

The B-1 SPO updated the Program Office Estimate (POE) to reflect the refinement of the estimate for the B-1 Consolidation (60 aircraft) program. The updated POE is reflected in this SAR.

Computer Upgrade - Defensive system (ALQ-161) portion of the Computer Upgrade test is slipping due to loss of defensive range time and range assets due to real world events. Still anticipate completing within APB flight test schedule. The SPO is progressing with clearing the Wind Corrected Munitions Dispenser (WCMD) for employment on the B-1--currently working tailfin deployment problem. (NOTE: The WCMD integration effort is an ACAT III program which is an integral part of the Computer Upgrade flight test program.)

Accelerated the SP-103A integration by deleting post operational test regression testing and incorporating SP-103A integration into the current development/operational flight test programs. This extends the completion date for development test and operational test by two months.

Changed acquisition strategy to procure hardware prior to Milestone III which will provide Computer Upgrade capability to HQ ACC up to one year early at no additional cost.

Aircraft kitproof activities were completed successfully--aircraft delivery was January 2002.

DSUP - The B-1 Defensive System Upgrade Program (DSUP) is on the brink of an APB schedule breach for two milestones (DT&E Complete, OT&E Complete). Section 9 provides the approved APB dates (threshold is six months from APB dates) and the current estimates. Since the last restructure was approved, these milestones have been impacted by the February 28, 2001 Seattle earthquake (one month impact) and a reduction of the planning factor for Nevada Test and Training Range (NTTR) availability from six sorties/month to three sorties/month (four month impact). The NTTR planning factor reduction was mitigated some by off loading as many defensive test sorties as possible to the Electronic Combat Range (China Lake Naval Air Station).

In addition to those factors, the risk of completing DSUP to the current schedule is being stressed due to other issues. First, the ALE-55, Fiber Optic Towed Decoy (FOTD), developed under the Navy IDECM program, has not demonstrated, over our first three B-1 flight tests, the maturity originally contemplated for entering into DSUP flight test, especially within the area of fiber-optic and signal line continuity. A recently chartered joint Independent Review Team assessed the current B-1 DSUP development test/operational test plan as high risk due to the ALE-55 performance. In addition to the ALE-55 development, there are a few other hardware and software integration issues that, although today would not lead to a breach, could easily do so if not

B-1B CMUP, December 31, 2001

#### 7. (U) Executive Summary (Cont'd):

resolved in a timely fashion.

Progress is being made on ground testing of DSUP systems to support Reduction-in-Lethality (RiL) testing at the defensive test ranges. Engineering Test and Evaluation conducted in the Integrated Facility for Avionics System Testing (IFAST) at Edwards AFB was completed in October 2001, but follow-on regression testing of software updates is still required. Also, on-aircraft defensive testing was conducted in the Benefield Anechoic Facility (BAF) during October-November 2001. BAF tests confirmed the system's ability to detect and identify threat signals, while also identifying anomalies needing resolution prior to initiating RiL effectiveness flight testing at the defensive range.

Completion of laboratory and aircraft ground integration regression testing and analysis, as well as incorporating design corrections into the FOTDs, will push start of RiL effectiveness flight tests to April/May 2002. This increases the risk of maintaining DT&E completion milestone by the APB threshold of January 2003-efforts to pull-in this completion date are on-going.

Laboratory and Navy flight test indicate DSUP will meet or exceed all requirements outlined in the Operational Requirements Document if the FOTDs mature. However, RiL performance predictions assume fiber optic continuity throughout the aircraft's flight envelope-this continues to be the biggest challenge to the Navy IDECM and B-1 DSUP programs. DSUP performance with the current towed decoy (ALE-50) in lieu of the ALE-55 FOTD will not meet three threshold RiL requirements (none are Key Performance Parameters). Due to the risk associated with the lack of ALE-55 maturity, the Air Force is seeking to restructure DSUP to minimize cost impacts and reduce program schedule risk.

#### B-1B CMUP, December 31, 2001

#### 8. (U) Threshold Breaches:

Computer Upgrade

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	NO
Procurement	NO
MILCON	No
O&M	NO
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	Yes

c. (U) Explanation of Breach:

Pursuant to 10 USC, Section 2433, Nunn-McCurdy unit costs are computed on the total Major Defense Acquisition Program (MDAP)--in this case, B-1 Conventional Mission Upgrade Program (CMUP). Per DoD policy, programmatic increases (e.g. quantity reductions) are excluded from the unit cost calculations. For B-1 CMUP, the quantity reduction (from 93 to 60 aircraft) is a programmatic impact for unit cost calculations. Excluding the impact of the quantity reduction, B-1 CMUP Average Procurement Unit Cost (APUC) increased approximately 21%. A Nunn-McCurdy unit cost breach determination was made by SECAF and Congress was notified on March 15, 2002. The details of the unit cost increase, including and excluding the programmatic impacts are provided in Section 12 of this SAR.

A new APB to reflect B-1 consolidation (quantity change) was approved March 7, 2002.

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### B-1B CMUP, December 31, 2001

#### Sc. (U) Threshold Breaches (Cont'd):

DSUP

a. (U) Acquisition Program Baseline (APB):

	Breach	
Schedul	e	No
Perform	ance	NO
Cost	RDTSE	No
	Procurement	No
	MILCON	No
	OeM	No
	Program Acquisition Unit Cost (PAUC)	No
	Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Breach			
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	Yes

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c. (U) Explanation of Breach:

Pursuant to 10 USC, Section 2433, Nunn-McCurdy unit costs are computed on the total Major Defense Acquisition Program (MDAP)--in this case, B-1 Conventional Mission Upgrade Program (CMUP). Per DoD policy, programmatic increases (e.g. quantity reductions) are excluded from the unit cost calculations. For B-1 CMUP, the quantity reduction (from 93 to 60 aircraft) is a programmatic impact for unit cost calculations. Excluding the impact of the quantity reduction, B-1 CMUP Average Procurement Unit Cost (APUC) increased approximately 21%. A Nunn-McCurdy unit cost breach determination was made by SECAF and Congress was notified on March 15, 2002. The details of the unit cost increase, including and excluding the programmatic impacts are provided in Section 12 of this SAR.

A new APB to reflect B-1 consolidation (quantity change) was approved March 7, 2002.

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#### 9. (U) Schedule:

Computer Upgrade

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Milestone I	APR 1993	APR 1993	APR 1993
Milestone II	JAN 1995	JAN 1995	JAN 1995
Development Contract Award	JAN 1996	MAY 1996	MAY 1996
Critical Design Review	JUN 1998	MAY 1998	JUN 1998
Service Final DT&E			
Start	JAN 2000	FEB 2001	DEC 2000
Complete	SEP 2000	<b>JAN 2002</b>	JUN 2002(Ch-1)
Low Rate Production Contract Award	<b>JAN 2000</b>	JUL 1999	NOV 1999
Low Rate Initial Production 1st	JUL 2001	NOV 2001	MAY 2001
Delivery			
IOTSE			
Start	SEP 2000	FEB 2001	DEC 2000
Complete	<b>JAN 2001</b>	AUG 2002	NOV 2002(Ch-2)
Milestone III	JAN 2001	JAN 2003	MAR 2003
Full Rate Production Contract Award	JAN 2001	JAN 2003	MAR 2003
initial Operational Capability (IOC)	JAN 2003	N/A	N/A
Required Assets Available	N/A	JAN 2003	MAR 2003
-			

(U) Notes:

DT&E - Development Test and Evaluation IOT&E - Initial Operational Test and Evaluation

Low Rate Production Contract award is defined as the contract award for the kitproof upgrade kit. Low Rate Initial Production First Delivery is defined as the delivery of the first kitproof upgrade kit. Full-rate production contract award is defined as the production contract award for follow-on upgrade kits. Required Assets Available (RAA) is defined as the date assets consisting of three modified aircraft, a total of three modified module/launchers, associated Organization-level support equipment, O-level spares, verified O-level maintenance and flight manuals, and source data to support training systems, programs and courses are delivered to the using command. In lieu of IOC, HQ ACC has agreed to use the RAA date.

b. Current Change Explanations --(U) (Ch-1) Service Final DT&E Complete changed from Apr 02 to Jun 02 for the following reasons: Wind Corrected Munitions Dispenser problems,

difficulties in obtaining needed range time, and some aircraft maintenance problems - Apr to May 02. SP-103A acceleration (which incorporates the SP-103A integration into the DT&E program and deletes SP-103A regression testing post-operational test) - May to Jun 02.

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9b. (U) <u>Schedule (Cont'd)</u>: Computer Upgrade

(Ch-2) IOT&E Complete changed from Sep 02 to Nov 02 to reflect the SP-103A acceleration explained in Ch-1 above.

#### DSUP

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone I	APR 1993	APR 1993	APR 1993
Milestone II	APR 1997	APR 1997	APR 1997
Development Contract Award	JUN 1997	JUN 1997	JUN 1997
Critical Design Review Complete	JUL 1998	JUL 1998	SEP 1998
Development Flight Test			
Start	MAR 2000	AUG 2001	AUG 2001
Complete	APR 2001	JUL 2002	JAN 2003(Ch-1)
IOT&E			
Start	JUN 2001	AUG 2001	AUG 2001
Complete	DEC 2001	MAY 2003	OCT 2003
Milestone III	MAR 2002	OCT 2003	FEB 2004
Full Rate Production Contract Award	APR 2002	DEC 2003	MAR 2004
Required Assets Available	FEB 2002	OCT 2005	FEB 2006

(U) Notes:

IOTSE - Initial Operational Test and Evaluation RAA - Required Assets Available

RAA is substituted for Initial Operational Capability in the schedule. HQ ACC has agreed that RAA is defined as the date assets consisting of three modified aircraft, associated O-level support equipment, O-level spares, verified O-level maintenance and flight manuals and source data to support training is available (does not include training system devices).

b. Current Change Explanations --(U) (Ch-1) DT&E Complete changed from Dec 02 to Jan 03 due to FOTD immaturity issues.

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### 10. (U) Performance Characteristics:

Computer Upgrade

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a. Performance --

W			_	Development	Appro Program	oved (APB)	Demon- strated	Current
	eapons	Flexibil	Lity	stimate (SAR) N/A	Obj/Thr 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. /	eshold 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. 65	Perf Capabil- ity to safely monitor, ferry, carry, arm, and jettison up to 3 differ- ent conven- tional weapon types (1 type per bay) with a single software load.	Estimate 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. 678
м	Rate (%	сарарте )	(MC)	10	12 /	60	190	0/0

(U) Mission Capable Rate as expressed applies to the overall fleet aircraft wartime mission capable rate. The integration of the weapons upgrade modification will not cause the fleet MC rate to degrade below the threshold value. For information only - the following reliability and maintainability parameters are specified in the weapons upgrade contract specifications: mean time between critical failure, mean time between unscheduled maintenance, maintenance manhours per flight hours, and max/mean repair time on equipment. These parameters will be used to support MC rate calculations

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10b. (U) <u>Performance Characteristics (Cont'd)</u>: Computer Upgrade

b. Current Change Explanations -- None

DSUP

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current
(b)(1)				

(U) MTBCF - Mean Time Between Critical Failure(U) KPP - Key Performance Parameter

(U) KPPs are as stated in the Operational Requirements Document.

(II) The specified values for the threshold and objectives are for system maturity. System maturity for the DSUP occurs after accumulation of 16,520 flight hours.

b. Current Change Explanations -- None

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11. (U) Total Program Cost and Quantity (Dollars in Millions): Computer Upgrade

	Development	Approved	Current
a. (U) Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	159.9	234.6	233.3
Procurement	174.5	153.7	91.4
Recurring	(152.4)		(80.2)
Nonrecurring	(14.8)		(5.6)
Total Flyaway	(167.2)		(85.8)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.8)		(0.4)
Initial Spares	(6.5)		(5.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition OSM	0.0	285.5	277.0
Total FY 1995 Base-Year	\$ 334.4	673.8	601.7
Escalation	80.5	71.6	51.1
Development (RDT&E)	(23.2)	(15.8)	(16.9)
Procurement	(57.3)	(35.5)	(14.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition 05M	(0.0)	(20.3)	(20.2)
Total Then Year \$	414.9	745.4	652.8
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	103	101	60
Total	103	101	60

(U) Low Rate Initial Production First Delivery is defined as the delivery of the first kitproof upgrade kit.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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#### 11a. (U) Total Program Cost and Quantity (Cont'd):

DSUP

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	303.0	376.6	384.8
	Procurement	291.4	475.8	412.6
	Recurring Flyaway	(262.8)		(317.5)
	Nonrecurring Flyaway	(0.7)		(60.3)
				(0.0)
	Total Flyaway	(263.5)		(377.8)
	Other Weapon System Cost	(0.0)		(0.0)
	Peculiar Support	(6.3)		(7.6)
	Initial Spares	(21.6)		(27.2)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition OSM	0_0	0	0_0
	Total FY 1996 Base-Year \$	594.4	852.4	797.4
	Escalation	105.9	125.0	113.8
	Development (RDT&E)	(30.0)	(23.0)	(26.5)
	Procurement	(75.9)	(102.0)	(87.3)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition OSM	(0.0)	(0.0)	10.01
	Total Then Year \$	700.3	977.4	911.2

(U) RDT&E dollars do not include funds for Air Force Mission Support Systems (AFMSS), AFOTEC, Group B (Techniques Generators and Fiber Optic Towed Decoy (FOTD) subsystem) and decoys. AFMSS is a separately managed ACAT III program. Group B funds provided by Electronic Warfare Program element. AFOTEC costs funded under AFOTEC PE. Procurement costs do not include Fiber Optic Towed Decoy subsystem and decoys. Funding is provided by Electronic Warfare PE.

Current Estimate for Nonrecurring Flyaway is now corrected to include software infrastructure costs, mission support and software interim contractor support that was previously reported as recurring flyaway.

b. (U) Quantity --Development (RDT&E) 0 0 0 Procurement <u>95 93 60</u> Total 95 93 60

(U) No Low Rate Initial Production quantities were approved for DSUP.

c. Foreign Military Sales -- None.

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11d. (U) Total Program Cost and Quantity (Cont'd): DSUP

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

Computer Upgrade

		UCR	Current	
		Baseline	Estimate	Percent
		(AUG 2000 APB) (Dec	2001 SAR)	<u>Change</u>
a.	(U) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 1995 BY\$)	1509.2	1383.0	
	(2) Quantity	93	60	
	(3) Unit Cost	16.228	23.050	+42.04
b.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1995 BY\$)	619.9	495.7	
	(2) Quantity	93	60	
	(3) Unit Cost	6.666	8.262	+23.94

(U) This section, while entitled "Computer Upgrade," represents the total Major Defense Acquisition Program (MDAP) costs for B-1 Conventional Mission Upgrade Program (Computer Upgrade/Defensive System Upgrade Program).

Pursuant to 10 USC, Section 2433, Nunn-McCurdy unit costs are computed on the total MDAP level--in this case, B-1 Conventional Mission Upgrade Program (CMUP). Per DoD policy, programmatic increases (e.g. quantity reductions) are excluded from the unit cost calculations. For B-1 CMUP, the quantity reduction (from 93 to 60 aircraft) is a programmatic impact for unit cost calculations. Excluding the impact of the quantity reduction, B-1 CMUP Average Procurement Unit Cost (APUC) increased approximately 21%. A Nunn-McCurdy unit cost breach determination was made by SECAF and Congress was notified on March 15, 2002. The details of the unit cost increase, including and excluding the programmatic impacts are provided below.

A new APB to reflect B-1 consolidation (quantity change) was approved March 7, 2002.

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#### B-1B CMUP, December 31, 2001

12c. (U) Unit Cost Summary (Cont'd): Computer Upgrade

		UCR	Currer	it
		Baseline	Estimat	ce Percent
	<u>(AUG</u>	2000 APB) (De	<u>c 2001 S</u>	R) Change
	c. (U) Prog. Acg. Unit Cost (PAUC)			
	(1) Cost (TY\$)	1703.3	1564.	. 0
	(2) Unit Cost	18.315	26.00	57 +42.33
	d. (U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (TY\$)	755.4	605.	. 3
	(2) Unit Cost	8.123	10.08	38 +24.19
е.	(U) Changes from Previous SAR (Sep 2001)	Dollar	s/Qty	Percent
	(1) PAUC (BY\$)		7.614	+49.33
	(2) APUC (BY\$)		2.427	+41.60
	(3) PAUC Quantity		-33	~35.48
	(4) PAUC (TY\$)		8.469	+48.13
	(5) APUC (TY\$)		2.863	+39.62
f.	(U) Initial SAR Information Initial SAR Date (JAN 1995):			
	(1) Program Acquisition Cost (BY\$)		916.9	
	(2) Program Acquisition Cost (TY\$)	1	115.2	

g. (U) Unit Cost PAUC Changes --Changes in Program Acquisition Unit Cost are primarily due to the reduction in quantity due to consolidation of the B-1 force from 93 to 60 aircraft. Of the 42.04% increase in PAUC, 35.63% can be attributed to the quantity change.

DSUP EMD program has projected a slip of six months to its Acquisition Program Baseline, with high risk of additional slips forthcoming. It was impacted by approximately five weeks due to the February 28, 2001 Seattle earthquake. In addition, the planning factor for Nevada Training and Test Range (NTTR) availability for projected defensive flight testing was reduced to three defensive range sorties per month, adding approximately an additional four months to the DT&E completion date. These impacts were further compounded by late and immature GFE deliveries from the Navy's IDECM RFCM program. The PAUC is impacted by the change to its divisor due to the reduction to 60 B-1s. In addition, the costs of the additional months of EMD as well as cost increases in GFE and Program Depot Maintenance rates (outlined below) account for increases in PAUC.

(U) Unit Cost APUC Changes --Changes in Average Procurement Unit Cost are affected by the quantity change. Of the 23.94% increase in B-1 CMUP APUC, 2.9% is due to the

B-1B CMUP, December 31, 2001

12. (U) Unit Cost Summary (Cont'd): Computer Upgrade

quantity reduction. The actual cost growth in B-1 CMUP APUC is approximately 21%. The reasons for the cost growth are outlined below and in Section 13.

a. DSUP Subsystem Software (S/W) Interim Contractor Support (ICS) Software costs - Requirement was previously identified as an O&M (3400) funded requirement. Clarification of the correct appropriation to be used for ICS moved this to an aircraft procurement (3010) funding requirement.

b. Radar Warning Receiver (ALR-56M) - ALR-56M cost changes were updated to reflect current unit costs provided by the ALR-56M item manager at Warner-Robins Air Logistics Center.

c. Updated IDECM Techniques Generator/Decoy Controller and Launcher costs - The unit cost estimate for these items increased due to three factors:

 The B-1 Program Office Estimate (POE) relies on Navy estimating model for these items. Their model was recently revised to account for latest known changes.

2) Navy delayed and stretched out their planned yearly buy quantities-program stretched from ending in FY10 to FY13.

(a) B-1B buys are now earlier on the learning curve which results in higher unit costs.

(b) Learning curves were updated based on Navy's recent Low Rate Initial Production 1 and 2 data instead of EMD data.

3) B-1B buys reduced to support 60 aircraft vice 93--also reducing yearly buys by approximately 30%.

d. Program Depot Maintenance (PDM) Labor Rate Change - The Oklahoma City Air Logistics Center (OC-ALC) PDM rate will increase from \$150/hour to \$170/hour. This is significant since DSUP will be modified at OC-ALC (9100 hours plus 600 additional hours for 29 aircraft to add the 1122 antenna modification). Total modification hours unchanged.

- h. (U) Impact of Perf or Sched Changes --The six month schedule slip increases cost to complete EMD. Also, delays initial fielding of DSUP by six months.
- i. (U) Program Management & Control --The B-1 CMUP System Program Director is Colonel Michael M. Miller, DSN 785-3281. The DSUP Program Manager is Lieutenant Colonel Peter J. Knudsen, DSN 986-5004.
- J. (U) Cost Control Actions --Delay of GFE and increases in GFE costs are beyond the cost control of DSUP. However, the B-1 program continues to work with the Navy in its efforts to control costs. Air Force is looking into restructuring the program to segregate highest technical risk element (Fiber Optic Towed Decoy) as a separate effort.

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12j. (U) <u>Unit Cost Summary (Cont'd)</u>: Computer Upgrade

k. (U) Contract Information (In Millions of Then-Year Dollars) --

(U) (1) Contractor(s): McDonnell Douglas/TBC

- (2) Contract Title: Computer/WCMD
- (3) Contract Number: F33657-96-C-2075

(4) Actual Cost of Work Performed (ACWP) to date: 345.0

(5) Percent contract completed (BCWP/target cost): 86.00

(6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$-3.3/	-1.00	\$-3.0/	-0.90
Current Values	\$0.4/	+0.10	\$-0.3/	-0.10
Change from the Baseline Report	\$0.4/	+0.10	\$-0.3/	-0.10
Change from the Previous SAR	\$3.7/	+1.10	\$2.7/	+0.80

(U) Explanation of Variances --

The Seattle earthquake was properly incoporated, relieving some of the variance in cost and schedule. The remaining variance is attributable to flight test delays with the Wind Corrected Munitions Dispenser (WCMD) lanyard and fin problems.

(U) Impact of Variances on Contract --No significant impact. Variances will be paid for out of management reserve, an account already established at the contractor.

(U) Impact of Variances on Unit Costs --The increase in development costs have no significant impact to the overall unit cost system.

1. (U) General Comments -DSUP

Contract Information (In Millions of Then-Year Dollars) --

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121. (U) Unit Cost Summary (Cont'd): Computer Upgrade

Previou	IS SAF	2			\$0.8/	+1.00	\$-0.7/	+0.30
Current	: Valu	les			\$2.4/	+0.01	\$-1.8/	+0.01
Change	from	the	Baseline	Report	\$2.4/	+0.01	\$-1.8/	+0.01
Change	from	the	Previous	SAR	\$1.6/	-0.99	\$-1.1/	+0.29

Explanation of variances --Behind schedule due to late GFE and some Group A development.

Impact of Variances on Contract --Late delivery and immaturity of GFE resulted in a reduction of contractor level of effort and subsequent schedule delays.

DSUP

	UCR	Current	
	Baseline	Estimate	Percent
	<u>(N/A)</u>	(Dec 2001 SAR)	<u>Change</u>
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	N/A	N/A	
(2) Quantity	N/A	0	
(3) Unit Cost	N/A	N/A	N/A
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	N/A	N/A	
(2) Quantity	N/A	0	
(3) Unit Cost	N/A	N/A	N/A

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### 13. (U) <u>Cost Variance Analysis</u>: Computer Upgrade

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	0&M	TOTAL
Development Estimate	183.1	231.8	-	-	414.9
Previous Changes:					
Economic	-13.7	-24.3	-	-7.2	-45.2
Quantity	-	+3.1	-	-	-3.1
Schedule	-16.0	+1.7	-	+30.1	+15.8
Engineering	+24.7	-30.0	-	-	-5.3
Estimating	+61.4	-27.1	-	+277.6	+311.9
Other	+10.8	-	-	+4.9	+15.7
Support	-	+1.7	-	-	+1.7
Subtotal	+67.2	-81.1		+305.4	+291.5
Current Changes:					
Economic	+0.2	-	-	+0.3	+0.5
Quantity	-	-39.8	-	-	-39.8
Schedule	-	-	-	-	
Engineering	-	-5.8	-	-	-5.8
Estimating	-0.3	+4.1	-	-8.5	-4.8
Other	-	-	-	-	-
Support	-	-3.8	-	-	-3.8
Subtotal	-0.1	-45.3		-8.2	-53.6
Total Changes	+67.0	-126.4	+	+297.2	+237.8
Current Estimate	250.2	105.4	-	297.2	652.8

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### 13a. (U) Cost Variance Analysis (Cont'd): Computer Upgrade

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(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	159.9	174.5	-	-	334.4
Previous Changes:					
Quantity	-	-2.6	-	-	-2.6
Schedule	-14.8	- 1	- (	+27.3	+12.5
Engineering	+21.7	-27.6	-	-	-5.9
Estimating	+56.8	-17.0	- (	+252.6	+292.4
Other	+9.8	- 1		+4.4	+14.2
Support	-	+1.5	- [	-	+1.5
Subtotal	+73.5	-45.7	- 1	+284.3	+312.1
Current Changes:					
Quantity	-	-32.7	- }	-	-32.7
Schedule	-	-	-	-	-
Engineering		-5.0	-	-	-5.0
Estimating	-0.1	+3.5	-	-7.3	-3.9
Other	-	-	-	-	-
Support	-	-3.2	-		-3.2
Subtotal	-0.1	- 37.4	-	-7.3	-44.8
Total Changes	+73.4	-83.1	-	+277.0	+267.3
Current Estimate	233.3	91.4	-	277.0	601.7

b. (U) Current Change Explanations --

.1.		(Dollars in <u>Base-Year</u> <u>T</u>	Millions) <u>ten-Year</u>
$(\tau)$	<u>RUIGE</u> Deviaed evenintion indices (Recordin)	NI ( N	.0.1
	Revised escalation indices. (Economic)	N/A	+0.1
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.2
	Revised Program Office Estimate (Estimating)	0.0	-0.2
	RDT&E Subtotal	-0.1	-0.1
(2)	Procurement		
•	Quantity reduction of 33 kits (Quantity)	-32.7	-39.8
	Hardware change in Data Transfer Device (Engineering)	-5.0	-5.8
	Revised Program Office Estimate (Estimating)	+3.5	+4.1
	Decrease in estimate due to quantity reduction (Support)	-3.2	-3.8
	Procurement Subtotal	- 37.4	-45.3

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13b. (U) <u>Cost Variance Analysis (Cont'd)</u>: Computer Upgrade

b. (U) Current Change Explanations --

		(Dollars in <u>Base-Year</u> <u>Th</u>	Millions) <u>en-Year</u>
(3)	<u>OAM</u>		
	Revised escalation indices. (Economic)	N/A	0.0
	Economic adjustment for negative program change. (Economic)	N/A	+0.3
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	New program office estimate (Estimating)	-7.2	-8.4
	Oam Subtotal	-7.3	-8.2

DSUP

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	TOTAL
Development Estimate	333.0	367.3	-	700.3
Previous Changes:				
Economic	-12.9	-21.9	- 1	- 34.8
Quantity	-	-7.5	-	-7.5
Schedule	+100.8	+15.3	-	+116.1
Engineering	-	-	-	-
Estimating	-17.0	+159.1	- 1	+142.1
Other	+5.0	-	-	+5.0
Support	-	+9.0	-	+9.0
Subtotal	+75.9	+154.0	-	+229.9
Current Changes:				
Economic	+0.8	-9.2	-	-8.4
Quantity	-	-165.4	-	-165.4
Schedule	-	-	-	- 1
Engineering	-		-	-
Estimating	+1.6	+153.2	-	+154.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.4	-21.4	-	-19.0
Total Changes	+78.3	+132.6	-	+210.9
Current Estimate	411.3	499.9	-	911.2

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## B-1B CMUP, December 31, 2001

(Dollars in Millions)

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# 13a. (U) Cost Variance Analysis (Cont'd): DSUP

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	303.0	291.4	-	594.4
Previous Changes:			1	
Quantity	-	-5.8	-	-5.8
Schedule	+92.5	-	-	+92.5
Engineering	-	-	-	-
Estimating	-16.9	+129.8	-	+112.9
Other	+4.5	-	- 1	+4.5
Support	-	+6.9	-	+6.9
Subtotal	+80.1	+130.9	-	+211.0
Current Changes:				
Quantity	-	-131.4	-	-131.4
Schedule	-	- 1	- [	-
Engineering	-	-	-	-
Estimating	+1.7	+129.3	-	+131.0
Other	-	- 1	-	-
Support		- [	- 1	-
Subtotal	+1.7	-9.7		-8.0
Total Changes	+81.8	+121.2	-	+203.0
Current Estimate	384.8	412.6	-	797.4

b. (U) Current Change Explanations --

		<u>Base-Year</u>	<u>Then-Year</u>
(1)	RDRAF		
	Revised escalation indices. (Economic)	N/A	+0.8
	Adjustment for Current and Prior Inflation. (Estimating)	-1.0	-1.0
	Change in Program Office Estimate (Estimating)	+2.7	+2.6
	RDT&E Subtotal	+1.7	+2.4
(2)	Procurement		
	Economic adjusment for negative program change. (Economic)	N/A	-9.2
	CHANGES TO PROGRAM OFFICE ESTIMATE FOR 2000:		
	Increase in labor rates for PDM installs (Estimating)	+29.4	+34.9
	Increase in cost of IDECM and MPLC/DCL (Estimating)	+8.3	+9.8
	Increase in cost of Radar Warning Receiver	+7.9	+9.4
	Miscellaneous estimating changes (Estimating)	+3.5	+4.1
	Quantity reduction of 33 kits (QR)(Quantity)	-131.4	-165.4
	Quantity reduction of 33 kits (QR)(Quantity)	-131.4	-100.4

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## B-1B CMUP, December 31, 2001

(Dollars in Millions)

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13b. (U) <u>Cost Variance Analysia (Cont'd)</u>: DSUP

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b. (U) Current Change Explanations --

	Base-Year	Then-Year
CHANGES IN PROGRAM OFFICE ESTIMATE FOR 2001:		
Newly defined requirement for software	+16.6	+19.6
Interim Contractor Support (Estimating)		
Increased cost of Improved Multi-Purpose	+3.6	+4.3
Launch Control/Dual Capable Launcher Upgrade		
(Estimating)		
Increase labor rates for PDM installs	+8.7	+10.2
(Estimating)		
Increase for revised IDECM cost model	+9.4	+11.1
(Estimating)		
Increase for Other/Factors (Estimating)	+25.0	+29.8
Increased cost of ALR-56M (Estimating)	+16.6	+19.6
Increase in non-recurring costs (Estimating)	+0.3	+0.4
Progurement Subtotal	-9.7	-21 4
LIOCATEMENT DAPEOLAT	2.1	

QR = Quantity related changes.

### 14. (U) <u>Unit Cost and Other History</u> (Then-Year Dollars in Millions): Computer Upgrade

a. (U) Program Acquisition Unit Cost (PAUC) History

Current S	AR	Baseline	to	Current	Estimate
-----------	----	----------	----	---------	----------

PAUC		Changes							
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.03	-0.745	+2.17	+0.263	-0.185	+5.12	+0.262	-0.035	+6.85	10.88

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC		Changes							
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.25	-0.405	+0.898	+0.028	-0.597	-0.383		-0.035	-0.494	1.76

### B-1B CMUP, December 31, 2001

### 14C. (U) Unit Cost and Other History (Cont'd): Computer Upgrade

#### c. (U) Schedule, Cost, and Quantity History

[	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	APR 1993	N/A	APR 1993
Milestone II	N/A	JAN 1995	N/A	JAN 1995
Milestone III	N/A	JAN 2001	N/A	MAR 2003
IOC	N/A	JAN 2003	N/A	JAN 2003
Total Cost	N/A	414.9	N/A	652.8
Total Quantity	N/A	103	N/A	60
Prog Acq Unit Cost	N/A	4.0	N/A	10.9

(U) Date shown as IOC is the RAA date. HQ ACC has agreed to use the RAA date in lieu of IOC.

DSUP

## a. (U) Program Acquisition Unit Cost (PAUC) History

### Current SAR Baseline to Current Estimate

PAUC				Chan	ges				PAUC
Dev Est							_		Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.37									N/A

### b. (U) Procurement Unit Cost (PUC) History

### Current SAR Baseline to Current Estimate

Current	SAR Dase	TTUE CO	current	LSLIMALE					
PUC		Changes							PUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.87									N/A

#### B-1B CMUP, December 31, 2001

14c. (U) Unit Cost and Other Ristory (Cont'd): DSUP

## c. (U) Schedule, Cost, and Quantity History

	SAR SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	APR 1993	N/A	APR 1993
Milestone II	N/A	APR 1997	N/A	APR 1997
Milestone III	N/A	MAR 2002	N/A	FEB 2004
IOC	N/A	FEB 2002	N/A	FEB 2006
Total Cost	N/A	700.3	N/A	911.2
Total Quantity	N/A	95	N/A	60
Prog Acq Unit Cost	N/A	7.4	N/A	15.2

(U) 14 a. (U) Program Acquisition Unit Cost (PAUC) History

DSUP

### Current SAR Baseline to Current Estimate

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PAUC  Dev Est			Changes					PAUC  Cur Est
Econ	Qty	Sch	Eng	Est	Oth	Spt	Tot	 Į
II		l	_1	I	.		I	_
17.37 1-0.72	+1.42	+1.935	6  -0.185	+4.94	+.083	+0.15	+7.623	1+15.186
11				I			1	_1

14 b. (U) Procurement Unit Cost (PUC) History

DSUP

### Current SAR Baseline to Current Estimate

PUC	Ch	anges					PUC
Econ	Qty   Sch	Eng	Est	Oth	Spt	Tot	Cur Est
II				!			
3,86  ~0.516 	-0.626  +0.255 	1	1+5.205		+0.15 	+4.468 	+8.33 

14 c. The IOC date shown is the RAA date. HQ ACC has agreed to use the RAA date in lieu of IOC.

B-1B CMUP, December 31, 2001

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E			Initial (	Contract Pr	ice
(U) <u>Comput</u>	er/WCMD:		<u>Target</u> (	<u>eiling</u>	Oty
McDonnell Dou	glas/TBC, Long	g Beach CA			
F33657-96-C-2	075, CPAF		\$342.6	N/A	0
Award: Januar	y 30, 1997				
Definitized:	January 30, 1	997			
Current	Contract Pric	ce	Estimated Pri	Lce At Comp	letion
Target	Ceiling	Oty	<u>Contractor</u>	Program	Manager
\$405.3	N/A	0	\$402.7	\$4	10.7
			Cost Variance	Schedule_V	<u>ariance</u>
Previous Cumu	lative Varian	ces	\$-7.9	\$-6.	3
Cumulative Va	riances To Dat	te (12/23/01)	50.4	\$-0.	3
Net Chang	e		\$8.3	\$6.	0

## Explanation of Change:

(U) Contract was rebaselined and single point adjusted in April 2001. The Seattle earthquake can be traced to a significant portion of the cost/schedule variance. Residual variances are due to underestimation of effort required to complete AFS development.

(U) Contract Comments: Increase in contract price is due to added scope. Major scope changes include RAA kits, Computer Upgrade Avionics Control Unit configuration from SP103E to SP103A due to obsolescence, Request for Equitable Adjustments for strike, earthquake, and sustainment effort.

(0) <u>DSUP:</u>			Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	rice <u>Oty</u>
MCDonnell Do F33657-97-C- Award: June Definitized:	UGIAS/TEC, LONG 0002, CPAF 20, 1997 June 20, 1997	J Beach CA	\$216.5	N/A	0
Curren <u>Target</u> \$249.3	t Contract Pric <u>Ceiling</u> N/A	oty 0	Estimated Pr <u>Contractor</u> \$249.3	rice At Comp <u>Program</u> \$2	pletion <u>Manager</u> 281.3

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B-1B CMUP, December 31, 2001

## 15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$0.8	\$-0.7
Cumulative Variances To Date (12/23/01)	<u>\$2.4</u>	<u> </u>
Net Change	\$1.6	\$-1.1

#### Explanation of Change:

(U) Late delivery and immaturity of GFE resulted in a reduction of contractor level of effort and subsequent schedule delays.

### 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

## Total Program

.

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-11)	<u>Total</u>
RDT&E	497.2	88.4	63.8	12.1	661.5
Procurement	8.0	22.4	30.0	544.9	605.3
MILCON	-	-	-	-	-
O&M	272.9	22.5	1.8	-	297.2
Total	778.1	133.3	95.6	557.0	1564.0

## Computer Upgrade

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-05)	<u>Total</u>
RDT&E	219.4	27.2	3.6	-	250.2
Procurement	8.0	22.4	30.0	45.0	105.4
MILCON	-	-	•	-	-
04M	272.9	22.5	1.8	-	297.2
Total	500.3	72.1	35.4	45.0	652.8

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B-1B CMUP, December 31, 2001

## 16a. (U) Program Funding Summary (Cont'd):

DSUP

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Xears</u> (FY97-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-11)	<u>Total</u>
RDTSE	277.8	61.2	60.2	12.1	411.3
Procurement	-	-	-	499.9	499.9
MILCON	-	-	-	-	•
MaO	-	-	-	-	-
Total	277.8	61.2	60.2	512.0	911.2

b. Annual Summary -- Computer Upgrade

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway	Flyaway		
		FY 1995	FY 1995	Total	Total
Fiscal	1	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				1.3	1.3
1996				12.9	13.3
1997				31.3	32.8
1998				42.3	44.6
1999				48.6	51.8
2000				37.9	41.0
2001				31.5	34.6
2002				24.3	27.2
2003				3.2	3.6
2004					
Subtotal				233.3	250.2

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999					
2000	6		7.0	7.0	7.7
2001			0.3	0.3	0.3
2002	8	1.7	18.1	19.8	22.4
2003	30	1.2	24.5	26.1	30.0
2004	16	1.7	22.5	26.8	31.4
2005		1.0	7.8	11.4	13.6
Subtotal	60	5.6	80.2	91.4	105.4

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## B-1B CMUP, December 31, 2001

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## 16b. (U) <u>Program Funding Summary (Cont'd)</u>: Computer Upgrade

Appropriation: 3400 - Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				5.2	5.4
1997				27.7	29.0
1998				58.2	61.3
1999				68.0	72.4
2000				51.5	55.7
2001				44.7	49.1
2002				20.1	22.5
2003				1.6	1.8
Subtotal				277.0	297.2

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	60	5.6	80.2	601.7	652.8

b. Annual Summary -- DSUP

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal		Flyaway FY 1996 Dollars	Flyaway FY 1996 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997				27.1	27.8
1998				59.4	61.4
1999				64.6	67.5
2000				52.0	55.2
2001	]			61.1	65.9
2002				55.8	61.2
2003				54.1	60.2
2004				10.7	12.1
Subtotal				384.8	411.3

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## B-1B CMUP, December 31, 2001

#### 16b. (U) Program Funding Summary (Cont'd): DSUP

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 \$
2001					
2002					
2003					
2004	10	8.3	27.4	38.4	44.1
2005	12	12.3	55.4	69.9	81.8
2006	12	17.3	50.0	78.9	94.1
2007	12	11.0	60.8	82.6	100.3
2008	12	5.3	61.8	74.4	92.1
2009	2	3.4	30.4	33.9	42.8
2010		1.6	18.7	20.3	26.1
2011		1.1	13.0	14.2	18.6
Subtotal	60	60.3	317.5	412.6	499.9

		Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	60	60.3	317.5	797.4	911.2

## 17. (U) <u>Delivery/Expenditure Information</u>:

Computer Upgrade

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a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	0	0
	Procurement	1	1

(U) Percent Total Program Quantities Delivered: 1.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 463.1

(U) Percent Total Program Expended: 70.9%

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B-1B CMUP, December 31, 2001

17b. (U) <u>Delivery/Expenditure Information (Cont'd)</u>: DSUP

DSUP

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): \$ 277.5
  - (U) Percent Total Program Expended: 30.5%

#### 18. (U) <u>Operating and Support Costs</u>: Computer Upgrade

a. (U) Assumptions and Ground Rules --This estimate, dated January 14, 2002, was prepared by the B-1 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 ACC/XPM Manpower Estimate Report was reviewed and found to have no manpower adjustments for the Computer Upgrade. The Operation and Support has a Phase-In of FY02-FY07 and Steady State FY08-FY26. A 1.48 Utilization Factor (Equipment Operation Hours per Flying Hour) was used for 60 aircraft at 319/Flying Hour (FH)/Acft/Yr for ACC.

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 OsS costs reflect aircraft life 2002 through 2026.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

	Computer Upgrade	Avg Annual Cost
	60 B-1 Aircraft	Per Antecedent
Cost Element	Avg Annual Costs	B-1 AP101F Computers
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	2.1	5.8
Intermediate Maintenance	N/A	N/A

### B-18 CMUP, December 31, 2001

18b. (U) Operating and Support Costs (Cont'd): Computer Upgrade

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Computer Upgrade 60 B-1 Aircraft Avg Annual Costs	Avg Annual Cost Per Antecedent B-1 AP101F Computers
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	6.6	70.3
Indirect Costs	N/A	N/A
Total	8.7	76.1

Total OSS Cost	Computer Upgrade	Avg Annual Cost
BY\$ (In Millions)	218.8	1902.5
TY\$ (In Millions)	304.5	2747.3

DSUP

a. (U) Assumptions and Ground Rules --This estimate was prepared by the B-1 System Program Office as part of the updated Program Office Estimate, dated January 18, 2002, for the Acquisition Program Baseline approved March 7, 2002.

The B-1 CMUP - Defensive System Upgrade Cost Analysis Requirements Description and Service Cost Position estimate, which reflect a revised system architecture, were used as the basis for this estimate. The HQ ACC/XPM Manpower Estimate Report was reviewed and found to have a 33 person manpower reduction for the Defensive System Upgrade. The Operation and Support has a phase-in of FY06-FY11 and steady state FY12-FY26. A 1.48 utilization factor (Equipment Operation Hours per Flying Hour) was used for 60 aircraft at 319/Flying Hour/Aircraft/Year for HQ ACC.

Changes with the Defensive System Upgrade include replacing 118 ALQ-161 Line Replaceable Units (LRUs) with 35 ALR-56M and IDECM LRUs; a 4000 pound B-1B aircraft weight reduction; elimination of over 41,000 Technical Order pages; and in Support Equipment, the elimination of one Test Station Type, 31 LRU Test Program Sets and 66 Shop Replaceable Unit Test Program Sets. It is estimated the Defensive System Upgrade Program will reduce annual Operating and Support costs approximately \$50M per year.

The antecedent system is the B-1B ALQ-161 Defensive System.

Total OsS costs reflect aicraft life 2002 through 2026.

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B-18 CMUP, December 31, 2001

# 18a. (U) Operating and Support Costs (Cont'd): DSUP

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Costs are shown in FY 1996 Constant (Base-Year) Dollars in Millions). (Conversion factor from BY 96 to BY 96 is .98.)

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

	DSUP	Antecedent
	60 B-l Aircraft	B-1 ALQ-161
Cost Element	Avg Annual Cost	Avg Annual Cost
Mission Pay & Allowances	1.4	2.5
Unit Level Consumption	3.6	58.2
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	3.9	24.9
Indirect Costs	0.1	0.2
	N/A	N/A
Total	9.0	85.8

Total O&S Cost	DSUP	Antecedent
BY\$ (In Millions)	171.5	2145.0
TY\$ (In Millions)	233.4	4435.6

Report Creation Date: 03/28/2002 8:43:55 AM
## N-22 TACTICAL TOMAHAWK

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: TOMAHAWK (R/UGM-109)

#### AS OF DATE: December 31, 2001

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Operating and Support Costs	11	

- 1. (U) Designation and Nomenclature (Popular Name): RGM 109E/UGM-109E
- 2. (U) DoD Component: Navy

#### 3. (U) <u>Responsible Office and Telephone Number</u>: PEO Cruise Missiles and Joint RADM J. V. Unmanned Aerial Vehicles Assigned: Patuxent River, MD 20670-1547 DSN 757-63

RADM J. V. Chenevey Assigned: January 14, 1999 DSN 757-6332; COMM 301-757-6332 cheneveyjv@navair.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)

AS ANTENDER AS AMENDED

Derived from Converting Const. 28 Downgrade in actions: Oran S513,28 Demosify on: X3

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02-0-0640

5. (U) References:

SAR Baseline (Development Estimate): (U) NAE Approved Acquisition Program Baseline (APB) dated September 27, 1999.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated June 15, 2001.

#### 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 Tactical Tomahawk design are an improved navigation and guidance computer; improved anti-jam Global Positioning System (GPS) capability; improved responsiveness and flexibility through two-way satellite communications for in-flight retargeting; a loiter capability; and the ability to send a single-frame, Battle Damage Indication Image (BDII) of overflown areas prior to impact. Modern manufacturing techniques and Commercial Off-the-Shelf/Government Off-the-Shelf (COTS/GOTS) hardware will provide this improved capability at an affordable production cost and allow lower post-production support costs by extending the recertification interval from eight years for the currently-fielded Block III to 15 years for Tactical Tomahawk. Tactical Tomahawk will maximize the use of existing Tomahawk Weapon System program and logistic support. There will be no change to the system's overall support concept.

#### 7. (U) Executive Summary:

(U) On December 18, 1997, ASN(RD&A) approved the termination of the Tomahawk Baseline Improvement Program (TBIP) and initiated the Tactical Tomahawk program. At present Raytheon is in the Engineering and Manufacturing Development (EMD) phase of the Tactical Tomahawk program. Initial Operational Capability (IOC) is planned for 2004. Procurement of Tactical Tomahawk missiles will begin in FY02 with Low Rate Initial Production (LRIP), and continue through FY07 for a total of 1715 missiles. The FY03 President's Budget reflects a sponsor mandated missile quantity increase of 362 over the previous program of record quantity of 1353. The increase precipitated an associated procurement cost and total acquisition cost APB breach. The revised APB, to reflect increased quantities, has been submitted and should be approved by March 2002.

The Tactical Tomahawk EMD contract is a cost share contract. The total cost share ratio varies depending on total cost and incentivizes a Target Cost of \$247.6M. At this cost, the government's share is \$141.6M and Raytheon's share

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#### 7. (U) Executive Summary (Cont'd):

is \$106M. The program Target Cost (\$247.6M) is based on the Contractor's proposal and represents a 3-year program from contract award to Operational Assessment. The Program Manager evaluated the \$247.6M/3-year program as high risk. The Program Manager in 1998, supported by independent estimates from the Naval Center for Cost Analysis and Naval Air Systems Command, estimated the total contract completion cost to be \$327.6M and the required schedule to be 4 years. The share ratio at the Program Manager's estimate is \$165.6M in government costs and \$162M in Raytheon costs.

During the reporting period, the program experienced technical design issues with the body castings, engine qualification and DSMAC integration. Previous challenges within simulation development and software formal qualification testing have been adjudicated. Performance simulation development achieved limited accreditation in the later part of the reporting period to support missile software FQT and IV&V. Initial performance results from these simulations predict that the Tactical Tomahawk will meet its ORD requirements. The program remains on schedule for a third quarter FY02 first flight (DT-0) test to support subsequent LRIP I award.

#### 8. (U) Threshold Breaches:

a. (0) Acquisition Frodiam Deserine (A	VED/	÷.
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Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	Yes
MILCON	No
06M	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 Total Acquisition Costs and Procurement occurred with the increased inventory requirements mandated in PB03. The driver for the cost increase was additional inventory procurement (362 Baseline IV Tactical Tomahawk missiles) mandated in PB03.

## Sc. (U) Threshold Breaches (Cont'd):

- 9. (U) Schedule:
  - a. Milestones --

	1	)evel	opment	Appi	coved	Curi	rent
	Est	imat	e (SAR)	Progra	APB)	Esti	mate
Contract	Award	JUN	1998	JUN	1998	JUN	1998
		OCT	2001	OCT	2002	OCT	2002
		JAN	2002	OCT	2002	OCT	2002
		SEP	2002	JUL	2003	JUL	2003
		OCT	2002	AUG	2003	AUG	2003
		MAR	2003	MAR	2004	MAR	2004
		DEC	2001	JUN	2002	JUN	2002
		JUN	2003	MAY	2004	MAY	2004
		JUL	2003	MAY	2004	MAY	2004
ility		APR	2003	MAR	2004	MAR	2004
		N/A		JAN	2003	JAN	2003
	Contract ility	E <u>st</u> Contract Award ility	Devel Estimat Contract Award JUN OCT JAN SEP OCT MAR DEC JUN JUL JUL N/A	Development Estimate (SAR) Contract Award JUN 1998 OCT 2001 JAN 2002 SEP 2002 OCT 2002 MAR 2003 DEC 2001 JUN 2003 JUL 2003 ILLY APR 2003 N/A	Development Appr Estimate (SAR) Progra Contract Award JUN 1998 JUN OCT 2001 OCT JAN 2002 OCT SEP 2002 JUL OCT 2002 AUG MAR 2003 MAR DEC 2001 JUN JUN 2003 MAY JUL 2003 MAY N/A JAN	Development Approved Estimate (SAR) Program (APB) Contract Award JUN 1998 JUN 1998 OCT 2001 OCT 2002 JAN 2002 OCT 2002 JAN 2002 OCT 2002 SEP 2002 JUL 2003 MAR 2003 MAR 2004 DEC 2001 JUN 2002 JUN 2003 MAY 2004 JUL 2003 MAY 2004 JUL 2003 MAR 2004 N/A JAN 2003	Development Approved Curr Estimate (SAR) Program (APB) Estimate Contract Award JUN 1998 JUN 1998 JUN OCT 2001 OCT 2002 OCT JAN 2002 OCT 2002 OCT SEP 2002 JUL 2003 JUL OCT 2002 AUG 2003 AUG MAR 2003 MAR 2004 MAR DEC 2001 JUN 2002 JUN JUN 2003 MAY 2004 MAY JUL 2003 MAY 2004 MAY JUL 2003 MAR 2004 MAR N/A JAN 2003 JAN

(U) <u>Acronyms:</u> TECHEVAL-Technical Evaluation OPEVAL-Operational Evaluation LRIP-Low Rate Initial Production FRP-Full Rate Production

b. Current Change Explanations -- None

### 10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current Estimate
Accuracy Land Attack	(b)(1)		TBD	(b)(1)
ECCM Jam Resistance GPS/Navigation (dBW)		1	TBD	
Mission Reliability	C		TBD	8
Cruise Reliability			TBD	1
Range Operational (km)		and the second	TBD	V

(U) Acronyms:

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TOMAHAWK (R/UGM-109), December 31, 2001

## 10a. Performance Characteristics (Cont'd):

CEP-Circular Error Probable ECCM-Electronic Counter Counter Measure GPS-Global Positioning System dBW-decible watts km-kilometer

b. Current Change Explanations -- None

#### 11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
Development (RDT&E)	525.3	525.3	548.4
Procurement	1158.4	1158.4	1448.4
Fly Away	(860.0)		(1072.3)
	(237.6)		(350.1)
Peculiar Support	(60.8)		(26.0)
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 1999 Base-Year	1683.7	1683.7	1996.8
Escalation	179.7	179.7	173.1
Development (RDT&E)	(6.3)	(6.3)	(11.2)
Procurement	(173.4)	(173.4)	(161.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0,0)	(0.0)	(0.0)
Total Then Year \$	1863.4	1863.4	2169.9
b. (U) Quantity			
Development (RDT&E)	12	. 10	10
Procurement	<u>1353</u>	1353	<u>1715</u>
Total	1365	1363	1725

(U) Current plans call for 10 Development and 138 LRIP units. Milestone Decision Authority (MDA) modified Acquisition Baseline on October 12, 1999 to provide for 2 LRIPs: LRIP 1 2002 (32 units); LRIP 2 2003 (106 units).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

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		UCR	Current	
		Baseline	Estimate	Percent
		(JUN 2001 APB) (Dec	: 2001 SAR)	<u>Change</u>
а.	(U) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 1999 BY\$)	1683.7	1996.8	
	(2) Quantity	1363	1725	
	(3) Unit Cost	1.235	1.158	-6.23
b.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1999 BY\$)	1158.4	1448.4	
	(2) Quantity	1353	1715	
	(3) Unit Cost	0.856	0.845	-1.29

## 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	+0.2	+1.6	-	+1.8
Quantity	-	-7.5	<b>→</b>	-7.5
Schedule	+33.7	+23.6	-	+57.3
Engineering		-	-	- 1
Estimating	-30.2	+5.1	_	-25.1
Other	-	-	-	-
Support	-	-11.7		-11.7
Subtotal	+3.7	+11.1		+14.8
Current Changes:				
Economic	-5.1	-42.2	-	-47.3
Quantity	-	+243.8	-	+243.8
Schedule	-	+9.3	-	+9.3
Engineering	-		-	-
Estimating	+29.4	-46.9	-	-17.5
Other	-	-	-	
Support	-	+103.4		+103.4
Subtotal	+24.3	+267.4	-	+291.7
Total Changes	+28.0	+278.5	-	+306.5
Current Estimate	559.6	1610.3	-	2169.9

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### 13a. (U) Cost Variance Analysis (Cont'd):

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(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		~6.3	-	-6.3
Schedule	+30.3	+17.9	-	+48.2
Engineering		-	-	-
Estimating	-33.5	+6.8	-	-26.7
Other		-	-	
Support	-	-12.6	-	-12.6
Subtotal	-3.2	+5.8	-	+2.6
Current Changes:				
Quantity	-	+212.2		+212.2
Schedule	-	+10.7	-	+10.7
Engineering			-	
Estimating	+26.3	~29.0	-	-2.7
Other	-	-	-	-
Support		+90.3		+90.3
Subtotal	+26.3	+284.2	-	+310.5
Total Changes	+23.1	+290.0	-	+313.1
Current Estimate	548.4	1448.4	-	1996.8

b. (U) Current Change Explanations --

	D. (0) current change Explanacions	(Dollars in	Millions
		Base-Year T	hen-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-5.1
	Adjustment for Current and Prior Inflation. (Estimating)	+5.0	+5.0
	Net result of revised estimates for adding 2 program yrs and the removal of TBIP. (Estimating)	+21.3	+24.4
	RDT&E Subtotal	+26.3	+24.3
(2)	Procurement		
<b>v</b> = r	Revised escalation indices. (Economic)	N/A	-47.8
	Economic adjustment for negative program change. (Economic)	N/A	+5.6
	Total Quantity Variance associated with increase of 373 units.	+226.9	+260.7
	Quantity increase of 373 units, from 1342 to	+212.2	+243.8
	Allocation to Schedule variance resulting from Onantity Change. (OR) (Schedule)	+10.7	+13.9
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+4.0	+3.0

## 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations	(m. 3.3.)	
	(Dollars 1	.n Millions)
	<u>Base-Year</u>	<u>Then-Year</u>
Acceleration of annual procurement buy profile (Schedule)	. 0.0	-4.6
Estimating Change to reflect revised	-33.0	-49.9
Adjustment for Current and Prior Inflation. (Support)	+1.2	+1.3
Change in Peculiar Support (Support)	-40.6	-44.9
Change in Other Weapon System Costs (Support)	+129.7	+147.0
Procurement Subtotal	+284.2	+267.4

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

1	PAUC	Changes							PAUC	. 1	
þ	ev Est	lk							Cur Es	t	
		Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
Γ	1.37	-0.026	-0.148	+0.039		-0.025		+0.053	-0.107	1.2	6

#### b. (U) Procurement Unit Cost (PUC) History

Current	SAR	Base.	line	to	Curren	t –	Estimate
	-			_		_	

PUC	Changes						PUC		
Dev_Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.984	-0.024	-0.069	+0.019		-0.024		+0.053	-0.045	0.939

## 14c. (U) Unit Cost and Other History (Cont'd):

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c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	MAY 2004
IOC	N/A	APR 2003	N/A	MAR 2004
Total Cost	N/A	1863.4	N/A	2169.9
Total Quantity	N/A	1365	N/A	1725
Prog Acq Unit Cost	N/A	1.4	N/A	1.3

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E			Initial	Contract Pr	ice
(U) <u>New (</u>	Contract:		<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
RAYTHEON MIS N00019-98-C- Award: June	SILE SYSTEMS, TU 0177, CPFF 3, 1998	CSON AZ	\$247.6	N/A	0
Definitized:	June 3, 1998				
Currer	t Contract Price		Estimated Pr	rice At Comp	letion
<u>Target</u>	Ceiling	Oty	Contractor	Program	Manager
\$307.1	N/A	0	\$346.8	\$3	53.3
Previous Cum Cumulative N	nulative Variance Variances To Date	s (08/31/01)	<u>Cost Variance</u> \$-12.0 <u>\$-12.0</u>	<u>schedule V</u> \$-1. <u>\$-1.</u>	ariance 8 8
Net Char	ige		\$0.0	şψ.	0

## Explanation of Change:

(U) An Over Target Baseline was approved in April 2000.

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## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY98-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	<u>Total</u>
RDT&E	446.4	59.1	41.9	12.2	559.6
Procurement	-	73.9	145.5	1390.9	1610.3
MILCON .	-	-	-	-	-
04M	-	-	-	-	-
Total	446.4	133.0	187.4	1403.1	2169.9

b. Annual Summary -- TACTICAL TOMAHAWK AUR

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1999 Dollars Nonrec	Flyaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				50.3	49.7
1999				127.6	127.6
2000			1	161.8	164.2
2001		· · · · · · · · ·		101.6	104.9
2002				56.4	59.1
2003				39.4	41.9
2004				11.3	12.2
Subtotal	10			548.4	559.6

(U) The amounts shown for RDT&E in Section 16 will not track to the President's budget because the SAR reports cost for the Tactical Tomahawk All Up Round only, and the President's Budget includes costs for Mission Planning and Weapons Control System segments of the total Tomahawk Weapons System. Further, because of the unique cost sharing arrangement of the Tactical Tomahawk Engineering Development Contract, the SAR also includes an estimate of the contractor's contribution.

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY 1999 Dollars Nonrec	Flyaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	32	23.4	33.9	70.5	73.9
2003	106	18.8	95.0	136.4	145.5
2004	311		177.8	270.2	293.4
2005	343		195.9	260.4	288.1
2006	471		269.0	343.5	387.3
2007	452		258.5	367.4	422.1

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#### 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1507 - Weapons Procurement, Navy

Fiscal	Otu	Flyaway FY 1999 Dollars	Flyaway FY 1999 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Subtotal	1715	42.2	1030.1	1448.4	1610.3

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1725	42.2	1030.1	1996.8	2169.9

#### 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	10	0
	Procurement	1715	0

- (U) Percent Total Program Quantities Delivered: 0.0%
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 338.1
  - (U) Percent Total Program Expended: 15.6%

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The Tactical Tomahawk will be maintained using the same maintenance philosophy and infrastructure as the current Tomahawk Block III. There is no antecedent system.

b. (U) Costs -- (FY 1999 Constant (Base-Year) Dollars in Thousands)

	TACTICAL TOMAHAWK AUR	AVG. Annual Cost for
	TACTICAL TOMAHAWK	N/A
Cost Element		
Mission Pay & Allowances	N/A	<u>N/A</u>
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	122.1	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Tech/Operational Support	188.6	N/A

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## 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1999 Constant (Base-Year) Dollars in Thousands)

	TACTICAL TOMAHAWK AUR	AVG. Annual Cost for
	TACTICAL TOMAHAWK	N/A
Cost Element		
Platform Maintenance	0.0	N/A
Theater Mission Planning	0.0	N/A
Mission Personnel	121.0	N/A
Demilitarization	21.0	N/A
OTL	159.4	N/A
Software Support	63.3	N/A
	N/A	N/A
Total	675.4	N/A

Total O&S Cost	TACTICAL TOMAHAWK AUR	AVG. Annual Cost for
BY\$ (In Millions)	675.4	N/A
TY\$ (In Millions)	694.4	N/A

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#### SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 823) PROGRAM: FBCB2

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FBCB2 SUN LIGHT READABLE PLATEO CAUTION, WAS AUTO-CENTER TOUCH BOREEN POR DATA BITS INITION TO P THE W 0 PORTICI **BUTTONS AD** N INTA пu LD THEFT . ...

1. Designation and Nomenclature (Popular Name) : Force XXI Battle Command Brigade and Below (FBCB2)

2. DoD Component : Army

3. Responsible Office and Telephone Number :

COL Nickolas Justice PM FBCB2 ATTN: SFAE-C3T-FB Assigned: July 13, 2001 DSN 987-3237; COMM 732-427-3237 Bay 2, Building 2525 Fort Monmouth, NJ 07703-5008 justice@us.army.mil

4. Program Elements/Procurement Line Items :

RDT&E: PE 0203758A (Shared) Project D374, D120 PE 0203759A Project D120 **PROCUREMENT:** APPN 2035 ICN BS9736 (Army) APPN 2035 ICN W61900 (Army) (Shared) O&M: PE 590000 PE 59000

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 98 to create a funding line for PM FBCB2. APPN 2033 ICN GA0700 (Army) (Shared), APPN 2033 ICN GA0720 (Army) (Shared) and APPN 2033 ICN GZ2400 (Army) (Shared) were erroneously included in the December 1999 SAR and are being taken out in this SAR submission to correct the error.

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AS OF DATE: December 31, 2001

4. Program Elements/Procurement Line Items (Cont'd) :

#### 5. References:

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SAR Baseline (Development Estimate) : Approved Acquisition Program Baseline (APB) dated December 21, 1999.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated December 21, 2001.

#### 6. Mission and Description :

The mission of PM FBCB2 is to develop, procure, test and field a digital information system that provides integrated, on-the-move, real-time/near real-time, Situational Awareness (SA) and Command and Control (C2) information to all tactical combat, combat support and combat service support commanders, leaders and soldiers. This capability will be fielded from brigade down to the soldier level across all Battlefield Functional Areas (BFAs), including other Division and Corps elements necessary to support brigade operations. FBCB2 will be integrated into the mounted and dismounted maneuver (divisional, separate, heavy and light), cavalry reconnaissance and armored cavalry, mechanized infantry, and aviation units.

PM FBCB2 is developing and delivering the Applique (Computer, Software and Installation Kits (IKs)), FBCB2 Software and Common Card products integrated into various platforms. Battlefield digitization allows the Army's primary weapons and battle command systems to see, target and engage threats while sharing the same information, using advanced technologies and digital communications. These platforms are connected through and dependent upon a communications infrastructure called the Tactical Internet (TI) made up of existing Enhanced Position Location Reporting System (EPLRS), Inter Network Controller (INC) and Single Channel Ground and Airborne Radio System (SINCGARS) radios to pass SA and C2 messages. Interoperability is accomplished through the use of a network to share SA and C2 information, promoting an efficient use of resources within the enemy's decision cycle. FBCB2 is integrated with the Army Tactical Command and Control Systems (ATCCS) located within the brigades and battalions. The interfaces between FBCB2 and ATCCS systems will provide users at all levels a common picture of their battlespace. This seamless digitization (a computer with a graphics display, global positioning system, communications link and C2 software) will be applied across the Army. This program does not replace another system.

#### 7. Executive Summary :

This SAR submission will include the Schedule and Cost breaches to the approved APB, Change 1 dated December 21, 2001. The Schedule breach was caused by the Army's decision to implement System-Of-Systems testing concept during IOT&E and the ABCS' immaturity to prove out interoperability with ATCCS systems. The Cost breach in RDT&E was caused by zero-sum funding reprogramming action from OPA to RDT&E from FY 03 to FY 07 and additional funding in the RDT&E from FY 08 to FY 16 to continue software development and additional tests in compliance with the testers new requirements which necessitated a program restructure. The ORD has been revised to reorganize and reblock the KPPs to include a more realistic operational and achievable objectives. A Program Deviation Report has been submitted and a revised Acquisition Program Baseline, change 2 is in the process of being developed and will be submitted when the FBCB2 program and test restructures are approved.

The following events have occurred since the last SAR submission: Equipped 4th ID at Fort Hood in Dec 00; Division Capstone Exercise (DCX1)/Limited User Test (LUT#2) in Apr 01; Awarded System Engineering and Integration Contract in May 01; and successfully LUT #2A in Dec 01, Awarded the LRIP Option 1 contract in Dec 01 and awarded LRIP Option 2 contract in Feb 02.

#### 8. Threshold Breaches :

a	Acminition	Program	Baseline	(APB):
<b>d</b> .	VCUUTAICION	Frugram	Dagerine	(nep) -

[	Item	Breach
Schedule		Yes
Performan	Ce	No
Cost R	DT&E	Yes
P	rocurement	NO
M	ILCON	No
0	&M	Yes
P	rogram Acquisition Unit Cost (PAUC)	Yes
A	verage 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 Army's decision to implement System-Of-Systems testing concept during IOT&E, the ABCS' immaturity to prove out interoperability with ATCCS systems and DOT&E's imposing additional tests to the FBCB2 program caused a schedule breach. As a result, several schedule milestones have slipped (see Section 9).

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#### 8c. Threshold Breaches (Cont'd) :

A zero-sum reprogramming of the Procurement to RDT&E dollars for FY 03 to FY 07 was executed (see President's Budget 03) and added funding in RDT&E from FY 08 through FY 16 to continue software development and to add tests to comply with evolving user/tester requirements and program restructure. Added S4M O&M funding FY 00 to support the National Training Center (NTC) exercise at Fort Irwin, CA. These actions resulted in RDT&E and O&M cost breaches.

The PAUC cost breach is due to removing quantities funded with other customer money from the FBCB2 program. This action resulted in a higher PAUC since the customer funding had been removed from in previous SARs but the related quantity had not. (See section 11 and 13 for more details.)

These schedule/cost breaches will be incorporated in a revised APB which will be submitted when the FBCB2 program and test restructures are approved

#### 9. Schedule:

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a. Milestones --

	Devel	lopment	App:	roved	Cur	rent
	Estimat	e (SAR)	Progra	am (APB)	Est	imate
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	(Ch-1)
Equip 4th ID at Ft Hood (complete)	DEC	2000	DEC	2000	DEC	2000
Initial Operational Test & Evaluatic (IOT&E)	on NOV	2001	NOV	2001	MAY	2003 (Ch-2)
Milestone III Decision Review	APR	2002	JUL	2002	DEC	2003 (Ch-2)
Full Rate Production Award	JUN	2002	NOV	2002	JAN	2004 (Ch-2)
Force Development Test & Experiment (FDTE)/Customer Test (CT)	N/A		APR	2000-	APR	2000(Ch-1)
Division Capstone Exercise (DCX1)/Limited Uset Test (LUT#2)	N/A		APR	2001	APR	2001 (Ch+3)
Limited User Test (LUT#2A)	N/A		N/A		DEC	2001(Ch-4)
Limited User Test (LUT#3)	N/A		MAR	2002	FEB	2003(Ch-5)
BLOCK II						
PEO C3S Review	APR	2000	APR	2000	APR	2000
Award System Engineering and Integra tion Contract (Software V 4.0n)	I- NOV	2000	NOV	2000	MAY	2001
Participate in Army JTRS IOT&E	SEP	2005	SEP	2005	SEP	2005
Deployment of Block II Software	SEP	2005	SEP	2005	SEP	2005

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#### 9b. Schedule (Cont'd) :

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b. Current Change Explanations --

(Ch-1) - Force Development Test & Experiment (FDTE)/Limited User Test (LUT#2) changed to Force Development Test & Experiment (FDTE)/Customer Test (CT) which occurred in April 01.

(Ch-2) - The Initial Operational Test and Evaluation (IOT&E) changed to from Nov 01 to May 03 to align Army System-Of-Systems level of testing.

Full Rate Production (FRP) Decision Review changed from from Apr 02 to Dec 03 and FRP contract award from Jun 02 to Jan 04 due to program and test restructures.

(Ch-3) - Added Division Capstone Exercise (DCX1)/Limited User Test (LUT#2) to replace the LUT#2 test requirement which did not occur in Apr 00.

(Ch-4) - Added Limited User Test #2A with the same rigor as IOT&E which occurred in Dec 01.

(Ch-5) - Added Limited User Test #3 which is scheduled to occur in Feb 03.

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#### 10. Performance Characteristics :

a. Performance --

			P - '	0veu	Demon		
	Development	Progr	am	(APB)	strated	Current	
	Estimate (SAR)	Obj/T	hr	eshold	Perf	Estimat	e
KPP #1 Situational Awareness (SA)		_					
Picture Displays of	100%	100%	1	95%	TBD	100%	
the force data rec'd							
at each echelon.							
Data Accuracy -	10/1	10/1	1	100/10	TBD	100/1	
Display Platform/	meters	meters	1	meters		meters	
Dismounted Soldier							
of the Reported							
Position							
KPP #2							
Interoperability							
MCS/AFATDS/ASAS	Yes	Yes	1	Yes	TBD	Yes	
CSSCS/FAAD C21	Yes	Yes	1	Yes	TBD	No	(Ch-1)
Ability to push/	Yes	Yes	1	Yes	TBD	No	(Ch-1)
pull information							
into/from ABCS							
databases							
FBCB2 must be	Yes	Yes	1	Yes	TBD	No	(Ch-1)
interoperable with							
Navy, Air Force,							
and Marine Corps							
tactical systems							

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## 10a. Performance Characteristics (Cont'd) :

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		Aŗ	proved	Demon-	
	Development	Progr	am (APB)	strated	Current
	Estimate (SAR)	<u>Obj/1</u>	<u>hreshold</u>	Perf	Estimate
FBCB2 must be	Yes	Yes	/ Yes	TBD	No (Ch-1)
interoperable with					
Allied/Coalition					
tactical systems					
KPP #3 Unit Task	N/A		/		
Reorganization (UTR)			/		
(Time to implement					
UTR within FBCB2					
Network)					
BLOCK I (IOT&E)					
Move a platoon to a	l min	l min	/ 5 min	TBD	1 min
new company (same					
brigade)					
Move a platoon to a	1 min	1 min	/ 5 min	TBD	1 min
new battalion					
(same brigade)					
Move a company to a	5 min	5 min	/ 10 min	TBD	5 min
new battalion					
(same brigade)					
Move a platoon to a	5 min	5 min	/ 15/60	TBD	5 min
new brigade			/ min		
Move a company to a	5 min	5 min	/ 15/90	TBD	5 min
new brigade			/ min		
Move a battalion to	10 min	10 min	/ 2hrs/	TBD	10 min
a new brigade			/ 4hrs		
BLOCK II (FY05)					
Move a platoon to a	l min	l min	/ 5 min	TBD	l min
new company (same					
brigade)					
Move a platoon to a	1 min	l min	/ 5 min	TBD	l min
new battalion					
(same brigade)					
Move a company to a	5 min	5 min	/ 10 min	TBD -	5 min
new battalion					
(same brigade)					
Move a platoon to a	5 min	5 min	/ 10/30	TBD	5 min
new brigade			/ min		
Move a company to a	5 min	5 min	/ 15/45	TBD	5 min
new brigade			/ min		
Move a battalion to	10 min	10 min	/ 30/120	TBD	10 min
a new brigade			/ min		
KPP #4 Information					
Exchange (time for					
information exchange					
between sender and					
receiver)					
BLOCK I (IOT&E)	N/A		/ N/A		

## 10a. Performance Characteristics (Cont'd) :

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Approved Demon-Development Program (APB) strated Current Estimate (SAR) Obj/Threshold Estimate Perf 95% rc'd/ 85% rc'd TBD Alerts and 95% rc'd 95% rc'd Warnings w/i 4 w/i 4 / w/i 6 w/1 4 / sec (Bn) / 80% rc'd бес sec Sec / w/i 30 / sec / (Bde) Fire Support 95% rc'd 95% rc'd/ 80% rc'd TBD 95% rc'd Information w/i 8 w/i8 / w/i 30 w/i 8 вес sec / sec sec Combat Reporting 90% rc'd 90% / 80% rc'd TBD 90% rc'd w/i 15 rc'd / w/i 30 w/i 15 w/i 15 sec / sec sec sec 90% rc'd Mission Planning 90% / 90% rc'd TBD 90% rc'd Information w/i B rc'd / w/i 15 W/1 8 mín w/i / min min 8 min / BLOCK II (FY05) Alerts and 95% 25% / 90% rc'd TBD 95% rc'd Warnings w/1 4 rc'd rc'd / w/i 6 w/i 4 w/i 4 / sec sec sec sec 1 95% rc'd Fire Support 95% 95% / 90% rc'd TBD / w/i 15 rc'd rc'd Information w/1 8 w/i 8 w/i 8 / sec sec sec sec 90% rc'd 90% rc'd/ 90% rc'd TBD Combat Reporting 90% rc'd w/i 15 / w/i 30 w/i 15 w/i 15 sec sec / sec min 90% rc'd 90% rc'd/ 90% rc'd TBD 90% rc'd Mission Planning / w/i 15 w/i 8 Information w/i 8 w/i 8 / min min min min / 700 700 Mean Time Between 910 910 TBD (Ch-2) / hours Essential Function hours hours hours Failure (MTBEFF)

Notes:

For Unit Task Reorganization Key Performance Parameter, the moving unit is digitally established at the time of notification. Time starts for establishment of digital communications with the new parent organization upon the order to re-task organize key positions will be digitally re-established first, for example, 15/60 is 15 minutes for key positions, 60 minutes for all other elements and echelons.

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#### 10a. Performance Characteristics (Cont'd) :

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b. Current Change Explanations --(Ch-1) - Changed from "Yes" to "No" under the "Current Estimate" column to correct the administrative errors in the development APB, dated December 21, 1999 and carried over in the SAR.

(Ch-2) - The MTBEFF "Current Estimate" is changed from 910 to 700 hours because the 910 value is no longer expected to be achieved during IOT&E tentatively scheduled for May 03.

#### 11. Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	462.9	462.9	625.5
Procurement	1818.1	1818.1	1805.5
Flyaway	(1337.3)		(0.0)
Non-Recurring Flyaway			(1199.5)
Recurring Flyaway			(10.3)
Total Flyaway	(1337.3)		(1209.8)
Other Wpn Systems Costs	(357.0)		(477.5)
Peculiar Support	(0.0)		(49.7)
Initial Spares	(123.8,		(68.5)
Construction (MILCON)	0.0	0.0	Q. 0
Acquisition O&M	0.0	0.0	4.0
Total FY 2000 Base-Year \$	2281.0	2281.0	2435.0
Escalation	336.9	336.9	382.4
Development (RDT&E)	(1.6)	(1.6)	(25.5)
Procurement	(335.3)	(335.3)	(356.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2617.9	2617.9	. 2817.4
b. Quantity			
Development (RDT&E)	0	0	0
Procurement	59522	59522	56465
Total	59522	59522	56465

Quantity shown is the FBCB2 funded only. 3057 of the total AAO of 59522 are funded under other Army Weapons Systems.

c. Foreign Military Sales -- None.

## 11d. Total Program Cost and Quantity (Cont'd) :

d. Nuclear Costs -- None.

12. Unit Cost Summary :

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	UCR	Current	
	Baseline	Estimate	Percent
	(DEC 2001 APB) (	Dec 2001 SAR)	Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	2281.0	2435.0	
(2) Quantity	59522	56465	
(3) Unit Cost	0.038	0.043	+13.16
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BYS)	1818.1	1805.5	
(2) Quantity	5 <b>9522</b>	56465	
(3) Unit Cost	0.031	0.032	+3.23

## 13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	464.5	2153.4	-	•	2617.9
Previous Changes:					
Economic	+0.5	-18.1	- 1	-	-17.6
Quantity	-	-	-	-	-
Schedule		-25.5	- 1	+	-25.5
Engineering	-	- ]	-	- 1	-
Estimating	-9.0	+31.7	-	-	+22.7
Other	-	-	-	_	-
Support	-	-23.1			-23.1
Subtotal	-8.5	-35.0	-	-	-43.5
Current Changes:					
Economic	-0.3	-9.6	-	-	9.9
. Quantity	-	-85.7	-	- '	-85.7
Schedule	/	+129.8		- :	+129.8
Engineering	-	+126.8	- i	-	+126.8
Estimating	+195.3	-300.7		+4.0'	-101.4
Other	-	-	i	- 1	-
Support	-	+183.4		-	+183.4
Subtotal	+195.0	+44.0	-	+4.0	+243.0
Total Changes	+186.5	+9.0	-	+4.0	+199.5
Current Estimate	651.0	2162.4	-	4.0	2817.4

## 13a. Cost Variance Analysis (Cont'd) :

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Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	OGM	TOTAL				
Development Estimate	462.9	1818.1	-	-	2281.0				
Previous Changes:									
Quantity	-	-	-	-	-				
Schedule		-	-	-	-				
Engineering		-	-	-	-				
Estimating	-8.8	+26.0	-	-	+17.2				
Other		_ 1	-	-	-				
Support		-12.9	-	-	-12.9				
Subtotal	-8.8	+13.1	-	-	+4.3				
Current Changes:			· 1						
Quantity		-64.7	- !	-	-64.7				
Schedule	-	+77.4	-	- 1	+77.4				
Engineering		+105.2	- (	-	+105.2				
, Estimating	+171.4	-271.4	- ;	+4.0 -	-96.0				
Other	1	~	-		-				
Support	-	+127.8	-	÷ (	+127.8				
Subtotal	+171.4	-25.7		+4.0	+149.7				
Total Changes	+162.6	-12.6	-	+4.0	+154.0				
Current Estimate	625.5	1805.5		4.0	2435.0				
b. Current Change Exp	b. Current Change Explanations (Dollars in Millions)								

		Base-Year	Then-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-0.3
	Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
	Zero-sum reprogramming of OPA to RDT&E dollars in FY 03 to FY 07 for continuing system engineering and integration, and test efforts in compliance with tester's and user's evolving requirements. (Estimating)	+96.0	+105.3
	Additional FY 08 to FY 16 funding requirements created by the System-of-Systems and interoperability management concept. (Estimating)	+56.8	+70.6
	Received additional funding through PBD 290 (\$9.0M) for unprogrammed LUT#3 test and PBD 820 (\$10.0M) for additional new testing and other development efforts due to requirements change. (Estimating)	+10.2	+19.0
	RDT&E Subtotal	+171.4	+195.0
(2)	Procurement Revised escalation indices. (Economic)	N/A	-15.1

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## 13b. Cost Variance Analysis (Cont'd) :

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b. Current Change Explanations		
	'Dollars	in Millions'
	Base-Year	Then Yea:
Economic adjustment for negative program change. (Economic)	N/A	+ 5 , 5
Total Quantity Variance associated with decrease of 3057 units. (Quantity)	-64.7	-85,7
Stretchout of annual procurement buy profile. (Schedule)	0.0	+72.8
Additional Schedule Variance. (Schedule)	+77.4	+57.0
Dismounted Soldier System Unit (DSSU) (Engineering)	+105.2	+126.8
Adjustment for Current and Prior Inflation. (Estimating)	-0.2	- 0 . 2
Hardware Costs Cost savings Using the New LRIP Contract (Estimating)	-232.1	-271.1
Engineering Changes Rationale Change (Estimating)	+1.7	+2.0
New OPA Funded On-Site Contractor Training Requirement (Estimating)	+16.2	+19.0
Data Costs Not Previously Costed (Estimating)	+5.9	+6.5
Requirement for New Installation Sites and Site Support Cost for Each Site (Estimating)	+62.7	+73.9
Reduced New Equipment Training and Contractor Logistic Support Requirements (Estimating)	-44.7	-49.2
Additional OPA Funded Test Requirements from the LRIP Contract: Big 5 and Acceptance Tests (Estimating)	+33.0 s	+ 3 9 . B
Reduction in CLS Requirement (Estimating)	-17.9	-16.1
Zero Sum OPAS to RDTES FY02 - FY07 (Estimating)	-96.0	-105.3
Adjustment for Current and Prior Inflation. (Support)	-0.3	- 0 . 3
Change in Initial Spares (Support)	-58.2	-63.4
Change in Peculiar Support (Support)	+49.7	+59.8
Change in Other Wpn Systems Costs (Support)	+136.6	+187.3
Procurement Subtotal	-25.7	+44.0
) O&M Funds were provided for the NTC exercise at Fort Irwin, CA. (Estimating)	+4.0	+4.0
Orm Subrotal	+ 4.0	+ 4.0

FBCB2, December 31, 2001

## 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current	SAR	Baseline	to	Current	Estimate
CULTCHIC	onn	Dagerine	20	~~~~~~~~~~~	TDC71100000

PAUC Dev Est	C Changes st							PAUC Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.044			+0.002	+0.002	-0.001		+0.003	+0.006	0.050

#### b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate Changes PUC PUC Cur Est Dev Est Spt [ Total Econ Sch Eng Est Oth Qty -- +0.002 +0.002 -0.005 -- +0.003 +0.002 0.038 0.036 --

#### 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	DEC 2003
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	2617.9	N/A	2817.4
Total Quantity	N/A	59522	N/A	56465
Prog Acq Unit Cost	N/A	0.0	N/A	0.1

## 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E SDD (EMD)			Initial <u>Target</u>	Contract Pri Ceiling	ce Qty
DAAB07-95-D-I	CA E604, CPIF		\$75.5	\$0.0	1
Definitized:	May 25, 1995				
Curren	t Contract Pric	e	Estimated P	rice At Compl	etion
Target	Ceiling	Qty	Contractor	Program	Manager
\$233.2	\$233.2	0	\$206.5	\$20	04.3

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FBCB2, December 31, 2001

#### 15a. Contract Information (Cont'd) :

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-2.0	\$0.9
Cumulative Variances To Date (02/26/02)	\$5.3	\$-0.8
Net Change	\$7.3	\$-1.7

#### Explanation of Change:

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The original quantity of "1" was an error, there are no RDT&E fully configured fieldable units, therefore, the quantity is changed from "1" to "0".

Cost and Schedule variances are not considered significant.

Contract Comments: The contract data shown in this SAR is only the portion that PM FBCB2 is funding. There are other Army Weapons Systems funds included in this contract.

b. Procurement		Initial	Contract P	rice
LRIP:		Target	Ceiling	Qty
TRW, Carson, CA				
DAAB07-00-D-E501, FPIF		\$310.0	\$310.0	5952
Award: January 25, 2000				
Definitized: June 27, 2000				
Current Contract Price	1	Estimated Pr	ice At Com	pletion
Target Ceiling	Qty Co	ontractor	Progra	m Manager
\$90.7 N/A	5952	\$76.4		\$76.9
	C	ost Variance	Schedule	Variance
Previous Cumulative Variances		\$0.0	\$0	. 0
Cumulative Variances To Date	(02/26/02)	\$2.9	\$-0	.7

Net Change

#### Explanation of Change:

This was a letter contract with an initial estimate of \$310.0M ceiling. When the LRIP base and option 1 were awarded, the contract ceiling was changed to reflect the actual contract Target Price. Ceiling is not required for LRIP contract and is not reflected in the C/SSR.

\$2.9

\$-0.7

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## FBCB2, December 31, 2001

## 16. Program Funding Summary (Current Estimate in Millions of Dollars):

## a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY95-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To <u>Complete</u> (FY04-16)	Total
RDT&E	377.0	56.4	64.9	152.7	651.0
Procurement	129.2	75.5	67.2	1890.5	2162.4
MILCON	-	-	-	-	•
0&M	4.0	-	-	-	4.0
Total	510.2	131.9	132.1	2043.2	2817.4

b. Annual Summary -- FBCB2

Appropriation: 2040 - Research, Development, Test + Eval, Army

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995			1	39.0	37.1
1996				51.5	49.8
1997				49.2	48.1
1998				61.9	61.1
1999		· · · · · ·	· · · · · · · · · · · · · · · · · · ·	52.1	52.0
2000			· · · · · · · · · · · · · · · · · · ·	65.9	66.8
2001				60.2	62.1
2002		!		53.9	56.4
2003		1		61.0	64.9
2004				27.1	29.4
2005		1		18.7	20.6
2006				13.4	15.1
2007				14.8	17.0
2008				8.6	10.0
2009				8.4	10.0
2010		1		8.2	10.0
2011				8.1	10.0
2012				7.9	10.0
2013		1		3.9	5.0
2014				3.9	5.1
2015			÷	3.9	5.2
2016				3.9	5.3
Subtotal		1		625.5	651.0

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## 16b. Program Funding Summary (Cont'd) :

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2000 Dollars Nonrec	Flyaway FY 2000 Dollars Rec	Total Program Base-Year Ş	Total Program Then-Year Ş
2000	1718	5.1	49.4	64.8	66.2
2001	1651		47.4	60.7	63.0
2002	2235		54.6	71.6	75.5
2003	1544		42.1	62.8	67.4
2004	4100		97.4	126.7	138 0
2005	2179		56.0	82 1	91.1
2006	2243		57.4	90.2	101 9
2007	1568		43.3	74.5	85.8
2008	3058	5.2	73.6	115.0	135.0
2009	5667		114.4	161.9	193.6
2010	5128		101.9	149.3	181.9
2011	5434		103.6	149.1	185.2
2012	5528		101.4	149.0	188.6
2013	5428		97.8	149.4	192.6
2014	5230		91.5	145.7	191.5
2015	3754		65.7	117.4	157.2
2016			2.0	35.3	48.1
Subtotal	56465	10.3	1199.5	1805.5	2162.4

Appropriation: 2020 - Operation & Maintenance, Army

Fiscal		Flyaway FY 2000 Dollars	Flyaway FY 2000 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
2000				4.0	4.0
Subtotal				4.0	4.0

These funds were provided to support the NTC exercise.

	Oty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year Ş	Total Program Then-Year \$
Grand Total	56465	10.3	1199.5	2435.0	2817.4

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#### 17. Delivery/Expanditure Information :

a.	Deliveries 1	lo Date	Plan	Actual
		RDT&E	0	0
		Procurement	4152	2935

Percent Total Program Quantities Delivered: 5.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 523.5

Percent Total Program Expended: 18.6%

#### 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 LRU's identified through the use of BIT/BITE software, shipping them 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 MPA funded costs, including green suit maintenance, PMO and replacement personnel costs. Unit-Level Consumption costs consist of the cost of Replenishment Spares and Repair Parts. Depot maintenance will be provided by the system integration support contractor. Contractor support consists of the cost of Post Procurement Software Support (PPSS). Sustaining support is the cost of replenishment training and OMA funded system project management. The FBCB2 hardware will be replaced every three to five years using the Computer Hardware Reprocurement (CHR) concept. Annual CHR cost is shown in the "Other" category.

1	FBCB2	NO ANTECEDENT SYSTEM
	AVERAGE ANNUAL COST	AVERAGE ANNUAL COST
Cost Element		
Mission Pay & Allowances	10.0	N/A
Unit Level Consumption	25.8	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	28.8	N/A
Contractor Support	4.8	N/A
Sustaining Support	1.6	N/A
Indirect Costs	0.0	N/A
Other	7.6	N/A
Total	78.6	N/A

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

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## 18b. Operating and Support Costs (Cont'd) :

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Total O&S Cost	FBCB2	NO ANTECEDENT SYSTEM
BYŞ (In Millions)	786.1	N/A
TY\$ (In Millions)	1121.0	N/A

Report Creation Date: 3/26/2002 1:42:13 PM

AF-7 C-130 AMP

#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A) 823) PROGRAM: C-130 AMP

#### AS OF DATE: December 31, 2001

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 Designation and Nomenclature (Popular Name): C-130 Avionics Modernization Program (AMP)

### 2. DoD Component: USAF

#### 3. Responsible Office and Telephone Number:

ASC/GRB 2590 Loop Rd W WPAFB, OH 45433-7412 Col Robert Dillman Assigned: September 1, 2001 DSN 785-7100; COMM (937) 255-7100 robert.dillman@wpafb.af.mil

#### 4. Program Elements/Procurement Line Items: RDT&E: PE PE 41115F PROCUREMENT: APPN 0300 ICN 046404 (DCA/DNA) APPN 3010 ICN 41115f (Air Force)

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## 5. <u>References</u>:

SAR Baseline (Development Estimate): DAE approved Acquisition Program Baseline (APB) dated July 27, 2001

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated July 27, 2001.

#### 6. Mission and Description:

The C-130 Avionics Modernization Program (AMP) consolidates and installs the mandated DOD Navigation/Safety modifications, the Global Air Traffic Management (GATM) systems and the C-130 Broad Area review requirements. These mandated mods are incorporated with various other reliability, maintainability, and sustainability (RM&S) upgrades to include: TCAS; TAWS; replacement of APN-59 and APQ-175 radars; replacement of N-1/C-12 compass; dual autoplilot; dual flight management systems and HF/UHF/VHF datalink. The AMP modernization will give the C-130 Fleet complete access to international airspace.

The USAF C-130 fleet consists of 15 different mission design series (MDS) to be modified by AMP. These multiple different MDSs and cockpit configurations create significant support and training inefficiencies. Also these differences greatly complicate unit/aircraft interoperability at forward locations. C-130 AMP standardizes the cockpit configurations and avionics for the 15 different MDSs by installing a single core avionics package and cockpit configuration, thus eliminating the fleet's significant interoperability and training problems.

In addition to these modifications, the USSOCOM-funded Common Avionics Architecture for Penetration (CAAP) program will provide additional capabilities for the MC-130 and the AC-130. Specifically, the CAAP program will provide a Low Probability of Intercept Terrain Following/Terrain Avoidance system for the MC-130E/H and increase the situational awareness of the aircrews by presenting a single integrated picture of the threat environment on the AC-130H/U and the MC-130E/H. This is achieved 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.

#### 7. Executive Summary:

The C-130 AMP contract was awarded to The Boeing Company on July 31, 2001. There is insufficient funding in the C-130 AMP line to meet the training system requirements called out in the C-130 AMP ORD. The C-130 AMP is currently conducting a Training Systems Requirements Analysis (TSRA) to fully define C-130 AMP training requirements. Funding for the full C-130 AMP training system development and production will be an AMC initiative in POM 04.

OSD/AT&L on July 27, 2001 approved C-130 AMP Milestone B for Entry into System

C-130 AMP, December 31, 2001

#### 7. Executive Summary (Cont'd):

Development and Demonstration (SDD) and redesignated C-130 AMP as ACAT 1C.

**1.Funding for the Full C-130 Training capability.** The current training requirements called in the C-130 AMP ORD are for a full 3-C Go capability. This effort is projected to cost approximately \$670M, and is currently not fully funded.

2.Late to Need for GATM 2005 requirement. The size of the C-130 fleet and the limited number of aircraft that can be modified simultaneously will prevent the program from meeting the 2005 GATM requirements for the C-130 fleet.

#### 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:

	Breach			
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

## 9. <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Critical Design Review (CDR)	FEB 2003	FEB 2003	APR 2003
LRIP Decision/Contract Award	FEB 2005	FEB 2005	FEB 2005
Production Readiness Review (PRR)	JAN 2007	JAN 2007	JAN 2007

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## 9b. <u>Schedule (Cont'd)</u>:

.

b. Current Change Explanations -- None

## 10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current
GATM/Nav Safety	Comply	Comply / Compy	TBD	Сотру
Requirements	with	with / with		with
	required	required/ required		required
	Navigati	Navigati/ Navigati		Navigati
	on	on / on		on
	Periorma	Performa/ Performa		Performa
	nce 1	nce I / nce I		nce 1
Report of Navigator	(RNP-1)	(RNP-1) / (RNP-1).	<b></b>	(RNP-I).
(Combat Delivery)	waviyatu ~	Mavigato/ Mavigato	IBD	Mavigato
(compar belivery)	removed	removed / removed		removed
	for	for / for		for
	combat	combat / combat		combat
	delivery	N/A / N/A		delivery
	missions	missions/ missions		missions
Improved TF/TA	Safe and	Safe and/ Safe and	TBD	Safe and
	effectiv	effectiv/ effectiv		effectiv
	e manual	e manual/ e manual		e manual
	TF	TF / TF		TF
	flight	flight / flight		flight
	guidance	guidance/ guidance		guidance
	at	at / at		at
	Selectad	Selectad/ Selectad		Selectad
	Ie Set	Clearanc/ Clearanc		Te Set
	es Plane	es Plane/ es Plane		es Plane
	(SCP) of	(SCP) of/ (SCP) of		(SCP) of
	100	100 / 250		250
	feet.	feet. / feet.		feet.
ESA Threat Location	Notify	Notify / Notify	TBD	Notify
and Targeting Data	the	the / the		the
	aircrew	aircrew / aircrew		aircrew
	within	within / within		within
	0.5	0.5 / 0.5		0.5
	seconds	seconds / seconds		seconds
	when a	when a / when a		wnen a
	threat	threat / threat		threat
	nas Deen	nas Deen/ nas Deen		idas been
	ldentill	ad / ad		ad
	ea.	eu. / eu.		1,5 1,4 s

## 10a. Performance Characteristics (Cont'd):

. •

		Approved	Demon-	
	Development	Program (APB)	strated	Current
	Estimate (SAR)	<u>Obj/Threshold</u>	Perf	Estimate
EW Bus Fused Dat	a Presént	Present / Present	TBD	Present
	the	the / the		the
	pop-up	pop-up / pop-up		pop-up
	threat	threat / threat		threat
	and	and / and		and
	intervis	intervis/ intervis		intervis
	ibility	ibility / ibility		ibility
	within 1	within 1/ within 2		within 2
	seconds,	<pre>seconds,/ seconds,</pre>		seconds,
	99% of	99% of / 99% of		99% of
	the	the / the		the
	time.	time. / time.		time.
Interoperability	100% of	100% of / 100% of	TBD	100% of
	top-leve	<pre>top-leve/ top-leve</pre>		top-leve
	l IERs.	l IERs. / l IERs		l IERs
		/ designat		designat
		/ ed		ed
		/ critical		critical

b. Current Change Explanations -- None

## 11. Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	625.6	625.6	936.8
Procurement	2708.3	2708.3	2832.6
AMP PROD	(2574.8)		(2695.6)
CAAP PROD	(8.8)		(8.8)
Total Flyaway	(2583.6)		(2704.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(124.7)		(128.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year \$	3333.9	3333.9	3769.4
Escalation	631.5	631.5	807.6
Development (RDT&E)	(44.5)	(44.5)	(88.3)
Procurement	(587.0)	(587.0)	(719.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3965.4	3965.4	4577.0
b. Quantity			
Development (RDT&E)	15	15	16
Procurement	_504	504	<u>503</u>
Total	519	519	519

Note: Excludes 16 RDT&E prototypes from the SAR Baseline and 16 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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## C-130 AMF, December 31, 2001

#### 12. Unit Cost Summary:

. .

UCR Baseline (JUL 2001 APB)(Dec	Current Estimate 2001 SAR)	Percent <u>Change</u>
3333.9	3769.4	
519	519	
6.424	7.263	+13.06
2708.3	2832.6	
504	503	
5.374	5.631	+4.78
	UCR Baseline (JUL 2001 APB)(Dec 3333.9 519 6.424 2708.3 504 5.374	UCR Current   Baseline Estimate   (JUL 2001 APB) (Dec 2001 SAR)   3333.9 3769.4   519 519   6.424 7.263   2708.3 2832.6   504 503   5.374 5.631

## 13. Cost Variance Analysis:

Summary - All end items

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	670.1	3295.3	-	3965.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	~	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-		-
Support	-	-		-
Subtotal	-	-	-	-
Current Changes:				
Economic	-1.7	-221.2	-	-222.9
Quantity	+28.7	~28.7	-	-
Schedule		-	-	-
Engineering	-	-	-	-
Estimating	+328.0	+502.8	· -	+830.8
Other		-	-	-
Support	-	+3.7	-	+3.7
Subtotal	+355.0	+256.6	-	+611.6
Total Changes	+355.0	+256.6	-	+611.6
Current Estimate	1025.1	3551.9	-	4577.0
# 13a. <u>Cost Variance Analysis (Cont'd)</u>: Summary - All end items

.

.

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	-	-	-	-
Schedule	-	-	-	-
Engineering	-	_	-	-
Estimating	-		-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	+25.4	-25.4	-	-
Schedule	-		-	
Engineering	-	-	-	-
Estimating	+285.8	+146.2	-	+432.0
Other	-	-	-	
Support	-	+3.5		+3.5
Subtotal	+311.2	+124.3	-	+435.5
Total Changes	+311.2	+124.3	-	+435.5
Current Estimate	936.8	2832.6		3769.4

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# 13a. Cost Variance Analysis (Cont'd):

. •

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	670.1	3295.3	-	3965.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	~ ]		
Other	-	~		-
Support	-	~	-	-
Subtotal	-	-	-	
Current Changes:				
Economic	-1.7	-221.2	-	-222.9
Quantity	+28.7	-28.7	-	-
Schedule	-	-	-	-
Engineering		-	-	<i>→</i>
Estimating	+328.0	+502.8	-	+830.8
Other	-	-	-	-
Support		+3.7	-	+3.7
Subtotal	+355.0	+256.6	-	+611.6
Total Changes	+355.0	+256.6	~*	+611.6
Current Estimate	1025.1	3551.9	-	4577.0

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		-	-	-
Schedule	_	- 1	-	-
Engineering	-		-	-
Estimating		~	-	-
Other		-	-	
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	+25.4	-25.4	-	-
Schedule		-	~~	-
Engineering	-		-	-
Estimating	+285.8	+146.2	-	+432.0
Other		-	-	-
Support		+3.5		+3.5
Subtotal	+311.2	+124.3	-	+435.5
Total Changes	+311.2	+124.3	+	+435.5
Current Estimate	936.8	2832.6	-	3769.4

#### 13b. Cost Variance Analysis (Cont'd):

•

b. Current Change Explanations --

(1)	BDT&E	(Dollars in <u>Base-Year</u> T	Millions) hen-Year
/	Revised escalation rates (Economic)	N/A	-1.7
	Transfer of funding for one aircraft from procurement to RDT&E (Quantity)	+25.4	+28.7
	Revised estimate to reflect post-contract award and the re-phasing of funding (Estimating)	+285.8	+328.0
	RDT&E Subtotal	+311.2	+355.0
(2)	Procurement		
	Revised escalation indices (Economic)	N/A	-221.2
	Transfer of funding for one aircraft from procurement to RDT&E (Quantity)	-25.4	-28.7
	Revised estimate to reflect post-contract award and the re-phasing of funding (Estimating)	+146.2	+502.8
	Revised estimate for initial spares (Support)	+3.5	+3.7
	Procurement Subtotal	+124.3	+256.6

#### 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

#### Current SAR Baseline to Current Estimate

PAUC	Changes								PAUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.64	-0.429				+1.60		+0.007	+1.18	8.82

## 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	
6.54	-0.440	-0.044			+1.00		+0.007	+0.523	7.06

# 14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost,	and Quantity H	listory	
	SAR	SAR	SAR
Item/Event	Planning	Development	Producti

	4			
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	FEB 2005	N/A	FEB 2005
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	3965.4	0.0	4577.0
Total Quantity	N/A	519	0	519
Prog Acq Unit Cost	N/A	7.6	0.0	8.8

#### 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E		Initial	Contract H	rice
<u>C-130 AMP:</u>		Target	<u>Ceiling</u>	Otv
BOEING, Witchita, KS				
£6657-01-00 <b>47, CPAF</b>		\$484.6	\$453.0	
Award: July 30, 2001				
Definitized: July 30, 2001				
Current Contract Price		Estimated Pr	rice At Com	pletion
<u>Target</u> <u>Ceiling</u>	Oty	<u>Contractor</u>	Progra	<u>m Manager</u>
\$453.0 \$484.6		\$453.0	\$	694.5
		Cost Variance	Schedule	Variance
Provious Cumulativo Variancos		COSE VALIANCE	<u>schedute</u>	
Cumulative Variances		\$0.1 ¢	\$-0 *	
Not Change		<u> </u>		<u> </u>
Mer Change		\$-0.I	\$1	

Explanation of Change:

None.

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# C-130 AMP, December 31, 2001

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# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

#### a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-15)	<u>Total</u>
RDT&E	70.1	75.1	178.1	701.8	1025.1
Procurement	-	-	-	3551.9	3551.9
MILCON	-	-	-	-	-
0&M	-	-	-	~	-
Total	70.1	75.1	178.1	4253.7	4577.0

#### b. Annual Summary -- C-130AMP

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Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal		Flyaway FY 2000 Dollars	Flyaway FY 2000 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001		4.6	1.9	6.6	6.8
2002		9.3	5.3	14.6	15.2
2003		8.8	9.2	18.0	19.1
2004		6.2	10.6	16.8	18.2
2005		4.8	7.6	12.4	13.7
2006		4.8	_ 7.0	11.7	13.2
2007		1.8	1.5	3.3	3.8
Subtotal		40.3	43.1	83.4	90.0

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001		39.8	22.0	61.8	63.3
2002		19.4	37.0	57.5	59.9
2003		82.6	67.3	150.0	159.0
2004		60.8	106.0	166.7	180.5
2005		63.7	79.5	143.9	159.0
2006		56.5	68.0	125.4	141.6
2007		44.2	53.2	98.7	113.7
2008		29.7	19.7	49.4	58.1
Subtotal	16	396.7	452.7	853.4	935.1

Funding for Common Avionics Architecture for Penetration (CAAP) for special mission aircraft is not a stand alone kit. For example, all 519 aircraft will be modified with a "common" kit. However, the AC-130U will be modified with a common kit and a delta kit associated with CAAP.

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### 16b. Program Funding Summary (Cont'd):

Therefore, special mission aircraft do not receive stand alone kits.

In FY02, RDT&E was reduced by \$20M. The \$20M will be needed in FY08 to complete SDD.

Appropriation: 0300 - Procurement, Defense Agencies

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2004			1.3	1.3	1.4
2005			1.2	1.2	1.4
2006		1	0.6	0.6	0.7
2007		1	3.7	3.7	4.4
2008			1.2	1.2	1.5
2009			0.8	0.8	1.0
Subtotal			8.8	8.8	10.4

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2005	4		99.9	101.6	114.7
2006	13		120.9	126.6	146.0
2007	33		188.6	194.9	229.4
2008	65		328.3	341.3	410.2
2009	75		386.4	405.1	497.1
2010	82		415.2	435.9	546.2
2011	79		386.1	406.9	520.4
2012	75		353.5	373.0	487.2
2013	51		258.2	273.3	364.6
2014	26		132.2	138.9	189.2
2015			26.3	26.3	36.5
Subtotal	503		2695.6	2823.8	3541.5

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD		40.3	51.9	92.2	100.4
USAF	519	396.7	3148.3	3677.2	4476.6
Grand Total	519	437.0	3200.2	3769.4	4577.0

#### *** UNCLASSIFIED ***

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C-130 AMP, December 31, 2001

#### 17. Delivery/Expenditure Information:

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a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 13.4

Percent Total Program Expended: 0.3%

At the preparation of this Dec 01 SAR, there were no prototypes delivered.

NOTE: Expenditures are calcuated against the total program which includes procurement. Actual kit buys will not occur until FY05.

#### 18. Operating and Support Costs:

a. Assumptions and Ground Rules -- None.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

	C-130AMP	Antecedent System
Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

Total O&S Cost	C-130AMP	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 04/03/2002 3:21:18 PM

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 823) PROGRAM: IAV

#### AS OF DATE: December 31, 2001

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1. Designation and Nomenclature (Popular Name) : Family of Interim Armored Vehicles (IAV)

2. DoD Component : Army

A-12 IAV

3. Responsible Office and Telephone Number :

INDEX

PM Brigade Combat Team PEO-GCS Attn: SFAE-GCS-BCT Warren, MI 48397-5000 COL David Ogg Assigned: January 16, 2001 DSN 786-2000; COMM (586) 753-2000 OggD@tacom.army.mil

# 4. Program Elements/Procurement Line Items :

RDT4E: PE 0603653A (Shared) Project C03 PE 63653 (Shared) PROCUREMENT: APPN 2033 ICN G85100 (Army) APPN 2035 ICN W61900 (Army) APPN ICN MILCON: PE 0202096A (Shared) O&M: PE 1220211 (Shared)

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*** UNCLASSIFIED ***

#### 5. References:

SAR Baseline (Development Estimate) : DAE Approved Acquisition Program Baseline (APB) dated November 16, 2000.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated November 16, 2000.

#### 6. Mission and Description :

Mission: The Family of Interim Armored 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 IAV 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 family of IAVs is centered on the Infantry Carrier Vehicle (ICV). There are eight additional configurations of the ICV: Reconnaissance Vehicle, Mortar Carrier, Commander's Vehicle, Fire Support Vehicle, Engineer Squad Vehicle, Medical Evacuation Vehicle, Anti-Tank Guided Missile Vehicle, and NBC Reconnaissance Vehicle. The Mobile Gun System represents the second variant of the IAV for this acquisition.

(1) Infantry Carrier Vehicle (ICV) - The ICV is the base vehicle in the BCT. The BCT mission, based on decisive action through dismounted infantry assault, mandates an ICV capability to rapidly deploy an overmatching infantry force anywhere on the battlefield. Within the ICV variant, there are eight additional configurations as follows:

(a)Reconnaissance Vehicle (RV) -The principal function of the RV configuration is to provide an effective platform to enable the RSTA Squadron and battalion scouts to perform reconnaissance and surveillance operations.

(b)Mortar Carrier (MC) - The MC provides immediate, responsive fire support to the BCT in the conduct of fast paced offensive operations. These immediate, on-demand fires are critical to the ability of dismounted infantry to rapidly achieve decisive results. The MC will be fielded with the M121 120mm mortar until a vehicle mounted Soltam mortar is completed with its integration and Limited User Test.

(c) Commander's Vehicle (CV) -The CV provides an operational platform for selected elements of command within the BCT. Commanders must have the capability to see and direct the battle continuously, maintaining the Common Relevant Operating Picture (CROP) for all friendly forces within their respective areas of operation.

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#### 6. Mission and Description (Cont'd) :

(d) Fire Support Vehicle (FSV) -The FSV provides enhanced surveillance, target acquisition, target identification, target designation, and communications to support the BCT with "first round" fire for effect capability.

(e)Engineer Squad Vehicle (ESV) -The ESV provides the platform for the Engineer Company to provide the required mobility and limited counter mobility to support the BCT.

(f)Medical Evacuation Vehicle (MEV) -The MEV integrates medical evacuation support into the BCT as an essential element of the inter netted combat forward formation.

(g)Anti-Tank Guided Missile Vehicle (ATGM) -The ATGM provides the brigade's primary tank killing capability.

(h)NBC Reconnaissance Vehicle (NBCRV) - The NBCRV, with its integral NBC Reconnaissance Sensor Suite, provides NBC situational awareness and Detect to Warn via cooperative NBC networks and reconnaissance to increase the combat power of the deployed force. The NBCRV is not required for IOC.

(2) Mobile Gun System (MGS) - The MGS supports assaulting infantry and is the key weapons overmatch platform to ensure mission success and survivability of the Combined Arms Company. The ILO until the MGS is completed with its development, is the IAV ATGM vehicle. To accommodate temporary use of the ATGM ILO MGS, the Army will complete development of a separate TOW warhead optimized to defeat the MGS targets.

#### 7. Executive Summary :

The program currently is in Engineering and Manufacturing Development (EMD) and Low Rate Initial Production (LRIP). At the November 2000 milestone decision, 7 out of 10 vehicles in the IAV family were approved for LRIP. Currently, 8 of the 10 vehicles have been approved for LRIP, with the Fire Support Vehicle (FSV) approved in August 2001.

Delivery of the first four production vehicles, Infantry Carrier Vehicles (ICV), took place on February 28, 2002. A "Roll-Out" ceremony occurred on March 8, 2002 at London, Ontario and a second acceptance ceremony is scheduled for April 12, 2002 at Anniston Army Depot. Testing will begin in April 2002.

The program is progressing on schedule, and is deemed to be affordable within current funded levels. The FY03 President's Budget decreased RDTE funding in FY01-06 by \$3.637M and WTCV by \$36M. Since the last SAR, the Under Secretary of the Army has approved the "Contingency Force" concept. The "Contingency Force" is projected to be fielded by December 2002.

Fielding and Contractor Logistics Support(CLS) present immediate potential issues due to the complexity of the program, and the requirement to synchronize

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### 7. Executive Summary (Cont'd) :

fielding activities of several vehicles in conjunction with Interim Brigade Combat Team fielding and the "Contingency Force". Some additional concerns are the maturity of the remote weapons station, air transportability weight of the vehicles and the add-on-armor capabilities. The PMO feels that these issues are currently manageable.

Emerging issues that affect the Interim Armored Vehicles are:

1) Conversion of a BCT to an Interim Cavalry Regiment. Converting one of the BCTs to an ICR would change the mix of vehicles currently required for a baseline BCT. The ICR requires a mix of more expensive IAVs (MGS, ATGM, RV, FSV, etc) and fewer ICVs, which are the least expensive. As a result, the ICR would cost more than a baseline BCT.

2) The identification of new equipment training locations for BCTs 3-6. The locations of BCTs 3-6 have been announced; however, the location of new equipment training and deprocessing sites have not been determined for these BCTs. These installations may require facilitization.

3) BCTs 3-6 acceleration plan and the acquisition and fielding of BCT 7. The Secretary of the Army accelerated the introduction of a forward stationed BCT. Various scenarios are being reviewed to include the procurement of more than one BCT per year. One of the BCTs should be stationed in the European theatre by 2007. Under the acceleration scenario and the addition of BCT 7 the program funding shortfall for the IAVs could be as high as up to \$18.

#### 4) SCHEDULE BREACH:

A decision was made on December 21, 2001 to rebaseline the NBCRV. As a result, the NBCRV program schedule slipped by 12 Months. The rationale for adjusting the NBCRV schedule is to align it and bring it to sync with the NBC Sensor Suite production schedule. The NBC sensor suite is Government Furnished Equipment (GFE) for the IAV program, and is managed by PM NBC Defense Systems.

#### 5) POTENTIAL COST BREACH:

The MGS program is currently reviewing options to reduce vehicle weight. The cost implications of this review will not be known until April 2002, but may cause the program a cost breach for RDT&E.

#### 8. Threshold Breaches :

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	NO
Cost RDT&E	No
Procurement	NO
MILCON	No
0&M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

c. Explanation of Breach:

SCHEDULE BREACH: The Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) IPR has slipped from 4QFY02 to 1QFY04. This schedule breach was caused by a slip to the availability of the NBC sensor suite, and will not have a significant impact to the Interim Armored Vehicle program. Initially, the NBCRV variant was identified as a high risk system and, as such, it was placed on its own developmental path. (The NBC Sensor Suite is not included in the IAV program estimate as it is funded by PM, NBC Defense Systems.) The NBCRV was never identified as one of the seven variants approved for 968 LRIP quantity. As a result of continuing program reviews, the PEO GCS on December 21, 2001 made a decision to rebaseline NBCRV. This decision slipped the NBCRV program schedule by 12 months. The rationale for this adjustment in the NBCRV schedule is to align the NBC vehicle production with the production and integration of NBC sensor suite. The NBC sensor suite is Government Furnished Equipment (GFE) for the IAV program, and is managed by PM NBC Defense Systems. This breach only affects one of the ten variants and will not impact the fielding and operational readiness of the BCTs, since ILO vehicles will be fielded for the NBCRV and be extended for during that time.

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#### 9. Schedule:

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a. Milestones --

	Devel	lopment	App	roved	Curi	rent
	Estimat	e (SAR)	Progra	am (APB)	Est:	imate
ICV - NDI	······································					
Low Rate Initial Productiion (LRIP) Award	AUG	2000	AUG	2000	NOV	2000
Milestone II	AUG	2000	AUG	2000	NOV	2000
FSV Initial Production IPR	JUN	2001	JUN	2001	AUG	2001
First Unit Equipped (FUE)	JUL	2002	JUL	2002	DEC	2002(Ch-1)
<pre>Initial Operational Test and Evaluatio (IOT&amp;E #1)</pre>	on					
Start	AUG	2002	AUG	2002	FER	2003
Completion	JAN	2003	JAN	2003	JUL	2003(Ch-1)
NBC RV Initial Production IPR	JUL	2002	JUL	2002	NOV	2004 (Ch-2)
MGS Initial Production IPR (Mobile Gu	n DEC	2002	DEC	2002	DEC	2002
System)						
Initial Operational Capability (IOC)	MAY	2003	MAY	2003	MAY	2003
Milestone III	SEP	2003	SEP	2003	DEC	2003
Full Operational Capability (FOC): BDE #3	FEB	2005	FEB	2005	FEB	2005
ICV - NDI						

b. Current Change Explanations --

(Ch-1)Under subject of First Unit Equipped the Current Estimate in the September 2001 SAR submission reflected the date of July 2001. This was an administrative error. The correct date is December 2002.

(Ch-1)Initial Operational Test and Evaluation the Current Estimate in the September 2001 SAR submission reflected the date of May 2003. This was an administrative error. The correct date is July 2003.

(Ch-2) A decision was made by the PEO-GCS to rebaseline NBCRV. This decision will slip the NBCRV program by 12 months. The rationale for the adjustment in the NBCRV schedule is to align the NBC vehicle production with the production and integration of NBC sensor suite. The NBC sensor suite is Government Furnished Equipment (GFE) for the IAV program, and is managed by PM NBC Defense Systems.

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# 10. Performance Characteristics :

a. Performance
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		Appro	oved	Demon-	
	Development	Program	(APB)	strated	Current
	Estimate (SAR)	Obj/Thre	shold	Perf	Estimate
Transportability:					
Air Transportation*	Trans-	Trans- /	Trans-	N/A	Trans-
	portable	portable/	portable	,	portable
	in a	in a /	on a		in a
	C-130	C-130 /	C-130		C-130
	aircraft	aircraft/	aircraft		aircraft
	& combat	£ combat/	6 combat		6 combat
	a combac	ready on/	ready on		a combac
	evit	evit /	avit		ready on
	exit		(5.11		exit
		/	LUII		
		/	Dasic		
		/	load not		
		/	red(d)		
Reliability: (Less GFE)					
Interoperability*	Host and	Host and/	Host	N/A	Host and
	inte-	inte- /	and		inte-
	grate	grate /	inte-		grate
	planned	planned /	grate		planned
	C4ISR	C4ISR /	existing		C4ISR
	systems	systems /	Army		systems
	-	- /	C4ISR		-
			systems		
		1	(EPLRS.		
			FBCB2.		
		'/	ABCS.		
		1	WIN-T		
		,	Sub-		
		'/	scriber		
		· · · ·	Node)		
MMBCE	2000	2000 /	808	N/A	2000
	MARCE	MMBCE /	confid-	67.71	MMBCE
	PuBCF	Panber /	ence of		PANDEP
			achiev-		
			ing 1000		
			ING TOOD		
Our and the ball is the			PHILIDUP Curber of the	17/3	
Supportability	Maintain	Maincain/	Support	N/A	Maincain
(Commonality)	Common-	Common- /	cnarac-		Common-
	ality	ality /	teris-		ality
	Daseline	paseline/	C1C5		paseline
	10	1n /	esta-		10
	contract	contract/	plished		contract
	With	with /	in IAV		WICH
	tielding	rielding/	contract		rielding
	OT IAV	OT LAV /			OI IAV
	Block	Block /			Block
	Improve-	Improve-/			Improve-

# 10a. Performance Characteristics (Cont'd) :

		Approved	Demon-
	Development	Program (APB)	strated Current
	Estimate (SAR)	Obj/Threshold	Perf Estimate
	ments	ments /	ments
Mobility		,	
Cruising Pange	300	300 / 300	N/A 300
cruising kange	500	miles / miles	nya 500
	milles	miles / miles	miles
	W/O	w/o / w/o	W/O
	refuel-	refuel- / refuel-	reiuel-
	ing	ing / ing	ing
Sustained Hard	40 mph	40 mph / 40 mph	N/A 40 mph
Surface Speed			
Survivability:	Overhead	Overhead/ Integral	N/A Overhead
-	crew	crew / frontal,	crew
	protec-	protec- / side,	protec-
	tion	tion / rear	tion
	against	against / and	against
	162mm UP	152mm HE/ overhead	152mm HR
	airburgt	airburgt/ protect	airburgt
	attourat	allburst/ pictee	at
	ac (Cleani	(Classi / from	[Clargi.
	[CIG881~	$\{C_1a_5B_1-7, 1, 0\}$	[Utabet-
	rieaj		[led]
	meters;	meters; / AP	meters;
	all	all / at	aii
	around	around / [Classi-	around
	crew	crew / fied]	crew
	protec-	protec- / meters;	protec-
	tion	tion / overhead	tion
	against	against / crew	against
	blast	blast / protec-	blast
	and	and / tion	and
	over-	over- / against	over-
	pressure	pressure/ 152mm HE	pressure
	effects	effects / airburst	effects
	of 7 5kg	of 7 5kg/ at	of 7.5kg
	orplo	evalor / [Classin	explo-
	expro-	ciup (fied)	cive
	sive	Sive / Lied;	3170
		/ meters;	
		/ all	
		/ around	
		/ crew	
		/ protec-	
		/ tion	
Combat Capability:			
FUE	2 Com-	2 Com- / 2 Com-	N/A 2 Com~
	pany	pany / pany	pany
	Teams	Teams / Teams	Teams
	equipped	equipped/ equipped	equipped
	with	with / with	with
	TCV	ICV. / ICV.	ICV.
	1011		*

# 10a. Performance Characteristics (Cont'd) :

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		Approved	Demon	
	Development Estimate (SAR) MC, CV, FSV, MGS	Program (APB) Obj/Threshold MC, CV, / MC, CV FSV, MGS/	strated <u>Perf</u>	Current Estimate MC, CV, FSV, MGS
IOC	Brigade equipped with ICV, RV, MC, CV, FSV, ESV, MEV, ATGM, MGS	Brigade / Brigade equipped/ equipped with / with ICV, / ICV, RV, MC, / RV, MC, CV, FSV, / CV, ESV, ESV, / MEV, MEV, / ATGM ATGM, / MGS /	N/A	Brigade equipped with ICV, RV, MC, CV, FSV, ESV, MEV, ATCM, 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 /	N/A	10 soldiers and 2 crew members, with indivi- dual eqmt
MGS Lethality*	Defeat std infantry bunker and create opening for infantry in double rein-	Defeat / Defeat std / std infantry/ infantry bunker / bunker and / and create / create opening / opening for / for infantry/ infantry in / in double / double rein- / rein-	N/A	Defeat std infantry bunker and create opening for infantry in double rein-

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# 10a. Performance Characteristics (Cont'd) :

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		Approved	Demon-	
	Development	Program (APB)	strated Cur	rent
	Estimate (SAR)	Obj/Threshold	Perf Est	imate
	forced	forced / forced	for	ced
	concrete	concrete/ concrete	COR	icrete
	wall	wall / wall	wal	.1
		/		
ATGM Antitank	Host	Host / Inte-	N/A Hos	t
Capability	next	next / grate	nex	t
	genera-	genera- / IBAS/	gen	iera-
	tion of	tion of / ITAS or	tic	on of
	fire &	fire & / equiv	fir	e &
	forget	forget / w/equal	for	get
	and	and / target	and	Ĩ
	LOSAT	LOSAT / acquisi-	LOS	AT
	missiles	missiles/ tion	mis	siles
		/ capa-		
		/ bility		
FSV: Target Acquisi-	Inte-	Inte- / Inte-	N/A Int	e-
tion accuracy of	grate a	grate a / grate	ara	te
Sansor	lt-wt	]r-wr / M707	M70	7
5611501	laser	laser / Striker	Str	iker
	designa-	designa-/ MEP with	MER	, with
	tor/	tor/ / current	Cur	rent
	Range-	Range- / func-	fur	1C -
	finder	finder / tions	tic	ons
	MED	MEP /		
ESV, Obstacle	Inte-	Inte- / Inte-	N/A Int	e-
Neutralization	grate	grate / grate	gra	te
Rederarization	emerging	emerging/ existing	exi	sting
	mine	mine / obstacle	obs	tacle
	detec-	detec- / neutral-	neu	itral-
	tion	tion / ization.	iza	ition.
	devices	devices / & lane	6 I	ane
	(CCAICCO	/ marking.	mai	king.
		/ and mine	and	tane
		/ detec-	det	ec-
		/ tion	510 510	or.
		/ devices	dev	/ices
DI	OSP	OSP (HOST	N/A Hos	at.
RV	Dust	must / inte-	int	e-
	operate	operate / grate &	gra	ate &
	on the	on the / fully	5	lly
		move/ / employ	em	ploy
		incor- / LRASI	LEA	AS3
	INCOL-			
	porate	magted /		
	masteu	sensor &/		
	sensor «	target /		
	at a	at a /		
	ala	wa w w /		

### 10a. Performance Characteristics (Cont'd) :

	Approved	Demon-	
Development	Program (APB)	strated	Current
Estimate (SAR)	Obj/Threshold	Perf	Estimate
platform	platform/		
height	height /		
of 5-10m	of 5-10m/		

MMBOMF - Mean Miles Between Operational Mission Failure

b. Current Change Explanations -- None.

#### 11. Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	488.0	488.0	526.3
Procurement	5706.0	5706.0	5533.7
Recurring Rollaway	(3984.8)		(3943.5)
Non-recurring Rollaway	(684.4)		(568.3)
Total Rollaway	(4669.2)		(4511.8)
Other Weapon System	(956.1)		(961.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(60.1)
Construction (MILCON)	286.8	286.8	286.8
Acquisition O&M	0.0	0.0	0.0
Total FY 2000 Base-Year Ş	6480.8	6480.8	6346.8
Escalation	639.4	639.4	597.6
Development (RDT&E)	(20.0)	(20.0)	(25.6)
Procurement	(584.0)	(584.0)	(536.7)
Construction (MILCON)	(35.4)	(35.4)	(35.3)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	7120.2	7120.2	6944.4
b. Quantity			
Development (RDT&E)	3	3	12
Procurement	2128	2128	2119
Total	2131	2131	2131

LRIP Note: Initial production vehicles are required to maintain momentum of the CSA and Army's transformation and to fill the urgent need associated with the BCT and development of doctrine, training, leadership, organization and soldiers for the Army Transformation Plan. The program's total LRIP quantity for 7 of the 10 variants is 968 which was approved by the Defense Acquisition Executive in November 2000. Subsequently, the Fire Support Vehicle's (FSV) IPR

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#### 11b. Total Program Cost and Quantity (Cont'd) :

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 2d BCT, and the 3d BCT. The large number of initial production vehicles is driven by MS III not occurring until 1Q FY 04 which is after the date the contract must be awarded to avoid a break-in-production vehicles for the 3d BCT. The date is driven, in turn, by the completion of LFTE, PVT and IOTE, and statutory required reports.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

#### 12. Unit Cost Summary :

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۰.	date cope stands.			
		UCR	Current	
		Baseline	Estimate	Percent
		(NOV 2000 APB) (De	2001 SAR)	Change
	a. Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 2000 BYS)	6480.8	6346.8	
	(2) Quantity	2131	2131	
	(3) Unit Cost	3.041	2.978	-2.07
	b. Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 2000 BY\$)	5706.0	5533.7	
	(2) Quantity	2128	2119	
	(3) Unit Cost	2.681	2.611	-2.61

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# 13. Cost Variance Analysis:

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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	_	-	-	-
Quantity		-	-	-
Schedule	-	-	-	-
Engineering	~	-		-
Estimating	+1.7	-85.7	+3.2	-80.8
Other	-	-	-	-
Support		-	-	-
Subtotal	+1.7	-85.7	+3.2	-80.8
Current Changes:				
Economic	+0.2	-39.9	-3.3	-43.0
Quantity	+13.0	-23.3	-	-10.3
Schedule	-	-2.7	_	-2.7
Engineering	-	+11.3	-	+11.3
Estimating	+41.1	-51.5		-10.4
Other	-	-	-	-
Support	-12.1	-27.8		-39.9
Subtotal	+42.2	-133.9	-3.3	-95.0
Total Changes	+43.9	-219.6	-0.1	~175.8
Current Estimate	551.9	6070.4	322.1	6944.4

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	488.0	5706.0	286.8	6480.8
Previous Changes:				
Quantity		_	_	-
Schedule	_ !	-	-	-
Engineering	-	-	-	-
Estimating	-0.6	-104.3	-	-104.9
Other	-		-	-
Support	-	+0.2	-	+0.2
Subtotal	-0.6	-104.1	-	-104.7
Current Changes:				
Quantity	+12.9	-20.0	_	-7.1
Schedule	-	-	-	-
Engineering	-	+10.3		+10.3
Estimating	+37.8	-43.4	-	-5.6
Other	-	- 1	-	-
Support	-11.8	-15.1		-26.9
Subtotal	+38.9	-68.2	-	-29.3
Total Changes	+38.3	-172.3	-	-134.0
Current Estimate	526.3	5533.7	286.8	6346.8

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# 13b. Cost Variance Analysis (Cont'd):

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b. Current Change Explanations --

		<u>Allen-lear</u>
(1) <u>RDT&amp;E</u>		
Revised escalation indices. (Economic)	N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
Revised to contract cost (Estimating)	+54.6	+57.7
Increase quantity of vehicles procured from 3 to 12. (Quantity)	+12.9	+13.0
Revised training device requirements (Support)	-11.8	-12.1
Revised test requirements/updated estimates (Estimating)	+2.1	+2.5
Change in Gov- Sys Eng/PM costs (Estimating)	-18.5	-18.7
RDT&E Subtotal	+38.9	+42.2
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-41.6
Economic adjustment for negative program	N/A	+1.7
change. (Economic)		
Adjustment for Current and Prior Inflation. (Estimating)	-0.3	-0.3
Total Quantity Variance associated with a decrease of 9 vehicles from 2128 to 2119	-19.8	-23.1
Quantity decrease of 9 units. (Quantity)	-20.0	-23.3
Allocation to Estimating variance resulting	+0.2	+0.2
from Quantity Change. (OR) (Estimating)		
Accelerate annual procurement buy profile.	0.0	-2.7
Add Medical Evauation Vehicle's Litter Lift	+10.3	+11.3
Revised estimate for final refurbishment of	+21.4	+23.4
Reduced System Technical Support requirement	-96.0	-102.5
due to quantity change (Estimating) Revised estimate for testing requirements	+55.3	+60.2
(Estimating) Change in Non-recurring manufacturing	+33.6	+34.5
estimate to reflect signed contract		
Change in unit manufacturing to reflect	-50.6	-60.0
signed contract (Estimating)		
Change in estimated Gov System Engineering/PM	∽0.2	+0.3
Change in requirements for facilities cost (Estimating)	+5.0	+5.3

# 13b. Cost Variance Analysis (Cont'd):

1	b. Current Change Explanations		
		(Dollars in <u>Base-Year</u> /	n Millions) Then-Year
	Change in estimating Engineering Change Orders (Estimating)	-11.8	-12.6
	Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
	Revised estimate for reduced initial spares requirement (Support)	-20.6	-22.4
	Reduced Other Weapon System costs requirement (Support)	+5.4	-5.5
	Procurement Subtotal	-68.2	-133.9
(3)	MILCON Revised escalation indices. (Economic)	N/A	-3.3
	MILCON Subtotal	0.0	-3.3

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	Changes							PAUC	
Dev Est	L								Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.34	-0.020	-0.004	-0.001	+0.005	-0.043		-0.019	-0.082	3.26

#### b. Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate

PUC				Chan	ges				PUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.96	-0.019	+0.002	-0.001	+0.005	-0.065		-0.013	-0.091	2.86

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#### 14c. Unit Cost and Other History (Cont'd):

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c. Schedule, Cost, and Quantity His	SCOLA
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	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	AUG 2000	AUG 2000	N/A	NOV 2000
Milestone III	N/A	SEP 2003	N/A	DEC 2003
IOC	TBD	MAY 2003	N/A	MAY 2003
Total Cost	352.5	7120.2	N/A	6958.3
Total Quantity	N/A	2131	N/A	2131
Prog Acg Unit Cost	N/A	3.3	N/A	3.3

#### 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E				Initial	Contract	Price
RUTE:	0				Celling	UEV
GM GD Derense DAAE07-00-D-M Award: Novemb	e Group LLD, S 1051, CPAF mer 16, 2000	erling Hei	gnts MI	\$203.1	\$203.1	0
Definitized:	November 16, 2	2000				
Current <u>Target</u> \$210.1	Contract Pric Ceiling \$210.1	e <u>Oty</u> 0	<u>c</u>	Estimated F <u>ontractor</u> \$211.3	rice At Co <u>Progr</u>	mpletion <u>am Manager</u> \$240.2
Previous Cumu Cumulative Va	lative Variand Tiances To Dat	ces te (12/31/0	<u>C</u> 1)	ost Varianc \$-13249.9 <u>\$-12383.5</u> \$866.4	<u>e Schedule</u> \$-656 <u>\$-1317</u> \$-661	<u>Variance</u> 3.4 <u>9.0</u> 5.6

#### Explanation of Change:

The month ending December 2001 Cost Performance Report (CPR) reflects Current Actual Cost of Work Performed (ACWP) at \$7759.8K and cumulative ACWP at \$85,412.7K. Current Budgeted Cost of Work Performed at \$6,806.7K. Cumulative BCWP is at \$73,029.2K. The cumulative Cost Performance Index (CPI) for the contract is .855, which is a slight improvement from last month. Cost overruns to date have been to insure schedule attainment. The contractor is projecting a Variance at Complete of -\$20,248.6k. The contractor in recent months has initiated an aggressive cost containment program. It appears that this effort has been effective since negative cost variances have decelerated.

End of December 2001 Cost Performance Report current Budgeted Cost of Work Scheduled (BCWS) is \$8751.0K. Cumulative BCWS is \$86,208.2K. Current Budgeted Cost of Work Performed is \$6806.7K. Cumulative BCWP is \$73,029.2K. Cumulative Schedule Performance Index (SPI) is .847. Analysis software indicates that there is a 5.5 week slip to the contractor's

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#### 15. Contract Information (Cont'd):

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activities. To insure that production dates will be met, the contractor is using out-of-station fixes on the vehicle production lines. The contractor's objective has been to meet the production schedule and it is the government's impression that contract activity is intensively geared towards doing this.

Contract Comments: This contract is funded with both RDTE and Procurement appropriation funding.

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Current	Contract Pric	e	Estimated Pri	ice At Completion
Target	Ceiling	<u>Oty</u>	Contractor	Program Manager
\$735.6	\$735.6	454	\$4500.0	\$4500.0

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

This contract is funded with both RDTE and Procurement appropriation funding, with most of the contract paid for out of procurement. The total projected value for the procurement funded portion of the contract is \$4.3B, with a total hardware buy of 2119 vehicles.

Current contract price reflects total dollars obligated on the production CLINs of the contract.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY00-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To Complete (FY04-09)	Total
RDT&E	255.6	98.6	124.1	73.6	551.9
Procurement	950.4	658.0	811.8	3650.2	6070.4
MILCON	-	19.0	78.1	225.0	322.1
O£M	-	-	-	-	-
Total	1206.0	775.6	1014.0	3948.8	6944.4

b. Annual Summary -- IAV

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal	0.54	Rollaway FY 2000 Dollars	Rollaway FY 2000 Dollars	Total Program	Total Program
Iear	<u> </u>	NONLEC	Nec.	Dase-rear \$	inen-ieal \$
2000	{}			14.4	14.6
2001				233.8	241.0
2002				94.2	98.6
2003				116.6	124.1
2004				39.8	43.1
2005				23.6	26.1
2006				3.9	4.4
Subtotal	12			526.3	551.9

Appropriation: 2033 - Proc of Weapons & Tracked Combat Veh

		Rollaway	Rollaway		
		FY 2000	FY 2000	Total	Total
Fiscal	1	Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2000	7		21.3	21.5	22.0
2001	447	87.2	730.9	893.4	928.4
2002	303	53.8	490.7	623.7	658.0
2003	332	62.0	620.8	756.2	811.8
2004	328	72.1	639.6	897.3	980.8
2005	320	64.3	587.5	724.3	806.7
2006	268	59.9	552.3	670.6	761.1
2007	94	57.2	300.4	706.4	816.9
2008		55.3		175.7	207.1
2000		56.6			
btotal	2119	568.3	3943.5	5533.7	6070.4

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#### 16b. Program Funding Summary (Cont'd):

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Appropriation: 2050 - Military Construction, Army

Fiscal Year	Qty	Rollaway FY 2000 Dollars Nonrec	Rollaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				17.8	19.0
2003				72.0	78.1
2004				23.0	25.4
2005				60.0	67.6
2006	N			62.0	71.2
2007				52.0	60.8
Subtotal				286.8	322.1

	Qty	Rollaway Dollars Nonrec	Rollaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2131	568.3	3943.5	6346.8	6944.4

#### 17. Delivery/Expenditure Information:

a. Deliver	ries 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): \$ 970.1

Percent Total Program Expended: 14.0%

#### 18. Operating and Support Costs:

a. Assumptions and Ground Rules --The O&S costs are representative of the average of the 10 variants. The average annual operating miles is 1157. The expected operating life is 20 years. The Army Cost Position dated Nov 2000 is the source for the costs in 18.b.

# 18b. Operating and Support Costs (Cont'd):

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b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

	IAV	N/A
	Average Annual Cost	
Cost Element	Per Vehicle	
Mission Pay & Allowances	189.0	N/A
Unit Level Consumption	17.0	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	1.0	N/A
Contractor Support	3.0	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	210.0	N/A

		)
Total O&S Cost	IAV_	N/A
BY\$ (In Millions)	8947.6	N/A
TY\$ (In Millions)	14026.7	N/A

Report Creation Date: 03/30/2002 2:18:38 PM

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# AF-17 MMIII GRP

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#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: MMIII GRP

AS OF DATE: December 31, 2001

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1. (U) Designation and Nomenclature (Popular Name): Minuteman III Guidance Replacement Program (MM III GRP)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number: 00-ALC/LMG MAJ MARK E. COLUZZI Assigned: September 4, 2001 6031 GUM LANE HILL AFB, UT 84056-5826 DSN 775-2293; COMM (801) 775-2293 Mark.Coluzzi@hill.af.mil

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0101213F (Shared) (U) PE 0604312F PE 0604851F (U) **PROCUREMENT:** APPN 3020 ICN LGM30G (Air Force) (U)

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#### 5. (U) References:

<u>SAR Baseline (Development Estimate)</u>: (U) Acquisition Decision Memorandum dated August 31, 1993.

<u>Approved Program / Production Estimate (PdE)</u>: (U) AFAE Approved Acquisition Program Baseline (APB) dated June 8, 1999.

#### 6. (U) Mission and Description:

(U) (U) The Guidance Replacement Program (GRP) upgrades and extends the life of the Minuteman III guidance system through the year 2020. As a result of various arms control initiatives, the Minuteman III is projected to become the only land-based ICBM in the Triad when Peacekeeper is retired. The guidance electronics will be replaced since current electronic components continue to degrade and are becoming unreliable and unsupportable. GRP replaces 1960's guidance system electronics and protects the option for future implementation of the Mark 21 RV/W87 warhead and an advanced inertial measurement unit (IMU), if required.

#### 7. (U) Executive Summary:

(U) One-hundred-three Guidance Replacement Program (GRP) (NS-50) Missile Guidance Sets (MGS) have been delivered under the low rate initial production (LRIP) and FY00 full rate production (FRP) options. 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 Decembe 31, 2001, a total of sixty-seven units have been deployed, 40 at Malmstrom AFB, MT, fourteen at Minot AFB, ND, and thirteen at F.E. Warren AFB, WY. Performance continues to be outstanding, with more than 436,000 alert hours accumulated. The mean time between failure (MTBF) for the NS-50 is over 18,100 hours, exceeding the requirement of 15,000 hours.

The LRIP contract was extended from August 2001 until March 2002 as a result of a hardware design change that stopped MGS deliveries in June and July 2001. This resulted in an extension of the LRIP delivery schedule where LRIP deliveries would overlap FRP deliveries until March 2002, at which time deliveries will be back on the original schedule. Currently the contractor is meeting the catchback schedule. The FY00 FRP contract for 65 units was awarded in December 1999. The FY01 FRP option for 80 units was awarded in November 2000. A Congressional mark of \$5M resulted in a reduction of four kits (down to 76) in the FY02 FRP option, leaving GRP below the USSTRATCOM requirement for 80 deliveries per year.

There have been three significant hardware changes to the NS-50 since deliveries began. Two hardware fixes are complete, both requiring changes to the configuration baseline, and an engineering change proposal (ECP) to correct the third is being submitted by the contractor.

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#### 7. (U) Executive Summary (Cont'd):

The contractor team completed the accuracy investigation on August 23, 2001. Fixes to the NS-50 software have been identified and were placed on contract in August 2001. A flight test of the new operational flight program is planned in June 2002 with operational deployment planned in September 2002.

#### 8. (U) Threshold Breaches:

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a. (U) Acquisition Program Baseline (APB):

	Item					
Schedu	le	NO				
Perfor	erformance					
Cost -	RDT&E	No				
-	Procurement	No				
-	MILCON	No				
-	- OGM	NO				
	<ul> <li>Program Acquisition Unit Cost (PAUC)</li> </ul>	No				
-	<ul> <li>Average Procurement Unit Cost (APUC)</li> </ul>	No				

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program: PdE	<u>Estimate</u>
Milestone I/II AFSARC	AUG 1993	AUG 1993	AUG 1993
Engineering and Manufacturing	AUG 1993	AUG 1993	AUG 1993
Development Contract Award			
Preliminary Design Review (PDR)	SEP 1994	FEB 1996	FEB 1996
Complete			
Critical Design Review (CDR) Complete	SEP 1995	JUN 1997	JUL 1997
AF QTEE			
Start	MAY 1995	MAY 1996	JUN 1996
Complete	MAY 1997	JAN 1998	FEB 1998
Low Rate Initial Production (LRIP)	JUL 1996	JAN 1998	MAR 1998
Contract Award			
AF QOTSE Integration Demonstration	NOV 1996	JUL 1998	SEP 1998
Flight (IDF)			

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#### 9a. (U) <u>Schedule (Cont'd)</u>:

	Development Estimate (SAR)	Approved Program: PdE	Current Estimate	
Milestone III AFSARC	MAY 1997	JUN 1999	NOV 1999	
First Asset Delivery (FAD) to User	SEP 1997	JUL 1999	AUG 1999	
Organic Support Capability	SEP 1997	N/A	N/A	
Service Depot Support Date	SEP 1998	N/A	N/A	
Initial Operational Capability (IOC)	MAR 1998	MAY 2000	JUL 2000	

(U) Footnote: Milestone III was approved in Nov 1999 and the APB was approved in Jun 1999, the baseline dollars did not change.

b. Current Change Explanations -- None

^{10. (}U) Performance Characteristics:
 a. Performance --



[U] The contractor team completed the accuracy investigation on 23 August

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#### 10a. (U) Performance Characteristics (Cont'd):

2001. Fixes to the NS-50 software have been identified and were placed on contract in August 2001. A flight test of the new operational flight program is planned in June 2002 with operational deployment planned in September 2002.

b. Current Change Explanations -- None

#### 11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program: PdE	<u>Estimate</u>
Development (RDT&E)	423.3	496.0	509.9
Procurement	1040.3	1516.5	1623.9
Total Fly-Away	(950.9)		(0.0)
Fly-Away Non Recurring	9		(365.0)
Fly-Away Recurring			(1119.0)
Total Flyaway	(950.9)		(1484.0)
Total Weapon Other Syste	em (6.8)		(8.8)
Peculiar Support	(47.9)		(66.6)
Initial Spares	(34.7)		(64.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition OsM	0_0	0_0	0.0
Total FY 1993 Base-Year \$	1463.6	2012.5	2133.8
Escalation	172.6	387.6	339.1
Development (RDT&E)	(29.0)	(35.9)	(33.3)
Procurement	(143.6)	(351.7)	(305.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	(0.0)	(0,0)
Total Then Year \$	1636.2	2400.1	2472.9
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	_652	652	_622
Total	652	652	622

(U) The initial planned LRIP quantities were 46, the current planned LRIP quantities are 83.

This represents more than 10% of the total planned buy as approved by the Component Acquisition Executive per the Acquisition Strategy Panel.

The unit of measure for this program is the Missile Guidance Set for the Minuteman III missile.

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llc. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales --None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

			UCR	Current	
			Baseline	Estimate	Percent
		(JUN	1999 APB) (Dec	2001 SAR)	Change
а.	(U) Prog. Acq. Unit Cost (PAUC)				
	(1) Cost (FY 1993 BY\$)		2012.5	2133.8	
	(2) Quantity		652	622	
	(3) Unit Cost		3.087	3.431	+11.14
b.	(U) Avg. Proc. Unit Cost (APUC)				
	(1) Cost (FY 1993 BYS)		1516.5	1623.9	
	(2) Quantity		652	622	
	(3) Unit Cost		2.326	2.611	+12.25

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# 13. (U) Cost Variance Analysis:

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	TOTAL
Development Estimate	452.3	1183.9	-	1636.2
Previous Changes:	[			
Economic	-9.8	-87.6	-	-97.4
Quantity	- 1	-	-	-
Schedule	+63.7	+134.7	-	+198.4
Engineering	-26.0	+20.7	-	-5.3
Estimating	+63.6	+479.1	-	+542.7
Other	-	-	-	-
Support		+49.8	-	+49.8
Subtotal	+91.5	+596.7	-	+688.2
Current Changes:				
Economic	+0.1	-6.2	-	-6.1
Quantity	-	-78.3	-	-78.3
Schedule	-	+0.2	-	+0.2
Engineering	-	-	-	-
Estimating	-0.7	+211.0	-	+210.3
Other	-	-	-	-
Support	-	+22.4	-	+22.4
Subtotal	-0.6	+149.1	-	+148.5
Total Changes	+90.9	+745.8	~	+836.7
Current Estimate	543.2	1929.7	-	2472.9

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#### 13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	423.3	1040.3	-	1463.6
Previous Changes:				
Quantity	-	-	-	~
Schedule	+56.0	+26.0	-	+82.0
Engineering	-24.4	+16.9	-	-7.5
Estimating	+55.8	+381.2	-	+437.0
Other	-		-	-
Support	-	+31.9	-	+31.9
Subtotal	+87.4	+456.0	-	+543.4
Current Changes:				
Quantity	-	-66.6	-	-66.6
Schedule	-	~	-	-
Engineering	-	-	-	-
Estimating	-0.8	+175.6	-	+174.8
Other	-	-	-	-
Support	-	+18.6	-	+18.6
Subtotal	-0.8	+127.6	-	+126.8
Total Changes	+86.6	+583.6	-	+670.2
Current Estimate	509.9	1623.9	-	2133.8

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year (1) RDTSE Revised escalation indices. (Economic) N/A +0.1 -0.1 -0.1 Adjustment for Current and Prior Inflation. (Estimating) Higher level budget adjustments and general -0.7 -0.6 Headquarter reductions (Estimating) -0.B -0.6 RDT&E Subtotal (2) Procurement -6.2 N/A Revised escalation indices. (Economic) 0.0 +0.2 Stretchout of annual procurement buy profile. (Schedule) -0.4 -0.4 Adjustment for Current and Prior Inflation. (Estimating) +45.0 +53.2 Increase is the result of additional funding programmed in the FY02 and FY03 POM for the lifetime buy of Application Specific Integrated Circuits (ASIC). (Estimating) Increase is the result of Boeing rate +131.0+158.2

increases. (Estimating)

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#### 13b. (U) Cost Variance Analysis (Cont'd):

#### 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	i i i i i i i i i i i i i i i i i i i							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.51	-0.166	-0.004	+0.319	-0.009	+1.21		+0.116	+1.47	3.98

#### b. (U) Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate

PUC		Changes								
Dev Est	)								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
1.82	-0.151	-0.038	+0.217	+0.033	+1.11		+0.116	+1.29	3.10	

#### c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	MAY 1997	NOV 1999
IOC	N/A	MAR 1998	MAR 1998	JUL 2000
Total Cost	N/A	1636.2	1636.2	2472.9
Total Quantity	N/A	652	652	622
Prog Acq Unit Cost	N/A	2.5	2.5	4.0

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## 15. (U) Contract Information (Then-Year Dollars in Millions):

(U) NOTE: In October 1999, the remaining Low Rate Initial Production (LRIP) effort was assigned (from Boeing) to the ICBM Prime Integrating Contractor, TRW. Boeing now performs as a subcontractor to TRW. To simplify contractor cost reporting only one Cost Performance Report is provided to the Government for both the Boeing LRIP contract and the assigned TRW LRIP contract.

This is the last SAR that will report the Boeing Contract - all data will be reported under the F42610-98-C-0001 (TRW IPIC) contract.

a. Procurement		Initial Contract Price			
(U) <u>MMIII (</u>	<u> GRP - Electro</u>	nics:	<u>Target</u>	Ceiling	Oty
Boeing, Anahei	im, CA				
F04704-93-C-00	D20, CPAF		\$38.0	N/A	14
Award: April 7	7, <b>1997</b>				
Definitized: A	April 7, 1997				
Current	Contract Pri	ce	Estimated Pr	ice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	Oty	Contractor	Program	Manager
\$49.1	N/A	14	\$48.8	Ş	48.8
			<u>Cost Variance</u>	Schedule V	ariance
Previous Cumul	lative Varian	ces	\$0.4	\$-1.	3
Cumulative Var	riances To Da	te (11/30/01)	\$-0.8	\$0.	0
Net Change	9		\$-1.2	\$1.	3

## Explanation of Change:

(U) The major contributor to the -1.2M cumulative unfavorable cost variance is due to higher than anticipated Boeing material requirement and Program Support.

The major contributor for the net change of \$1.3M cumulative favorable schedule variance is attributed to positive results realized in the receipt of Boeing Aerospace Vehicle Equipment (AVE) material.

This Contract is over 90% complete, this will be the last time it will be reported in the SAR.

(U) Contract Comments: The current contract price includes LRIP from the Boeing FO4704-93-C-0020 contract and the assigned LRIP portion from the TRW F42610-98-C-0001 contract.

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15. (U) Contract Information (Cont'd):

	400 FRTD 1074		Initial (	Contract Pr	ice
U) <u>MMIII</u>	GRP LRIP 1PIC	<u>1</u> 78	Targer	<u>leiling</u>	OLY
F42610-98-C-	0001, CPAF	~ <b>B</b>	\$221.6	N/A	69
Award: Octobe	er 14, 1999				
Definitized:	October 14, 19	999			
Current	t Contract Prid	ce	Estimated Pr	ice At Comp	letion
<u>Target</u>	Ceiling	<u>Oty</u>	<u>Contractor</u>	Program	Manager
\$222.6	N/A	69	\$222.6	\$2	22.6
			<u>Cost Variance</u>	Schedule V	<u>ariance</u>
Previous Cum	ulative Variand	Ces	\$-0.1	<b>\$-0</b> .	6
Cumulative Va	ariances To Dat	te (11/20/01)	<u>\$-8,1</u>	<u>\$-0.</u>	4
Net Chan	ge		\$-8.0	\$0.	2

#### Explanation of Change:

(U) The major contributor to the \$-8.0M cumulative unfavorable cost variance (out of \$213.4M cost of actual cost of work performed earned value to date) is due to, delays in tooling effort for fabrication of clamp, handling fixtures for Missile Guidance Set Control (MGSC) and Gyro Stabilized Platform (GSP) assemblies, associated engineering support labor, higher than planned build/test efforts, Boeing rates, and intensifying Honeywell Missile Guidance Computer (MGC) technical production challenges (including sell-off concentration). Test engineering is up also due to increased failure rates on Input/Output Single Amplifier yield.

The major contributor for the net change of \$0.2M cumulative favorable schedule variance is attributed to positive results realized in the Missile Guidance Set (MGS) integration assembly/and check-out.

This Contract is over 90% complete, this will be the last time it will be reported in the SAR.

(U) MM III	I GRP FRP 00 ()	IPIC):	Initial <u>Target</u>	. Contract Pi <u>Ceiling</u>	rice <u>Oty</u>
F42610-98-C-( Award: Decem) Definitized:	December 17, 1999	1999	\$167.0	\$181.2	65
Current <u>Target</u> \$167.2	t Contract Pric <u>Ceiling</u> \$185.7	ce <u>Otv</u> 65	Estimated P <u>Contractor</u> \$167.2	rice At Com <u>p</u> <u>Program</u> \$1	pletion <u>Manager</u> 167.2

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#### MMIII GRP, December 31, 2001

9-2.2

# 15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/20/01)	\$-1.5	<u>\$-3.3</u>
Net Change	\$-1.5	\$-3.3

## Explanation of Change:

(U) The overall cumulative cost variance of \$-1.5M is the result Boeing rate increases. In addition, inspection and rework efforts in support of cracked connectors plus RTV sealant voids are drivers. An ANSI specific Disa-Paste implementation costs at the Boeing-El Paso production facility are a contributing factor.

The cumulative schedule variance is unfavorable due to shortages of Printed Wiring Board (PWB) and Stacked Capacitors experienced early in FRP.

			Initial	Contract Pr	ice
(U) <u>MM III</u>	GRP FRP 01 (1	<u>PIC) :</u>	Targer	Celling	DTY
TRW inc, San	Bernadino, CA				
F42610-98-C-0	001, FPIF/AF		\$185.0	\$201.3	80
Award: Novemb	er 15, 2000				
Definitized:	November 15, 2	2000			
Gunnant	Contract Driv	20	Retimated I	Price At Com	letion
Current	CONCIACE PIIC	.е Офи	Coobmodeu r	PLICE AC COM	Managan
<u>Target</u>	Celling	OEY	CONLINCTOR	Program	<u>Hanager</u>
\$187. <b>9</b>	\$204.3	80	\$187.9	Ş I	187.9
			<u>Cost Varian</u>	e Schedule N	<u>/ariance</u>
Previous Cumu	lative Variand	ces	\$0.0	\$0.	. 0
Cumulative Va	riances To Dat	e (11/20/01)	\$0.5	<u>\$-2</u>	2

# Explanation of Change:

Net Change

(U) The overall positive cumulative cost variance is the result of actual cost for manpower being lower than budgeted cost. Currently FY01 manpower count is being shared with the LRIP and FRP FY00 contracts to accomplish program tasks.

\$0.5

The cumulative unfavorable schedule variance is the result of delays in completing the LRIP contract, and from being behind the schedule plan for FRP FY01 hardware causing delays to the FY01 initial box/module build.

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MMIII GRP, December 31, 2001

# 15. (U) Contract Information (Cont'd):

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		Initial	Contract P	rice
(U) MM III GRP FRP 02 (IP)	<u>IC):</u>	<u>Target</u>	Ceiling	<u>oty</u>
TRW inc, San Bernadino, CA 👘				
F42610-98-C-0001, FPIF/AF		\$107.3	\$117.1	18
Award: November 6, 2001				
Definitized: November 6, 200.	1			
Current Contract Price		Estimated F	rice At Com	pletion
<u>Target Ceiling</u>	Oty	Contractor	Progra	m Manager
\$107.3 \$117.1	18	\$107.3	\$	107.3
		Cost Varianc	e Schedule	Variance
Previous Cumulative Variance:	s	\$0.0	\$0	.0
Cumulative Variances To Date	(11/20/01)	\$0.0	\$0	.0
Net Change		\$0.0	\$0	. 0

## Explanation of Change:

(U) No cost or schedule variance at this time. Awarded initial contract for 18 units. Received addition funding per appropriations bill to fund the additional 58 units bring total units to 76.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY93-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-09)	Total
RDT&E	543.2	-	-	-	543.2
Procurement	661.6	220.6	243.3	804.2	1929.7
MILCON	-	-	-	-	-
OGM		-	-	-	-
Total	1204.8	220.6	243.3	804.2	2472.9

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# 16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- MM III GRP

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Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1993 Dollars Nonrec	Flyaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				52.8	53.7
1994				81.6	84.5
1995				88.2	93.0
1996				103.4	111.1
1997				106.0	115.4
1998				69.9	76.6
1999				8.0	8.9
Subtotal				509.9	543.2

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1993	FY 1993	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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	93.9	104.2
1999	39	25.6	57.2	93.7	105.4
2000	65	35.8	102.5	156.5	178.3
2001	80	36.0	127.3	173.8	200.6
2002	76	32.3	146.9	188.2	220.6
2003	80	45.1	150.6	204.3	243.3
2004	70	32.3	132.0	181.9	220.5
2005	74	33.0	131.4	175.8	217.1
2006	73	36.5	127.3	174.6	219.7
2007	21	37.3	65.3	112.6	144.3
2008		1.4		1.4	1.8
2009		0.6		0.6	0.8
Subtotal	622	365.0	1119.0	1623.9	1929.7

(U) An FY04 FOM input was submitted for additional funding in FY04-07 to restore the total number of kits to meet USSTRATCOM requirement of 80 kits per year.

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## MMIII GRP, December 31, 2001

Actual

## 16b. (U) Program Funding Summary (Cont'd):

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	622	365.0	1119.0	2133.8	2472.9

#### 17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

RDT&E	0	0
Procurement	110	103

<u>Plan</u>

(U) Percent Total Program Quantities Delivered: 16.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 963.9

(U) Percent Total Program Expended: 39.0%

## 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The concept of operations is based on 500 deployed guidance systems which operate continuously. The only change in the Operating and Support (Oas) 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 has varied little since Minuteman III was fielded in the early 1970s. Personnel costs are based on the current manning levels associated with guidance system repair. These levels will not change because maintenance personnel have multiple tasks and qualifications that drive overall manning requirements. Repair costs are calculated as the number of projected annual repairs, multiplied by the unit repair cost. Unit level consumption costs are based on costs associated with deployment of missile wing personnel to missile sites to remove and replace guidance systems, and the annual user costs associated with maintaining guidance related maintenance support equipment. Repair and unit level consumption costs will decrease as a result of this modification. The increase in reliability of the electronics will result in fewer guidance system repairs and fewer maintenance actions by field personnel. NOTE: The calculated costs to repair the guidance set compares system level Missile Guidance System (MGS) repair. O4S data was extracted from the routine program office estimate dated May 1999.

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MMIII GRP, December 31, 2001

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# 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

	MM III GRP	Avg Annual Cost Per
	Year-NS-50 System	Year-NS-20
Cost Element		Antecedent
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	Avg Annual Cost Per
BY\$ (In Millions)	908.2	0.1
TYS (In Millions)	1287.7	0.1

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# AF-24 WGS

## *** UNCLASSIFIED ***

#### SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A) 823) PROGRAM: WGS

## AS OF DATE: December 31, 2001

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SUBJECT	PAGE	
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Executive Summary	2	
Threshold Breaches	3	
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Performance Characteristics	4	
Total Program Cost and Quantity	6	
Unit Cost Summary	7	, #
Cost Variance Analysis	8	
Unit Cost and Other History	9	
Contract Information	10	
Program Funding Summary	11	
Delivery/Expenditure Information	13	
Operating and Support Costs	13	

 Designation and Nomenclature (Popular Name): Wideband Gapfiller Satellites (WGS)

2. DoD Component: USAF

3. <u>Responsible Office and Telephone Mumber</u>:

INDEX

2420 Vela WaySES Christine AndersonSuite 1467-A8Assigned: December 30, 2000Los Angeles AFB, CA 90245-4659DSN 833-4877; COMM 310/363-4877chris.anderson@losangeles.af.mil

4. Program Elements/Procurement Line Items: RDT&E: PE 0603854F (Shared) BPAC 644811 PROCUREMENT:

APPN 3020 ICN 33600F (Air Force)

## 5. References:

SAR Baseline (Production Estimate): DAE Approved Acquisition Program Baseline dated December 15, 2000

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated December 15, 2000.

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CONGRESSIONAL

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

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#### 6. Mission and Description:

Wideband Gapfiller Satellites (WGS) will augment the DoD's Interim Wideband System, which includes Defense Satellite Communications System (DSCS III), and the Global Broadcast Service Phase II (GBS). WGS is a fully duplexed communications platform offering warfighters a quantum leap in capacity, connectivity, and interoperability. It will provide high capacity and digitally channelized service at both X and Ka frequency bands, opening up a new 2-way Ka communication capability. This highly flexible communications satellite design leverages commercial processes, practices and technology to provide a wideband payload compatible with existing and future terminals. First Launch is scheduled for FY04, followed by two launches in FY05.

#### 7. Executive Summary:

The Joint Requirements Oversight Council (JROC) approved the Wideband Gapfiller Satellites (WGS) Operational Requirements Document on May 4, 2000. The Defense Acquisition Board authorized WGS to proceed into a combined Milestone II/Production phase on November 6, 2000. A Firm Fixed Price (FFP) contract, containing six FFP satellite options, was awarded to Boeing Satellite Systems (BSS) of El Segundo, California on January 2, 2001.

The WGS Program continues to enjoy a strong cooperative team effort between the MILSATCOM Joint Program Office (MJPO), BSS and numerous DoD stakeholders. Together, these organizations are facilitating this fast paced space program. During this period WGS completed System and Segment Preliminary Design Reviews (PDR). All DoD stakeholders, the MJPO and BSS 'Gray Beard' teams evaluated the designs. However, during these reviews an issue was identified with regard to the operational timeliness required to conduct on-orbit station keeping and payload reconfiguration operations. BSS initiated an engineering study that produced increases to the telemetry and command data rates in the S-band as well as both the Ka- and X-bands. These data rates have been assessed to reduce payload reconfiguration times from over an hour to just a few minutes. Work continues to ensure that control software adequately supports multiple command streams at the increased rate of 35 commands per second. Additionally, satellite gross weight was identified as a program issue. To resolve this challenge, the MJPO and BSS consummated an Engineering Change Proposal (ECP) that provides the Government desired enhanced spacecraft capability, and upgrades Evolved Expendable Launch Vehicle Service. As part of this contract change the launch of Satellite 1, originally estimated to occur in early second quarter FY04, has moved to later in the same quarter. Our objective date for Initial Operational Capability (IOC) remains December 2004.

WGS encountered a significant financial challenge created by a \$20M cut to the program's FY02 missile procurement funding line. This cut is particularly challenging for a Firm Fixed Price contract. All budgeted dollars are needed to meet the obligations created by the exercise of options for satellites 1 and 2 and advanced parts buy for satellite 3; to fund other government costs needed to maintain the program office and ensure adequate contract insight; as well as

## 7. Executive Summary (Cont'd):

to fund high priority ECPs. As a result of this cut, the MJPO negotiated with BSS to restructure satellite production options within the reduced missile procurement budget. The overall cost of the program is expected to increase as a result of these noncompetitive negotiations and high priority ECPs will not be funded. Critical Design Reviews, originally scheduled for March 2002, are now scheduled to be complete by July 2002. This schedule change allows BSS to baseline design changes resulting from the Weight Growth ECP and adjust to the Government's late execution of production options, which resulted from the reduced funding in the FY02 Defense Appropriations Bill. Additionally, budget adjustments in FY03 have led to the delay in purchasing the launch vehicle service for the third WGS. As a result of this delay, the projected Satellite 3 launch has slipped from April 2005 to September 2005. The launch of Satellite 2 is unaffected by these changes and remains in early FY05.

On January 31, 2002, WGS announced the award of Satellites 1 and 2 production options and Satellite 3 advance parts. This event marks program transition from the engineering and manufacturing development phase to the production phase.

#### 8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

	Item	Breach
Schedule		No
Performe	ince	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

WGS, December 31, 2001

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# 9. <u>Schedule</u>:

a. Milestones ---

a. Milescourd			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone II/Procurement (DAB)	OCT 2000	OCT 2000	NOV 2000
Contract Award EMD/Production	DEC 2000	DEC 2000	JAN 2001
Critical Design Review	MAR 2002	MAR 2002	JUL 2002(Ch-1)
Initial Operational Capability (IOC)	DEC 2004	DEC 2004	DEC 2004
Full Operational Capability (FOC)	DEC 2005	DEC 2005	DEC 2005

Approved

b. Current Change Explanations ---

(Ch-1) The change in the Critical Design Review estimate is due to a contract modification that provided BSS additional spacecraft weight in exchange for enhancements in the WGS reliability and interoperability.

## 10. Performance Characteristics:

a. Performance --

	Production	Program (APB)	strated	Current
	<u>Estimate (SAR)</u>	<u>Obi/Threshold</u>	<u>Perf</u>	Estimate
Coverage	Capable	Capable / Capable	TBD	Capable
	of pro-	of pro- / of pro-		of pro-
	viding	viding / viding		viding
	communi-	communi-/ communi-		communi-
	cations	cations / cations		cations
	connec-	connec- / connec-		connec-
	tivity	tivity / tivity		tivity
	anywhere	anywhere/ anywhere		anywhere
	between	between / between		between
	70 deg N	70 deg N/ 65 deg N		65 deg N
	and 65	and 65 / and 65		and 65
	deg S	deg S / deg S		deg S
	latitude	latitude/ latitude		latitude
	and at	and at / and at		and at
	all	all / all		<b>al</b> 1
	longi-	longi- / longi-		longi-
	tudes	tudes / tudes		tudes
	within	within / within		within
	each	each / each		each
	satel-	satel- / satel-		satel-
	lites	lites / lites		lites
	field	field / field		field
	of view,	of view,/ of view,		of view,
	24 hrs	24 hrs / 24 hrs		24 hrs
	a day	a day / a day		a day
Capacity	Each	Each / Each		Each
	satel-	satel- / satel-		satel-
	lite	lite / lite		lite
	should	should / should		should
	provide	provide / provide		provide
	a min	amin / amin		a min
	through-	through-/ through-		through-

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# 10a. Performance Characteristics (Cont'd):

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		Approved	Demon-	
	Production	Program (APB)	strated	Current
	<u>Estimate (SAR)</u>	<u>Obj/Threshold</u>	Perf	Estimate
	put of	put of / put of		put of
	3.6 Gbps	3.6 Gbps/ 1.2 Gbps		~2.4
	_			Gbps
Access and Control	Provide	Proviđe / Proviđe		Provide
	platform	platform/ platform		platform
	and pay-	and pay-/ and pay-		6
	load	load / load		payload
	con-	con- / con-		con-
	trolled	trolled / trolled		trolled
	capabil-	capabil-/ capabil-		capabi1-
	ities to	ities to/ ities to		ities to
	perform	perform / perform		perform
	Launch	Launch / Launch		Launch
	and	and / and		& Early
	Early	Early / Early		Orbit,
	Orbit,	Orbit, / Orbit,		On-Orbit
	On-Orbit	On-Orbit/ On-Orbit		Ops,
	Opera-	Opera- / Opera-		Station-
	tions,	tions, / tions,		keeping,
	Station-	Station-/ Station-		Sat
	keeping,	<pre>keeping,/ keeping,</pre>		Reposi-
	Satel-	Satel- / Satel-		tioning,
	lite	lite / lite		Platform
	Reposi-	Reposi- / Reposi-		&
	tioning,	<pre>tioning,/ tioning,</pre>		Payload
	Platform	Platform/ Platform		Mainte-
	and	and / and		nance,
	Payload	Payload / Payload		æ
	Mainte-	Mainte- / Mainte-		Anomaly
	nance,	nance, / nance,		ID &
	and	and / and		resoluti
	An	An / An		on
Interoperability	Satel-	Satel- / Satel-		Satel-
	lites	lites / lites		lites
	must be	must be / must be		must be
	fully	fully / fully		fully
	inter-	inter- / inter-		inter-
	operable	operable/ operable		operable
	with	with / with		with
	existing	existing/ existing		existing
	and pro-	and pro-/ and pro-		and pro-
	grammed	grammed / grammed		grammed
	DSCS and	DSCS and/ DSCS and	L	DSCS and
	GBS ter-	GBS ter-/ GBS ter-		GBS ter-
	minals	minals / minals		minals

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# 10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

# 11. Total Program Cost and Quantity (Dollars in Millions):

		Production	Approved	Current
a.	Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
	Development (RDT&E)	175.8	175.8	168.5
	Procurement	804.6	804.6	674.2
	Total Flyaway	(758.5)		(629.4)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(46.1)		(44.8)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0_0	0_0	0.0
	Total FY 2001 Base-Year \$	980.4	980.4	842.7
	Escalation	62.1	62.1	34.2
	Development (RDT&E)	(3.0)	(3.0)	(2.8)
	Procurement	(59.1)	(59.1)	(31.4)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	<u>[0.0]</u>
	Total Then Year \$	1042.5	1042.5	876.9
Ъ.	Quantity			
1	Development (RDT&E)	0	0	0
	Procurement	3	3	3
1	Total	3	3	3

There is no Low Rate Initial Production (LRIP) for WGS.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. <u>D</u>	nit Cost Summary:			
		UCR	Current	
		Baseline	Estimate	Percent
		(DEC 2000 APB)	(Dec 2001 SAR)	Change
a	. Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 2001 BY\$)	980.4	842.7	
	(2) Quantity	3	3	
	(3) Unit Cost	326.800	280.900	-14.05
b	. Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 2001 BY\$)	804.6	674.2	
	(2) Quantity	3	3	
	(3) Unit Cost	268.200	224.733	-16.21

The substantial decrease in unit cost was due to funding outside the Future Years Defense Program (FYDP) being removed from the Program Element (PE). These out year procurement funds were budgeted for Other Government Costs (OGCs) (e.g., Federally Funded Research and Development Center (FFRDC), System Engineering and Technical Assistance (SETA), System Program Office (SPO) operations, etc.) to support future wideband programs. With WGS being a fully operational program by FYO8, it was decided that a follow-on wideband program would be mature enough to fund these efforts.

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# 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	178.8	863.7		1042.5
Previous Changes:				
Economic	-	-	-	-
Quantity		_	_	
Schedule	-	-	-	-
Engineering	-	-	-	- 1
Estimating	-	-147.1	-	-147.1
Other	-	-	-	-
Support	-	-1.3	-	-1.3
Subtotal	-	-148.4	-	-148.4
Current Changes:				
Economic	+0.1	-6.7	-	-6.6
Quantity	-	- 1	-	- 1
Schedule	-	-	-	-
Engineering	-	_	-	
Estimating	-7.6	-2.9	-	-10.5
Other	-		-	_
Support	-	-0.1		-0.1
Subtotal	-7.5	-9.7	-	-17.2
Total Changes	-7.5	-158.1	-	-165.6
Current Estimate	171.3	705.6	_	876.9

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	-	-	- 1	-
Schedule	-	-	-	-
Engineering	-	~	-	-
Estimating	-	-125.6	-	~125.6
Other		-	- 1	-
Support	-	-1.2	]	-1.2
Subtotal	-	-126.8	-	-126.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	i –
Engineering	-		-	-
Estimating	-7.3	-3.5	-	-10.8
Other	-		-	-
Support		-0.1		
Subtotal	-7.3	-3.6	-	-10.9
Total Changes	-7.3	-130.4	-	-137.7
Current Estimate	168.5	674.2	-	842.7

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# 13b. Cost Variance Analysis (Cont'd):

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	b. Current Change Explanations		
		(Dollars in Base-Year Th	Millions) en-Year
(1)	RDTLE		
	Revised escalation indices. (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	Zero Balance Transfer of Program Support from RDT&E to Missle Procurement (Estimating)	-0.6	-0.9
	Air Force and Congressional Budget Reductions (Estimating)	-6.6	-6.6
	RDT&E Subtotal	-7.3	-7.5
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-6.7
	Adjustment for Current and Prior Inflation. (Estimating)	+3.3	+3.4
	General Air Force and Congressional budget adjustments (Estimating)	+0.5	+0.7
	FY02 Appropriations Act reduction (Estimating)	-19.3	-20.0
	The procuremtent of the launch vehicle for Satellite 3 was delayed five months, thus slipping the satellite #3's launch from April 2005 to September 2005. Additional funding was required to cover extended schedule. (Estimating)	+11.1	+12.1
	Zero Balance Transfer of Program Support from RDT&E to Missle Procurement (Estimating)	+0.9	+0.9
	Change in Peculiar Support (Support)	-0.1	~0.l
	Procurement Subtotal	-3.6	~9.7

# 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current	SAR	Baseline	to	Current	Estimate
		Dagertue	<u> </u>	CATTONE	DOCTINGLE

PAUC	Changes								PAUC	
Prod Est	k								Cur Est	
	Econ	Econ Qty Sch Eng Est Oth Spt Total								
347.50	-2.20	-2.20 -0.00352.530.467 -55.20								

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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		c								
	Econ	Econ Qty Sch Eng Est Oth Spt Total								
287.90	-2.23	-0.003			-50.00		-0.467	-52.70	235.20	

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	DEC 2004
Total Cost	N/A	N/A	1042.5	876.9
Total Quantity	N/A	N/A	3	3
Prog Acq Unit Cost	N/A	N/A	347.5	292.3

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E Wideband Gapfiller:	Initia <u>Target</u>	1 Contract Ceiling	Price <u>Oty</u>
Boeing Satellite Systems, El Segun F04701-00-C-0011, FFP Award: January 2, 2001 Definitized: January 2, 2001	do CA \$137.0	N/A	0
Current Contract Price	Estimated	Price At Co	ompletion

\$137.0 N/A

Contractor	Program Manage
\$137.0	\$137.0

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

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## 15b. Contract Information (Cont'd):

b. Procur <u>Wideband G</u>	ement apfiller:	Compade (C)	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
Boeing Satellite Systems, El Segundo CA F04701-00-C-0011, FFP Award: January 2, 2001 Definitized: January 2, 2001		Segundo CA	\$19.6	N/A	0
Current <u>Target</u> \$498.8	Contract Price <u>Ceiling</u> N/A	Oty 2	Estimated P <u>Contractor</u> \$498.8	rice At Comp <u>Program</u> \$4	oletion <u>Manager</u> 198.8

## Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments: The difference between Initial Contract Price and Current Contract Price is associated with the execution of options for long lead parts for first three WGS Satellites and full funding for production of Satellites 1 and 2.

## 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY99-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	Total
RDT&E	83.6	82.0	2.0	3.7	171.3
Procurement	24.7	371.0	205.8	104.1	705.6
MILCON	-	-	-	-	-
0&M	-	-	_	-	-
Total	108.3	453.0	207.8	107.8	876.9

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# 16b. Program Funding Summary (Cont'd):

b. Annual Summary -- WGS

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 \$
1999				0.7	0.7
2000				4.9	4.9
2001				77.4	78.0
2002			·······	80.1	82.0
2003				1.9	2.0
2004				1.7	1.8
2005				1.8	1.9
Subtotal				168.5	171.3

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
	[	FY 2001	FY 2001	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001				24.3	24.7
2002	2		388.8	358.8	371.0
2003	1		240.6	180.7	189.7
2004				17.5	18.7
2005				22.4	24.4
2006				12.9	14.3
2007				12.8	14.5
Subtotal	3		629.4	629.4	657.3

Appropriation: 3080 - Other Procurement, Air Force

		Flyaway	Flyaway		
		FY 2001	FY 2001	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003				15.1	16.1
2004				29.7	32.2
Subtotal				44.8	48.3

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	3		629.4	842.7	876.9

## 17. Delivery/Expenditure Information:

a.	Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	0	0
	Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 103.8

Percent Total Program Expended: 11.8%

#### 18. Operating and Support Costs:

a. Assumptions and Ground Rules --Wideband Gapfiller Satellites were developed to use existing Army and Air Force infrastructures; operating and support costs are based on current and future infrastructure cost projections.

As of this report, DSCS III has been identified as the antecedent system and its O&S costs will be reported in the next SAR

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Millions)

	WGS	Antecedent System
	Average Annual Cost	
Cost Element	per Satellite	
Mission Pay & Allowances	32.4	N/A
Unit Level Consumption	9.4	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	0.5	N/A
Contractor Support	7.1	N/A
Sustaining Support	151.8	N/A
Indirect Costs	18.0	N/A
Maintenance	19.3	N/A
Total	238.5	N/A

Total O&S Cost	WGS	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/29/2002 3:00:36 PM

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# AF-5 C-5 RERP

### *** UNCLASSIFIED ***

## SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: C-5 RERP

# AS OF DATE: December 31, 2001

SUBJECT	PAGE
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Mission and Description	2
Executive Summary	2
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 <u>Designation and Nomenclature (Popular Name)</u>: C-5 Reliability Enhancement and Reengining Program

2. DoD Component: USAF

3. Responsible Office and Telephone Number: ASC/GRA LTC AMC III Complex, Bldg 556 Ass 2590 Loop Rd., West, Room 211 DSN WPAFB, OH 45433-7142 ral

LTC Ralph King Assigned: April 9, 2001 DSN 785-9292; COMM 937-255-9292 ralph.king@wpafb.af.mil

4. <u>Program Elements/Procurement Line Items</u>: RDT&E: PE 0401119F Project 4835 PROCUREMENT: APPN 3010 ICN 0401119F (Air Force) MILCON: PE 0401119F SAFIFAS 0 -- 0 0 7 8 CONGRESSIONAL

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

02-C-0410

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## 5. <u>References</u>:

<u>SAR Baseline (Development Estimate)</u>: DAE Approved Acquisition Program Baseline (APB) dated November 5, 2001.

#### Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 19, 2002.

### 6. Mission and Description:

The C-5 Reliability Enhancement and Reengining Program (RERP) is a comprehensive modernization effort that will improve aircraft reliability, maintainability and availability. RERP will enable the C-5 to achieve wartime mission requirements by increasing fleet availability (mission capable rate, departure reliability) while reducing total ownership costs (TOC). This effort centers on replacing the current TF-39 with more reliable, commercially available (COTS) turbofan engines with increased takeoff thrust and stage three noise compliance. In addition to new engines/pylons, C-5 RERP will provide upgrades to wing attach fittings, thrust reversers, Auxiliary Power Units (APUS), electrical system, hydraulics, fuel system, fire suppression system, pressurization/air conditioning systems, landing gear and airframe to increase payload capability and access to Global Air Traffic Management (GATM) airspace. It also decreases aircraft time to climb, increases engine-out climb gradient for takeoff, improves transportation system throughput, and decreases engine removals.

#### 7. Executive Summary:

The C-5 Pre-System Development and Demonstration (SDD) phase contract began in FY00 and continued through FY01. The Operational Requirements Document (ORD) was released in June 2001 and was validated by the Joint Requirements Oversight Council (JROC) in August 2001. The Acquisition Decision Memorandum (ADM) was approved November 2, 2001 and the Acquisition Program Baseline (APB) was approved November 5, 2001. The SDD contract was awarded in the first quarter of FY02 under an Undefinitized Contract Action (UCA). The contract is scheduled to be definitized in the second quarter of FY02. Development includes flight test of four prototypes. In FY02, Congress directed the Air Force to include at least one C-5A in SDD.

C-5 RERP, December 31, 2001

# 8. Threshold Breaches:

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a. Acquisition Program Baseline (APB):

Item	Breach	
Schedule	No	
Performance	NO	
Cost RDISE	No	
Procurement	No	
MILCON	No	
0sM	No	
Program Acquisition Unit Cost (PAUC)	No	
Average Procurement Unit Cost (APUC)	No	

# b. Nunn-McCurdy Unit Cost:

	Breach			
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

# 9. <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Program Initiation	FEB 2000	FEB 2000	FEB 2000
Milestone B	NOV 2001	NOV 2001	NOV 2001
Contract Award	DEC 2001	DEC 2001	DEC 2001
Hardware/Software CDR	JAN 2004	APR 2004	JAN 2004
First Flight	AUG 2005	NOV 2005	AUG 2005
Start Combined QT&E/QOT&E	NOV 2006	NOV 2005	NOV 2006
Milestone C	DEC 2006	MAR 2007	DEC 2006
Complete Dedicated QOT&E	AUG 2007	DEC 2007	AUG 2007
FRP For B Models	SEP 2008	JAN 2009	SEP 2008
IOC	MAR 2010	JUN 2010	MAR 2010
FRP For A Models	N/A	JUN 2011	MAR 2011
System Requirements Review (SRR)	N/A	N/A	FEB 2002(Ch-1)
-			

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b. Current Change Explanations --(Ch-1) Schedule Milestones added to reflect SRR and FRP For A Models.

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# 10. <u>Performance Characteristics</u>: a. Performance --

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		Approved	Demon-	
	Development	Program (APB)	strated	Current
	Estimate (SAR)	<u>Obi/Threshold</u>	Perf	<u>Estimate</u>
Time To Climb/Initial	840,000	840,000 / 769,000	TBD	840,000
Level Off	lbs	lbs / lbs		lbs
	take-off	take-off/ take-off		take-off
	weight;	weight; / weight;		weight;
	RCR 23:	RCR 23; / RCR 23;		RCR 23;
	climb	climb / climb		climb
	condi-	condi- / condi-		condi-
	tion:	tion: / tion:		tion:
	standard	standard/ standard		standard
	day plus	day plus/ day plus		day plus
	18 deg	18 deg / 18 deg		18 deg
	Fahren	Fahren- / Fahren-		Fahren-
	heit:	heit: / heit:		heit:
	31.000	31,000 / 31,000		31,000
	ft in	ft in / ft in		ft in
				loge
	1035 than 25	than 25 / than 25		than 25
	chan 25	min / min		min
	(011)			
		/		
Aircraft Takesoff	0.0.0		TBD	One
Climb Gradient	engine	engine / engine	100	engine
CITIED GIRGIEnc	out 2 5%	out 2.58/out 2.58		out 2 5%
	climb	climb / climb		climb
	gradient	gradient/ gradient		gradient
	7840 000	/840 000/ /840 000		/R40_000
	) be	lbs / lbs		lbs
	takeoff	takeoff / takeoff		takeoff
	woight /	weight / / weight /		weight /
	hot day/	hot day// bot day/		hot day/
	from	from / from		from
	LION	rotation / rotation		rotation
	rocation	///////////////////////////////////////		TOCACIÓN
		/		
Stage III Noise/	Aircraft	Aircraft / Aircraft	TBD	Aircraft
Dellution Compliance	aball	chall / chall	100	shall
POILICION COMPILANCE	Sharr	mont / mont		maet
	Stago TV	Ctage IV/ Ctage		Stare TV
	Staye IV	communi-/ III		communi-
		ty poise/ poise		ty noice
	and	and / and		and
	anu	and / and		emission
	emission	regulater ( requirer		Teruiter
	require-	require-/ require-		Tequile"
	ments	ments / ments		mencs

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# 10a. Performance Characteristics (Cont'd):

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Break Rate (Reliability) (Per 100 Sorties)	Development Estimate (SAR) Break rate shall not exceed 5.7 per 100 sorties	Approved Program (APB) <u>Obj/Threshold</u> Break / Break rate / rate shall / shall not / not exceed / exceed 5.7 per / 10.5 per 100 / 100 sorties / sorties	Demon- strated <u>Perf</u> TBD	Current <u>Estimate</u> Break rate shall not exceed 5.7 per 100 sorties
Fix Rate	4-hr fix rate shall be no less than 34.3%; 12-hr fix rate shall be no less than 66.5%; 24-hr fix rate shall be no less than 84.1%	4-hr / 4-hr fix rate/ fix rate shall be/ shall be no less / no less than / than 34.3%; / 30.1%; 12-hr / 12-hr fix rate/ fix rate shall be/ shall be no less / no less than / than 66.5%; / 62.9%; 24-hr / 24-hr fix rate/ fix rate shall be/ shall be no less / no less than / than 84.1% / 82.4%	TBD	4-hr fix rate shall be no less than 34.3%; 12-hr fix rate shall be no less than 66.5%; 24-hr fix rate shall be no less than 84.1%

b. Current Change Explanations -- None

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# 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a,	Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	1413.9	1396.5	1413.0
	Procurement	7381.0	6733.2	7064.6
	Recurring Flyaway	(6626.2)		(6348.4)
	Nonrecurring Flyaway	(34.0)		(30.1)
	Total Flyaway	(6660.2)		(6378.5)
	Training	(82.1)		(77.1)
	Data	(74.6)		(71.1)
	Other wpn sys spt cost	s (262.9)		(239.9)
	Total Other Wpn Sys	(419.6)		(388.1)
	Peculiar Support	(97.7)		(88.8)
	Initial Spares	(203.5)		(209.2)
	Construction (MILCON)	3.1	3.1	3.2
	Acquisition OSM		0.0	0.0
	Total FY 2000 Base-Year \$	8798.0	8132.8	8480.8
	Escalation	2295.9	1887.8	1788.9
	Development (RDT&E)	(124.6)	(121.5)	(122.0)
	Procurement	(2170.8)	(1765.8)	(1666.5)
	Construction (MILCON)	(0.5)	(0.5)	(0.4)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	11093.9	10020.6	10269.7
b.	Quantity			
1	Development (RDT&E)	4	3	4
1	Procurement	_122	109	108
	Total	126	112	112

FY03 President's Budget reflects funding for 112 Aircraft.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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## 12. Unit Cost Summary:

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a. Prog. Acg. Unit Cost (PAUC)	UCR Baseline <u>(NOV 2001 APB)(De</u>	Current Estimate c_2001 SAR)	Percent Change
<pre>(1) Cost (FY 2000 BY\$) (2) Quantity (3) Unit Cost</pre>	8798.0 126 69.825	8480.8 112 75.721	+8.44
<pre>b. Avg. Proc. Unit Cost (APUC)    (1) Cost (FY 2000 BY\$)    (2) Quantity    (3) Unit Cost</pre>	7381.0 122 60.500	7064.6 108 65.413	+8.12

Percent change increase result of reduction of number of aircraft modifications funded in the FY03 PB. Reallocation of fixed costs per aircraft resulted in increased PAUC and APUC. Additionally, the aircraft not funded in the FY03 PB were further down the learning curve than the aircraft that are funded.

## 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	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	+
Engineering	-	- ]	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-3.8	-422.0	-	-425.8
Quantity	-	-607.4	-	-607.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.3	+256.2	-	+256.5
Other	-	- ]	-	-
Support	-	-47.5	-	-47.5
Subtotal	-3.5	-820.7	-	-824.2
Total Changes	-3.5	-820.7	-	-824.2
Current Estimate	1535.0	8731.1	3.6	10269.7

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# 13a. Cost Variance Analysis (Cont'd):

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Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1413.9	7381.0	3.1	8798.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-		-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-477.2	-	-477.2
Schedule	-	-	-	-
Engineering	-			-
Estimating	-0.9	+195.5	+0.1	+194.7
Other	-	-	-	-
Support	-	-34.7	-	-34.7
Subtotal	-0.9	-316.4	+0.1	-317.2
Total Changes	-0.9	-316.4	+0.1	-317.2
Current Estimate	1413.0	7064.6	3.2	8480.8

b. Current Change Explanations --

# (Dollars in Millions) <u>Base-Year</u> <u>Then-Year</u>

115	DDTrE	<u></u>	A.1659.14 A.S.164
(1)	Revised escalation rates. (Economic) Change in estimating methodology. (Estimating)	N/A -0.9	-3.8 +0.3
	RDT&E Subtotal	-0.9	-3.5
(2)	Procurement		
	Revised escalation rates. (Economic)	N/A	-422.0
	Decrease of 14 aircraft from 126 to 112. (QR)(Quantity)	-477.2	-607.4
	Estimating technique has been changed. The estimate for the SAR Baseline used cost estimating relationships based on other analogous aircraft. The Current Estimate used a detailed labor-hour build-up based on previous C-5 Aircraft bistory. (Estimating)	+195.5	+256.2
	The support cost changes are related to the Aircraft Quantity reduction in the Current Estimate. Initial spares and other support is reduced as the number or aircraft is reduced. (QR)(Support)	-34.7	-47.5

C-5 RERP, December 31, 2001

## 13b. Cost Variance Analysis (Cont'd):

	b. Current Change	Explanations ·	••	(Dollars f	in Millions)
	Procurement	Subtotal		-316.4	-820.7
(3)	<u>MILCON</u> Revised estimate	for rounding.	(Estimating)	+0.1	0.0
	MILCON Subto	otal		+0.1	0.0

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	Changes								PAUC
Dev Est	k k								Cur Est
	Econ	Econ Qty Sch Eng Est Oth Spt Total							
88.05	-3.80	+5.58			+2.29		-0.424	+3.65	91.69

## b. Procurement Unit Cost (PUC) History

## Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Dev Est	l k							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
78.29	-3.91	+4.53			+2.37		-0.440	+2.55	80.84

## c. Schedule, Cost, and Quantity History

		03.0	010	
	SAR	SAK	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	FEB 2000	N/A	FEB 2000
Milestone B	N/A	DEC 2006	N/A	DEC 2006
Milestone C	N/A	DEC 2006	N/A	DEC 2006
IOC	N/A	MAR 2010	N/A	MAR 2010
Total Cost	N/A	11093.9	N/A	10269.7
Total Quantity	N/A	126	N/A	112
Prog Acg Unit Cost	N/A	88.1	N/A	91.7

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C-5 RERP, December 31, 2001

# 15. <u>Contract Information</u> (Then-Year Dollars in Millions):

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a. RDT&E <u>C-5 RERP SDD:</u> Lockheed Martin, Marietta, GA F33657-02-C-2000, CPAF with T&M Award: December 5, 2001 Definitized: N/A	Initial <u>Target</u> \$0.0	. Contract Pr <u>Ceiling</u> \$0.0	rice <u>Oty</u>
Current Contract Price <u>Target Ceiling Oty</u> \$0.0 \$0.0	Estimated P <u>Contractor</u> N/A	rice At Comp <u>Program</u>	oletion <u>Manager</u> N/A
Previous Cumulative Variances Cumulative Variances To Date Net Change <u>Explanation of Change:</u>	<u>Cost Varianc</u> \$0.0 <u>\$0.0</u> \$0.0	e <u>Schedule 1</u> \$0 \$0 \$0	<u>Variance</u> .0 .0 .0
None. Contract Comments: SDD Contract award via UCA Contract	Definitizatio	n projected	for 20 FY02
DDD COMPTREE WATE VIE OCK. CONTINCE			101 20 F102.
C-5 RERP PES:	Target	Ceiling	<u>Oty</u>
Lockheed Martin, Marietta, GA F33657-01-C-2083, FFP Award: June 2, 2001 Definitized: June 2, 2001	\$20.8	\$20.8	0
Current Contract Price <u>Target Ceiling Oty</u> \$20.8 \$20.8 0	Estimated P <u>Contractor</u> \$	rice At Comp <u>Program</u>	oletion <u>Manager</u> \$
Explanation of Change:			
None.			
Cost and Schedule variance reporting in FFP contract.	is not require	d on t <b>his</b>	

Contract Comments: C-5 RERP Preliminary Engineering Studies (PES) contract.

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C-5 RERP, December 31, 2001

# 15. Contract Information (Cont'd):

		Initia	l Contract Pi	ice
C-5 RERP Pre-SDD:		<u>Target</u>	<u>Ceiling</u>	Oty
Lockheed Martin, Marietta,	GA			
F33657-00-C-0022, FFP		\$25.0	\$25.0	0
Award: February 17, 2000				
Definitized: February 17, 2	000			
Current Contract Pric	e	Estimated	Price At Comp	letion
<u>Target</u> <u>Ceiling</u>	<u>Otv</u>	Contractor	Program	Manager
\$25.0 \$25.0	Õ	\$		S

## Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY00-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-16)	<u>Total</u>
RDT&E	61.4	90.7	236.1	1146.8	1535.0
Procurement	-	~	-	8731,1	8731.1
MILCON		-	-	3.6	3.6
Mao	-	~	-	-	-
Total	61.4	90.7	236.1	9881.5	10269.7

b. Annual Summary -- C-5 RERP

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway	Flyaway		
{		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2000		18.5		18.5	18.7
2001		41.6		41.6	42.7
2002		50.2	20.9	87.0	90.7
2003		135.3	56.4	223.2	236.1
2004		145.6	60.7	253.4	272.9
2005		245.1	102.1	420.9	461.3
2006		125.1	52.2	315.8	352.7
2007		28.9	12.0	52.6	59.9

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# 16b. Program Funding Summary (Cont'd):

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 \$
2008		0.1			
Subtotal	4	790.4	304.3	1413.0	1535.0

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2006			126.7	126.7	140.6
2007	5	30.1	249.9	408.9	462,5
2008	7		585.7	641.2	739.3
2009	12		730.6	789.9	928.1
2010	12		668.8	709.6	849.4
2011	11		676.1	740.8	903.8
2012	12		671.5	745.5	926.7
2013	12		663.8	736.5	932.4
2014	12		656.8	721.0	930.8
2015	12		652.2	724.9	953.3
2016	13		666.3	719.6	964.2
Subtotal	108	30.1	6348.4	7064.6	8731.1

Long lead items only in FY06.

# Appropriation: 3300 - Military Construction, Air Force

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2006				3.2	3.6
Subtotal				3.2	3.6

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	112	820.5	6652.7	8490.8	10269.7

# 17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	Actual
RDT&E Procurement	0 0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 39.5

Percent Total Program Expended: 0.4%

## 18. Operating and Support Costs:

a. Assumptions and Ground Rules --"O&S costs not tracked separately for C-5 RERP. O&S costs are included in the overall operational costs for the existing C-5 fleet.

# b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

	C-5 RERP	Antecedent System
Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

1		
Total Oss Cost	C-5 RERP	Antecedent System
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

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N-2 AESA

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: AESA

AS OF DATE: December 31, 2001

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02-6-0636

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## 5. (U) References:

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SAR Baseline (Development Estimate):
(U) NAE Approved Acquisition Program Baseline dated June 15, 2001

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated June 15, 2001.

## 6. (U) Mission and Description:

(U) The AN/APG-79 radar will be the primary search/track and weapons control radar for the F/A-18E/F aircraft. The AN/APG-79 radar will significantly improve F/A-18E/F air to air and air to ground lethality and situational awareness and improve aircraft survivability, supportability and affordability. The AN/APG-79 radar will incorporate embedded Electronic Support (ES) and Electronic Protection (EP) capabilities and Electronic Attack (EA) Radio Frequency (RF) jamming. The AN/APG-79 radar may be employed on any F/A-18E/F mission to include: Anti-Air Warfare (AAW), Strike Warfare, Electronic Warfare (EW), Anti-Surface Ship Warfare, Close Air Support (CAS), Tactical Air Control, Reconnaissance and Near Simultaneous Missions.

The F/A-18E/F AESA program includes development, integration and test of an advanced high power wideband airborne radar. The radar upgrade includes development of an advanced affordable AESA antenna, a wideband receiver exciter, advanced Commercial Off The Shelf (COTS) signal and data processors, high-density power supplies and custom radar rack. The AN/APG-79 antenna will be an electronically scanned antenna composed of many active transmitting and receiving elements. A computer will control the antenna elements individually, or in groups, to electronically steer a radar beam for various tactical purposes. In addition to the radar development, the program is to develop a new wideband radome, support the increased demand on aircraft power and cooling systems and integrate with the new aircraft mission system avionics and Higher Order Language (HOL) software over an advanced fibre channel network interface.

## 7. (U) Executive Summary:

(U) This is the second AN/APG-79 SAR following approval to enter Engineering and Manufacturing Development (EMD) (MSII) in February 2001. Procurement funding related information for this program is included in the F/A-18E/F SAR.

The AN/APG-79 radar was granted EMD status, and entered into an EMD and production readiness contract in February 2001. The program is on cost and on schedule, meeting or exceeding program performance parameters.

The Navy Program Review II Acquisition Decision Memorandum (ADM) was signed by ASN (RDA) on February 5, 2001. This ADM authorized full funding for Engineering and Manufacturing Development and Production Readiness to include the procurement of six Engineering Development Model (EDM) AN/APG-79 Radar

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## 7. (U) Executive Summary (Cont'd):

systems.

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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) <u>Schedule</u>:

a. Milestones --

	Development		Approved		Current	
	Estimat	e (SAR)	Progra	am (APB)	Esti	<u>.mate</u>
Milestone II	DEC	2000	DEC	2000	FEB	2001
EMD Contract Award	DEC	2000	DEC	2000	FEB	2001
Critical Design Review	MAY	2001	MAY	2001	AUG	2001
DT&E						
DT-IIA	APR	2002	APR	2002	MAY	2002
DT-IIB	NOV	2002	NOV	2002	FEB	2003
DT-IIC	AUG	2004	AUG	2004	AUG	2004
IOT&E						
OT-IIA	OCT	2002	OCT	2002	FEB	2003
OT-IIB	JUN	2004	JUN	2004	JUN	2004
OT-IIC	FEB	2006	FEB	2006	FEB	2006
Milestone III	JAN	2007	JAN	2007	JAN	2007
Full Rate Production Contract Award	JAN	2007	JAN	2007	JAN	2007
IOC	SEP	2006	SEP	2006	OCT	2006

(U) Note: The approved program (APB) dates are objectives.
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### 9a. (U) Schedule (Cont'd):

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Section 9 ACRONYM LIST (in order of appearance)

DT&E-Development Test and Evaluation DT-Developmental Testing IOT&E-Initial Operational Test and Evaluation OT-Operational Testing IOC-Initial Operational Capability

# b. Current Change Explanations -- None

### 10. (U) Performance Characteristics: a. Performance --

KEY PERFORMANCE PARAMETERS(KPPs) (Specified in AESA	Development <u>Estimate (SAR)</u>	Appro Program <u>Obj/Thro</u>	oved (APB) <u>eshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Interoperability	Achieve all IERs	Achieve / all IERs/ /	Achieve All Critical	TBD	Achieve All IERs
(b)(1)	(b)(1)			TBD	(Ch-1)
Muliple (Air-to-Air)			-	TBD I	
SAR Imagery Expand				TBD	
Horizantal TLE 1.(b)(1) Range (fee	t			TBD	
(b)(1) Range (feet CEP)	1-1-			TBD	113
Availability (A sub O /10/11	>>			TBD	

(U) Section 10 ACRONYM LIST (in order of appearance)

10a. (U) Performance Characteristics (Cont'd):

SAR-Selected Acquisition Report 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): Changed from (b)(1) due to update of Weapon Quality Track Analysis for CDR.

### 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	494.8	494.8	471.3
	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 \$	494.8	494.8	471.3
	Escalation	30.4	30.4	29.0
	Development (RDT&E)	(30.4)	(30.4)	(29.0)
	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	525.2	500.3

(U) Procurement funding related information for this program is included in the  $\rm F/A-18E/F$  SAR.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	<u>N/A</u>	<u>N/A</u>	0
Total	N/A	N/A	0

(U) The program of record at this time is 367 radars based on the current annual aircraft mix and quantities. Changes to the annual aircraft mix and quantities could change the quantity.

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### 11b. (U) Total Program Cost and Quantity (Cont'd):

LRIP quantities approved at the 2001 Navy Program Decision Meeting were 8 radars in FY03, 12 in FY04, and 22 in FY05. These are above the 10% guidline for LRIP quantities. This was documented in the Acquisition Strategy approved April 11, 2001 with the rationale that this is necessary in order to have continuity in production and to realize economic order requirements.

### c. (U) Foreign Military Sales --

An OSD Executive Committee approved releasability of AESA as installed on the FA-18E/F in June 2001. The program office is working toward potential future sales of the Super Hornet. Likely Foreign Military Sales (FMS) customers include Malaysia, Singapore and Austrailia.

d. (U) Nuclear Costs --None

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#### 12. (U) Unit Cost Summary:

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		(JUN	Baseline 2001 APB)(Dec.	Estimate 2001 SAR)	Percent <u>Change</u>
a.	<pre>(U) Prog. Acq. Unit Cost (PAUC)   (1) Cost (FY 2000 BY\$)   (2) Quantity</pre>		494.8 0	471.3 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

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(U) Procurement funding related information for this program is included in the F/A-18E/F SAR.

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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	525.2	-	-	525.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-164	-
Schedule	-	-	-	-
Engineering	_	-	-	-
Estimating	-	-	-	-
Other	, –	-	-	~
Support	-	-		-
Subtotal	-		-	-
Current Changes:				
Economic	+0.8	-	-	+0.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-25.7	-	-	~25.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-24.9	-	_	-24.9
Total Changes	-24.9	_	-	-24.9
Current Estimate	500.3	-	-	500.3

(U) Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	494.8	-		494.8
Previous Changes:		1		
Quantity	-	-	-	-
Schedule	~	-	-	-
Engineering	-	- 1	-	
Estimating	-	-	-	_
Other	-		_	- 1
Support	-	-	-	-
Subtotal	-	400		-
Current Changes:				
Quantity	-	-	-	
Schedule	-	-	-	-
Engineering	-	-	-	+
Estimating	-23.5	-	-	-23.5
Other	-		-	-
Support	-		-	-
Subtotal	-23.5	-	-	-23.5
Total Changes	-23.5	-	~**	-23.5
Current Estimate	471.3	-	-	471.3

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# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations --

(1)	BDT&F		(Dollars i <u>Base-Year</u>	n Millions) <u>Then-Year</u>
(1)	Revised escalation indices. Revised estimate to reflect (Estimating)	(Economic) actual cost.	N/A -23.5	+0.8 -25.7
	RDT&E Subtotal		-23.5	-24.9

# 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		Changes							
Dev Est		c							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		Changes							PUC
Dev Est		c						Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A									N/A

# c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 2000	N/A	FEB 2001
Milestone III	N/A	JAN 2007	N/A	JAN 2007
IOC	N/A	SEP 2006	N/A	OCT 2006
Total Cost	N/A	525.2	N/A	500.3
Total Quantity	N/A	0	N/A	0
Prog Acg Unit Cost	N/A	0.0	N/A	0.0

### 15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E (U) <u>AN/APG</u> MCDONNELL DOUG	 -79 EMD: SLAS CORP - ST	LOUIS MO	Initial ( <u>Target</u> (	Contract Pr <u>Ceiling</u>	ice <u>Oty</u>
N00019-01-C-0 Award: Februa	074, CPFF/AF ry 8, 2001	01	\$324.5	N/A	0
Dellultizea:	epruary 8, 20	01			
Current	Contract Pric	e	Estimated Pr:	ice At Comp	letion
Target	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	Manager
\$324.5	N/A	0	\$324.5	\$3	24.5
			<u>Cost Variance</u>	<u>Schedule V</u>	ariance
Previous Cumu	lative Varianc	es	N/A	N/	A
Net Chang	e e	e	\$-4.3	\$-1.	<u></u> 3

### Explanation of Change:

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(U) Cost Variance led by Northrop Grumman subcontract (\$3.0M) because icing problems for the Environmental Control System were more complex than expected. Minimum buy quantities for the Raytheon Receiver/Exciter also contributed to the variance. Raytheon is driving the schedule variance, driven primarily by the development of the Fibre Channel Switch.

(U) Contract Comments: Options not included as priced effort

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# 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY99-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	Total
RDT&E	103.2	110.2	107.1	179.8	500.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	_		-
Total	103.2	110.2	107.1	179.8	500.3

b. Annual Summary -- AESA

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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			1	2.5	2.5
2000		*		3.6	3.6
2001				94.4	97.1
2002				105.5	110.2
2003				101.0	107.1
2004			1	69.2	74.6
2005				61.4	67.5
2006			4	33.3	37.3
2007		1		0.4	0.4
Subtotal		1		471.3	500.3

(U) Procurement funding related information for this program is included in the F/A-18E/F SAR.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total				471.3	500.3

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### 17. (U) Delivery/Expenditure Information:

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a. (U) Deliveries To Date - None.

- (U) Percent Total Program Quantities Delivered: N/A
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 109.6
  - (U) Percent Total Program Expended: 21.9%

### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --Current Program: AN/APG-79 Service Life = 20 Years 282 Radars 12 Aircraft/Squadron 35 Flight Hours/Aircraft/Month MTBD = 323 Hours Two Level Maintenance Concept - Operational to Organic Depot

Antecedent Program: AN/APG-73 No stand alone estimate was incorporated as part of the F/A-18E/F aircraft total operating and support costs.

Date of estimate: February 2001 Source: AIR-4.2 Milestone II Estimate

	AESA	Avg Annual Cost Per
	F/A-18E/F AESA Sq	F/A-18E/F AN/APG-73
Cost Element	12 A/C Squadron	Sq 12 A/C Squadron
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

b. (U) Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

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# 18b. (U) Operating and Support Costs (Cont'd):

Total O&S Cost	AESA	Avg Annual Cost Per
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

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### SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: JSIMS

### AS OF DATE: December 31, 2001

SUBJECT	PAGE
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DSTATS Environment

### 1. Designation and Nomenclature (Popular Name) : Joint Simulation System (JSIMS)

2. DoD Component : OSD

" OOD-4 JSIMS

Joint Participants: USA (WARSIM), USAF (NASM), USN (Maritime), USMC, JSIMS JPO, DIA (DOMINO), NRO (NATSIM), NSA (J-SIGSIM), DMSO (RTI)

### 3. Responsible Office and Telephone Number :

PM, JSIMS 12000 Research Parkway, Suite 300 Orlando, FL 32826-3276 BG Stephen M. Seay Assigned: October 1, 2001 DSN 970-3524; COMM (407) 384-3524 Stephen_Seay@stricom.army.mil

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# 4. Program Elements/Procurement Line Items :

RDT&E: PE 0204571N PE 0206313M PE 0207601F PE 0301011G PE 0303140G PE 0305885G PE 0604715A PE 0604738A PE 0604742A PE 0902740J **PROCUREMENT:** APPN 1810 ICN 0204571N (Navy) APPN 1109 ICN 0206497M (Navy) APPN 3080 ICN 0207601F (Air Force) APPN 2035 ICN 0537020A (Army)

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### 5. References :

1 A. J.

SAR Baseline (Development Estimate) : DAE Approved Acquisition Program Baseline (APB) dated March 21, 2001.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated March 21, 2001.

### 6. Mission and Description :

The Joint Simulation System (JSIMS) is a distributed, constructive wargaming simulation designed to provide a readily available, operationally valid, synthetic environment for Commanders in Chiefs (CINCs), components/commands, other Joint organizations and the Military Services to conduct Joint Training Exercises. It will interface with command, control, communications, computers, and intelligence (C4I) functions and equipment in the field. JSIMS is a multi-Service/Agency development effort led by the JSIMS PM in Orlando, Florida.

JSIMS will contain representations to meet the requirements of Joint and Service training, software infrastructure, and interfaces augmented by representations of land, air/space, and maritime warfare functions. These representations will be provided by Executive Agents (EAs) and Development Agents (DAs) from the Defense Modeling and Simulation Office (DMSO), the U.S. Army, the U.S. Air Force, and the U.S. Navy for each warfare domain. The USMC DA provides a leverage-based program through the reuse of other domain's developmental activities. In addition, EAs from the Defense Information Systems Agency (DISA), U.S. Transportation Command (USTRANSCOM), and U.S. Special Operations Command (USSOCOM) represent the functions of C4, defense transportation systems, and special operations, respectively. The Defense Intelligence Agency (DIA) acts as both an EA and DA. As a DA, DIA provides national level intelligence (e.g., the U.S. intelligence processes and foreign representation) along with the National Security Agency (NSA) and National Reconnaissance Office (NRO) providing their associated capabilities. JSIMS will employ the DoD High Level Architecture (HLA) for modeling and simulation (M&S) interoperability. The Alliance Executive (AE) works directly for PM JSIMS and leads JSIMS integration, test, training and deployment activities.

JSIMS Components Warfighters' Simulation (WARSIM) 2000	Development Agent U.S. Army, Simulation, Training, and Instrumentation Command (STRICOM)	Executive Agent U.S. Army	
National Air & Space	U.S. Air Force, Electronic	U.S. Air Force	
Model (NASM)	Systems Command (ESC)		
JSIMS-Maritime (JSIMS-M)	Space and Naval Warfare	U.S. Navy	

### 6. Mission and Description (Cont'd) :

Systems Command (SPAWAR)

US Marine Corps (USMC)	U.S. Marine Corps Systems Command (MARCORSYSCOM)	U.S. Marine Corps
Joint Models	Joint Development Agent	Joint Warfighting
	(JDA)	Center (JWFC)
DIA Object-oriented Model of Intelligence Operations (DOMINO)	Defense Intelligence Agency (DIA)	DIA
Joint Simulation System Signals Intelligence Simulation (J-SIGSIM)	National Security Agency (NSA)	DIA
National Simulation (NATSIM)	National Reconnaissance Office (NRO)	DIA
High-Level Architecture Run Time Infrastructure (HLA-RTI)	Defense Modeling & Simulat Office (DMSO)	ion

#### 7. Executive Summary :

In FY 1994, the first JSIMS Memorandum of Agreement (MOA) resulted in the establishment of the JSIMS Joint Program Office (JPO). Initial partner programs included the Air Porce's National Air and Space Warfare Model (NASM), the Army's Warfighters' Simulation 2000 model (WARSIM 2000), and the Navy's Maritime Component (JSIMS Maritime). Other programs later joined JSIMS including the National Reconnaissance Office's National Simulation (NATSIM), the National Security Agency's Joint Signals Intelligence Simulation (J-SIGSIM) and the Defense Intelligence Agency's DOMINO. In February 1996, an acquisition strategy was approved and in 1998 Milestone I/II was approved. During the fall of 1999, a Senior Technical Review Board recommended both technical and management changes to the program resulting in a technical rebaselining and an Acquisition Decision Memorandum directing changes to the program. The Defense Modeling and Simulation Office became a partner at this time. The initial Acquisition Program Baseline (APB) for JSIMS as an ACAT ID program was approved on March 21, 2001 and a new Acquisition Strategy was apprized August 13, 2001.

JSIMS continues to progress to a successful Version Release (VPC 1.) Block : in June 2002. V2.0 (Block 2) schedule has been adjusted to account for Service events such as supporting an Army pre-IOT&E exercise in May 2003 with final

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### 7. Executive Summary (Cont'd) :

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V2.0 release in March 2004. The original program and Service program estimates are being updated to support a total life cycle cost estimate. Expected completion of the LCCE is March 2002. A Cost and Economic Analysis Center (CEAC) review of the cost status, an Army Systems Acquisition Review Council (ASARC) review, and the Defense Acquisition Board (DAB) are scheduled for completion by late May 2002. Other acquisition documents continue to be generated and reviewed in preparation for this review.

The JSIMS Operational Requirements Document (ORD) VR 2.0 (Block 2) Key Performance Parameters (KPPs) are complete and are being staffed through the Service and Joint Staff offices. Given some specific JSIMS and Service shortfalls in FY03, all requirements for V2.0 are under review for applicability and timing versus Service Title 10 training requirements and schedule.

The JSIMS Test Working-Level Integrated Product Team (WIPT' received notification in November 2001 that Air Force Operational Test and Evaluation Command (AFOTEC) declined to serve as Operational Test Agency. Navy's Commander Operational Test and Evaluation Force (COMOPTEVFOR) accepted the Operational Test Agency role on January 16, 2002. JSIMS and OPTEVFOR personnel will meet in February 2002 to detail any conceptual changes to the Operational Test strategy and will determine the estimated time and resources that will take to re-staff and approve the Test and Evaluation Master Plan (TEMP). OPTEVFOR will present a revised operational test cost estimate to DOT&E in mid March 2002.

JSIMS remains on track with an aggressive integration schedule. The first three Federation Integration Events (FIE1, FIE2 and FIE3) were completed in March, July, and October 2001 respectively. FIE4 is currently in process and continues until March 2002. FIE4 is followed by a user assessment, then the final FIE5 from April - June 2002. JSIMS will support a Joint Functional Assessment at the National Simulation Center, Ft Leavenworth, KS, in June 2002 for determining future path of the Army WARSIM program. An end-to-end systems test completes pre-V1.0 development and integration activities. V1.0 delivery meets functionality defined for a CINC/Joint Task Force and Components training event.

### 8. Threshold Breaches :

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	NO
MILCON	No
0&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	i	No	
Average	Procurement	Unit	Cost		No	

### 9. Schedule:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
MS I/II	OCT 1998	OCT 1998	OCT 1998(Ch-1)
Version 1.0			
Federate Integration Events	FEB 2001	FEB 2001	FEB 2001
System Functional Assessment	OCT 2001	OCT 2001	DEC 2001(Ch-1)
Federation Integration Events	FEB 2002	FEB 2002	JUN 2002(Ch-2)
Federation Systems Test	MAR 2002	MAR 2002	JUN 2002(Ch-2)
Version Release 1.0	MAR 2002	MAR 2002	JUN 2002
Operational Assessment	AUG 2002	AUG 2002	NOV 2002(Ch-2)
MOT&E/IOC Training Event	MAR 2003	MAR 2003	MAR 2003
Milestone C	AUG 2003	AUG 2003	AUG 2003
Version Release 2.0	SEP 2003	SEP 2003	MAR 2004
Version Release 3.0	MAR 2005	MAR 2005	SEP 2005(Ch-3)
Version Release 4.0	SEP 2006	SEP 2006	MAR 2007(Ch-3)
Version Release 4.0	SEP 2006	SEP 2006	MAR 2007(Ch-3)

Note:

All event, assessment and test entries show completion dates.
Program Milestones prior to the December 1999 Acquisition Decision Memorandum designating JSIMS an ACAT 1D program are as follows:
22 Jul 1994 Mission Needs Statement.
3 Jun 1995 Milestone I.
9 Oct 1998 Milestone II.

Definitions/Acronyms:

9a. Schedule (Cont'd) :

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HLA - High-Level Architecture. MOT&E - Multi-Service Operational Test & Evaluation. RTI - Runtime Infrastructure. Federate - Software program that participates as a peer in a HLA environment. Federation - Collection of federates operating together.

Elaboration:

 Federate Integration Event - Integrating components within a federate and testing the exchange of data between a federate and RTI.
 System Functional Assessment - Early user assessment/validation.
 Federation Integration Event - Integrating evolving functionality and testing the exchange of data between multiple federates via the RTI.
 Version Release constitutes completion of the development activity.
 IOC Training Event is the event during which MOT&E will occur. Per the Joint Warfighting Center direction, the IOC Training Event has been scheduled for Feb/Mar 03 to allow the IOC Training Event/MOT&E to be conducted during an USJFCOM Unified Endeavor Joint Task Force Exercise.

b. Current Change Explanations --(Ch-1) The milestone for the System Functional Assessment was changed from Jan 02 to Dec 01 to reflect the actual completion date.

The milestone for the MS I/II was added to reflect the actual date completed.

(Ch-2) The following technical demonstration milestones were impacted by the need for an additional 3 months in Federation Integration.

Federation Integration Events from Feb 02 to Jun 02 Federation Systems Test from Mar 02 to Jun 02 Operational Assessment from Aug 02 to Nov 02

(Ch-3) The following milestones were slipped to provide a version release date that would bring current cost estimates into closer alignment with funding.

Version Release 3.0 from Mar 05 to Sep 05 Version Release 4.0 from Sep 06 to Mar 07

# 10. Performance Characteristics : a. Performance --

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		Approved	Demon-	
Tailorability - Set	Development Estimate (SAR) Spt full	Program (APB) Obj/Threshold Spt full/ Spt tng	strated <u>Perf</u> TBD	Current Estimate Spt full
of Operational Tasks and Conditions (KPP1)	range of UJTL tasks/ condi- tions in CJCS Manual 3500.04 series	<pre>range of/ of CINC UJTL / JMETL &amp; tasks/ / Svc TL condi- / items, tions / using in CJCS / CINC/JTF Manual / TWCFC &amp; 3500.04 / JUCL series /</pre>		range of UJTL tasks/ condi- tions in CJCS Manual 3500.04
Composability -	Full	Full / Inter-	TBD	Full
Trainer/User C4I	integra-	integra-/ face	100	integra-
System Interface	tion	tion / with:		tion
(KPP2)	w/all	w/all / COP-GCCS		w/all
	Joint,	Joint, / JMCIS,		Joint,
	Svc, and	Svc, and/ CTAPS/		Svc, and
	CAI eve	CAT eve / LAD		Sp ops Cal sve
	includes	includes/ ATCCS.		includes
	voice	voice / JWICS,		voice
	recog-	recog- / and		recog-
	nition	nition / GTN		nition
Composability -	Spt Svc	Spt Svc / Provide	TBD	Spt Svc
Distributed	distrib	distrib / distrib		aistrib
Environment (KPP3)	nloved	ployed / JSB to		nloved
BRAILORMETIC (REL)	platform	platform/ geo		platform
	& units	& units / separate		& units
	to allow	to allow/ partici-		to allow
	exercise	exercise/ pants &		exercise
	at geo	at geo / spt		at geo
	remote	remote / distrib		remote
	sites	SILEB / LO / simitre		sites
		/ linked		
		/ via		
		/ Svc-dev		
		/ inter-		
		/ face		
System Uptime Ratio	Achieve	Achieve / Sys	TBD	Achieve
(KFF4)	yb≰ sys avail	avail / 90%		258 575 avail
	during a	during a/ during a		during a
	14 day,	14 day, / 14 day.		14 day,
	24 hours	24 hours/ 24 hours		24 hours
	per day	per day / per day		per day
	CAX	CAX / CAX		CAX

# 10a. Performance Characteristics (Cont'd) :

1. Tailorability - Set of Operational Tasks and Conditions (KPP 1) Threshold: Support training of CINC Joint Mission Essential Task Lists and Service Task List items, using the CINC/JTF Training with Components Functional Capability (FC J-3 Operations Minimum), which is consistent with the CJCSI 3500.02A Joint Training Master Plan, 1998 CINC Joint Fraining Plans, and the JSIMS Universal Capabilities List (JUCL).

Objective: Support the full range of Universal Joint Task List (UJTL) tasks and conditions described in Chairman of the Joint Chiefs of Staff Manual 3500.04 series.

2. Composability - Trainer/User C4I System Interface .KPP2; Threshold: JSIMS will be interoperable with the following C4I systems or programmed replacements, regardless of the HLA compliance status: Common Operational Picture (COP) of the Global Command and Control System (GCCS), Global Command and Control System -Maritime (GCCS-M), Theater Battle Management Core Systems (TBMCS), Army Tactical Command and Control System (ATCCS), Joint Worldwide Intelligence Communication System (JWICS) capable system, and Global Transportation Network (GTN) [Manual GTN interface at IOC, fully interoperable thereafter]. JSIMS threshold capability will be achieved when 100 percent of top-level Information Exchange Requirements (IERs) designated critical for JSIMS Universal Capabilities List (JUCL) Functional Capability J-3 Operations Minimum are satisfied for the listed systems.

Objective: 100 percent completion of top-level IERs. Those non-critical IERs that are not achieved by IOC will be accomplished in subsequent version releases of JSIMS. Full integration with all Joint, Service, and Special Operations C4I systems; includes voice recognition.

3. Composability - Distributed Simulation Environment (KPP 3) Threshold: Given a DOD network infrastructure, JSIMS shall provide distribution of the Joint Synthetic Battlespace (JSB) to geographically separated participants and shall support distribution to simulators that will be designed to be linked to JSIMS via Service-developed interfaces.

Objective: JSIMS should support Service distribution to deployed platforms and units to allow collaborative exercises at geographically remote sites.

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### 10b. Performance Characteristics (Cont'd) :

b. Current Change Explanations -- None

### 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
а.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	1110.8	1110.0	1126.9
	Procurement	170,8	170.8	133.0
	Flyaway	(170.8)		(133.0)
	Total Other Wpn Sys			(0.0)
	Peculiar Support	(0.0)		
	Initial Spares	(0.0)		
	Construction (MILCON)	0.0	0.0	Č. J
	Acquisition O&M	0.0	0.0	C.O
	Total FY 2001 Base-Year \$	1281.6	1281.6	1259.3
	Escalation	35.1	35.1	33.4
	Development (RDT&E)	(23.4)	(23,4)	(23.9)
	Procurement	(11.7)	(11.7)	(9.5)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	1316.7	1316.7	1293.3

Since program re-organization and ACAT ID designation in December 1999, a new Joint Cost Position (JCP) has not been completed. The JCP will be completed by March 2002 and will include a full life cycle cost estimate. As a result, the APB reflects the actual costs for all Joint, Service, and Agency program costs for JSIMS since program initiation through FY01 and budgeted cost as provided in the FY03 Presidents Budget. The APB will be updated within 90 days after the new JCP is validated.

b. Quantity --

Development	(RDT&E)	0	C	0
Procurement		1	1	1
Total		1	1	+

Note:

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Total procurement quantity of one equates to the total software development effort for all Service and Agency components as one complete system.

There is no LRIP for this program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12.	Unit	Cost	Summary	;
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	UCR Baseline (MAR 2001 APB) (De	Current Estimate c 2001 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)	1201 6	1050.0	
(2) Quantity	1201.0	1259.9	
(3) Unit Cost	1281.600	1259.900	-1.69
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	170.8	133.0	
(2) Quantity	1	1	
(3) Unit Cost	170.800	133.000	-22.13

# 13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1134.2	182.5	-	1316.7
Previous Changes:				
Economic	+3.3	+0.3		+3.6
Quantity	-	-	-	
Schedule	1	- 1	~	-
Engineering	- [	-	- 1	-
Estimating	+1.3		- 1	-1.3
Other		-	~ 1	-
Support	-	- 1	- 1	-
Subtotal	+4.6	+0.3	-	+4.9
Current Changes:				
Economic	-3.9	-0.6	- 1	-4.5
Quantity		-	-	-
Schedule			-	-
Engineering	- 1	- 1		-
Estimating	+15.9	-39.7		-23.8
Other	- 1	-	- 1	-
Support	-	-	-	-
Subtotal	+12.0	-40.3	-	-28.3
Total Changes	+16.6	-40.0	-	-23.4
Current Estimate	1150.8	142.5	-	1293.3

(Dollars in Millions)

### 13a. Cost Variance Analysis (Cont'd) :

Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1110.8	170.8	-	1281.6
Previous Changes:				
Quantity	-		- :	-
Schedule	-	-	- 1	-
Engineering		-		-
Estimating	+1.2	-	-	+1.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.2		-	+1.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-		-	-
Engineering	-	-		-
Estimating	+14.9	-37.8	-	-22.9
Other	-	-	-	-
Support	-	-	-	Charles Ser
Subtotal	+14.9	-37.8	-	-22.9
Total Changes	+16.1	-37.8	~	-21.7
Current Estimate	1126.9	133.0	-	1259.9
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A change in the FY03 President's Budget (PB03) for any of the nine services or agencies affects the overall JSIMS Budget. The current APB was approved in spring FY01 based on the FY01 BES, prior to the completion of a program life cycle cost estimate. Several of the service and agency cost centers validated their individual cost estimates in summer FY01, which adjusted their PB03 numbers up and down in various years.

The bulk of the RDT&E increase is in the National Reconnaissance Offices FY02-05 funding, based on the independent cost agency recommendation. The O&M reduction is related to Army removing procurement funding from FY02-03 based on a change in the fielding schedule. When the Army cost estimate is validated, the procurement dollars will be reprogrammed in later years based on the new fielding plan. The JSIMS Joint Cost Position (JCP) is scheduled to be completed by March 2002, and will include a full life cycle cost estimate. The APB will be updated after the new JCP is complete.

b. Current Change Explanations --

171	DOTED	Base-Year	Then-Year
(1)	Revised escalation indices. (Economic)	N/A	-3.9
	Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.7

# 13b. Cost Variance Analysis (Cont'd) :

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	b. Current Change Explanations		
	Revised estimate to reflect changes introduced by the FY 2003 President's Budget. (Estimating)	(Dollars Base-Year +14.2	in Millions) Then-Year +15.2
	RDT&E Subtotal	+ 14.9	+12.0
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	- D. 7
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Revised estimate to reflect changes introduced by the FY 2003 President's Budget. (Estimating)	37.7	-39.6
	Procurement Subtotal	-37.B	-40.3

# 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current	SAR Base	line to	Current	Estimate	5			
PAUC				Cha	anges			PAGC
Dev Est					-			Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt   Total	
1316.70	-0.900				-22.50		23.4	0 1293.30

### b. Procurement Unit Cost (PUC) History

Current	SAR Base	line to Cu	irrent E	Estimate						
PUC				Chai	nges				i pl	IC .
Dev Est									Cur	£st
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		-
182.50	-0.300	~ ~			-39.70			-40.00	142	2,50

### 14c. Unit Cost and Other History (Cont'd) :

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone C	N/A	AUG 2003	N/A	AUG 2003
IOC	N/A	MAR 2003	N/A	MAR 2003
Total Cost	N/A	1316.7	N/A	1293.3
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	1316.7	N/A	1293.3

Note:

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JSIMS is a software development program which is following an evolutionary "block" acquisition strategy. Future Block Milestones past Block 1 and IOC will be address in annual SAR updates.

### 15. Contract Information (Then-Year Dollars in Millions):

a. Procur	ement	Initial	Contract Price
JSIMS Land	(WARSIM):	Target	Ceiling Qty
Lockheed Mart	in, Orlando, FL		
N61339-95-C-0	051, CPAF	\$141.2	N/A 1
Award: May 1,	1995		
Definitized:	April 1, 1996		
Current	Contract Price	Estimated Pr	ice At Completion
Target	Ceiling Oty	Contractor	Program Manager
\$171.3	N/A 1	\$205.8	\$205.0
		Cost Variance	Schedule Variance
Previous Cumu	lative Variances	\$-10.5	\$-5.9
Cumulative Va	riances To Date (12/31/01	) \$-21.0	\$-10.9
Net Chang	e	Ş-10.5	Ş-S.O

Explanation of Change:

The net unfavorable cost and schedule variances are primarily due to an inability to take full credit for completed forward plan efforts that will not be baselined until Over Target Baseline (OTB) Estimate to Complete (ETC) is resolved. Efforts are to prioritize contractor requirements and functionality in parallel with schedule adjustements/contract restructure to determine a viable plan. No impact to Version Release 1.0 is expected.

# 15. Contract Information (Cont'd) :

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			Initial	Contract Pri	ice
WARSIM Int	el Model:		Target	Ceiling	Ctv
Veridian-MRJ,	Fairfax, VA				
DAAH01-97-C-A	012, CPAF		\$79.5	N/A	1
Award: April	18, 1997		+ · - · -	,	-
Definitized:	April 18, 1997				
Current	Contract Price	e	Estimated Pr	ice At Compl	etion
Target	Ceiling	Qty	Contractor	Program	Manager
\$45.5	N/A	1	\$40.7	\$	41.3
			Cost Variance	Schedule Va	ariance
Previous Cumulative Variances Cumulative Variances To Date (12/31/01)			\$0.9	Ş-0,	3
			\$-0.1	\$-0.2	2
Net Chang	e		\$-1.0	\$0.1	Ī

### Explanation of Change:

The cumulative unfavorable cost and schedule variances are primarily due to additional effort caused by changes to integration and test events and the delay of the JSIMS Alliance events which has also resulted in a delay of IOC.

		Initial (	Contract Price	
NASM:		Target	Ceiling Qty	,
Raytheon, Mar	lborough, MA			
F19628-97-C-0	016, CPAF	\$77.6	N/A 1	
Award: March	3, 1997			
Definitized:	March 3, 1997			
	Genture et Derá en	Perimenal De		
Current	Contract Price	Escimated Pr	ice At completion	
Target	Ceiling Qty	Contractor	Program Manag	er
\$77.6	N/A 1	\$68.3	\$68.5	
		Cost Variance	Schedule Varianc	е
Previous Cumu	lative Variances	\$-0.4	\$-0.6	
Cumulative Va	riances To Date (12/31/01)	\$-0.5	\$-0.6	
Net Chang	e	S-0.1	\$0.0	
	-			

### Explanation of Change:

The slight cumulative unfavorable cost and schedule variances to date are due to more resources than planned for Federation Integration Event (FIE) preparation and support. Corrective actions include a plan to restructure support to FIE 4 and FIE 5.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY93-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To Complete (FY04-07)	Total
RDT&E	589.0	159.3	118.9	283.6	1150.8
Procurement	8.9	5.3	25.9	102.4	142.5
MILCON	-	-	-	-	-
OSM	-	-		-	-
Total	597.9	164.6	144.8	396.0	1293.3

b. Annual Summary -- JSIMS

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Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year Ş
1995				7.5	7.0
1996				11.9	11.3
1997			and the second data and the se	21.8	21.0
1998				24.1	23.4
1999				25.0	24.6
2000				24.2	24.1
2001				43.9	44.5
2002		1		5.6	5.8
2003				3.7	3.9
2004				3.8	4.1
2005				3.8	4.1
2006				2.8	3.1
2007				2.7	3.1
Subtotal				180.8	180.0

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1997				3.7	3.6
1998				15.5	15.0
1999				17.4	17.1
2000				13.6	13.5
2001				15.6	15.8
2002				17.2	17.7
2003				16.4	17.2
2004				13.8	14.7

# 16b. Program Funding Summary (Cont'd) :

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Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
2005				9.7	10.5
2006				7.3	8.1
2007				7.2	A.1
2008	and a state of the				
2009					<ul> <li>Else of the second</li> </ul>
Subtotal				137.4	141.3

Appropriation: 2040 - Research, Development, Test - Eval, Army

Fiscal Year	Otv	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
1993	The state of the second s			2.3	2 2.0
1994		and many contraction - property a lighter.	1	3.3	2.8
1995				5.3	4.5
1996		and the second sec		11.4	10.8
1997	and the second s			25.8	3 24.8
1998				48.1	47.3
1999				39.1	38.5
2000	and the second sec		1. 1. Marcal and the second	59.6	59.3
2001				48.0	48.6
2002				89.6	92.1
2003			1	66.5	70.0
2004			1	54.5	58.0
2005				30.9	33.5
2006				30.2	33.4
2007			1	30.7	34.6
2008		The first same transfer and the second			for a measurement of the latest
2009	· · · · · · · · · · · · · · · · · · ·			1	
Subtotal				546.5	560.9

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 S
1997		1	4	13.3	12.8
1998		and the second s		24.9	24.1
1999				22.9	22.5
2000				24.2	24.1
2001				30.3	30.7
2002			1	38.0	39.1

# 16b. Program Funding Summary (Cont'd) :

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
2003				23.3	24.4
2004				19.3	20.5
2005				16.1	17.5
2006				9.4	10.4
2007				5.6	6.3
2008					and a second
2009					and a shake a star wards to a
Subtotal			[	227.3	232.4

Appropriation: 9991 - Other RDT&E Funding

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1998				3.0	2.9
1999				3.9	3.8
2000				3.8	3.8
2001				4.0	4.1
2002				4.5	4.6
2003				3.3	3.4
2004				3.3	3.5
2005				3.1	3.4
2006				3.1	3.4
2007				2.9	3.3
2008					an a second s
2009				a segue a second di sedali a	
Subtotal		.1	· · · ·	34.9	36.2

9991 - NSA (J-SIGSIM) Program RDT&E funds.

Appropriation: 1109 - Procurement, Marine Corps

# Flyaway Flyaway

Fiscal Year	Qty	FY 2001 Dollars Nonrec	FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year 3
2003			1.4	1.4	1.5
2004			1.5	1.5	1.6
2005			1.4	1.4	1.5
2006			1.4	1.4	1.5
2007			1.3	1.3	1.5
2008					a market i app i a range da se a se

# 16b. Program Funding Summary (Cont'd) :

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Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
2009					
Subtotal	1		7.0	7.0	7.6

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
1999			1.7	1.7	1.7
2000			1.0	1.0	1.0
2001			1.3	1.3	1.3
2002			1.7	1.7	1.8
2003			1.0	1.0	1.1
2004			2.7	2.7	2.9
2005			2.0	2.0	2.2
2006			2.3	2.3	2.5
2007			2.4	2.4	2.7
2008					
2009					
Subtotal			16.1	16.1	17.2

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
2003		1	19.4	19.4	20.4
2004			54.2	54.2	58.0
2005			13.5	13.5	14.7
2006			0.5	0.5	0.6
2007			8.5	8.5	9.6
2008					
2009					
Subtotal		1	96.1	96.1	103.3

# 16b. Program Funding Summary (Cont'd) :

. . .

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 S
1999			1.2	1.2	1.2
2000	· · · · · · · · · · · · · · · · · · ·		0.7	0.7	0.7
2001			2.9	2.9	3.0
2002			3.4	3.4	3.5
2003			2.8	2.8	2.9
2004			0.7	0.7	0.7
2005			0.7	0.7	0.8
2006			0.7	0.7	0.8
2007			0.7	0.7	0.8
2008			1		
2009			1		
Subtotal			13.8	13.8	14.4

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$ Th	Total Program en-Year 3
OSD			·	180.8	180.0
Navy			23.1	160.5	166.1
Army	1		96.1	642.6	664.2
USAF			13.8	241.1	246.8
Other Funding				34.9	36.2
Grand Total	1		133.0	1259.9	1293.3

# 17. Delivery/Expenditure Information :

a. Deliveries To Date

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): \$ 463.9

Percent Total Program Expended: 35.9%

### 18. Operating and Support Costs :

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a. Assumptions and Ground Rules --

Since program re-organization and ACAT ID designation in December 1999, a new Program Office Estimate (POE) including a new life cycle cost estimate (acquisition and operating & support costs) has not been completed. The POE will be completed by the end of FY02.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Millions)

	JSIMS	A14
Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A
Total O&S Cost	JSIMS	N/A

Brs (in Millions)	N/A	N/M
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 3/21/2002 2:53:32 PM

# A-4 BLACK HAWK UPGRADE

### *** UNCLASSIFIED ***

### SELECTED ACQUISITION REPORT (RCS: DD-ALT(QLA)823) PROGRAM: UH-60M Recap/Upgrade

### AS OF DATE: December 31, 2001

SUBJECT	PAGE
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Mission and Description	2
Executive Summary	2
Threshold Breaches	4
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INDEX

### 1. Designation and Momenclature (Popular Name) : UH-60M Recapitalization/Modernization

2. DoD Component : Army

#### 3. Responsible Office and Telephone Mumber :

Utility Helicopters Project Office SFAB-AV-UH-M Program Executive Office Aviation Redstone Arsenal, AL 35898-5000

COL William G. Lake, Jr. Assigned: June 23, 2000 DSN 645-8938; COMM (256) 955-8938 William.Lake@uh.redstone.army.mil

### 4. Program Elements/Procurement Line Items :

RDT6E: PE 273244504 PE 273744504 (Shared) PROCUREMENT: APPN 2031 ICN AA0492 (Army) (Shared)

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MAR 1 5 2002 9

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

- 1 -

### 5. References:

SAR Baseline (Development Estimate) : DAE Approved Acquisition Program Baseline (APB) dated February 21, 2002.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated February 21, 2002.

#### 6. Mission and Description :

The UH-60M BLACKHAWK will be an improved version of the existing UH-60 BLACKHAWK utility helicopter to meet evolving warfighting concepts and ensure the system is equipped/capable of meeting operational requirements beginning in 2006 and extending beyond 2025. Improvements will enhance the future division commander's ability to conduct non-linear, simultaneous, integrated operations to decisively mass the effects of warfighting assets. As a critical system of systems, the UH-60 helicopter will provide networked digital connectivity for enhanced situational awareness and information exchange, improved external lift capability, increased range, and improved survivability to meet the maneuver commander's need to conduct distributed multidimensional operations throughout the entire spectrum of the future battlespace. Additionally, a requirement exists for an improved evacuation platform for tactical, en route patient care and evacuation. The UH-60M with the integrated MEDEVAC mission equipment package (MEP) kit will provide day/night and adverse weather emergency evacuation of casualties.

### 7. Executive Summary :

The UH-60M is a key element to the US Army Modernization Plan, which in turn has its basis in the Army Vision and its overarching modernization plan. The Modernization Plan provides a proactive course of continuous improvement supporting the National Military Strategy, Joint Vision 2010 and the Army Vision. The UH-60M modernization strategy reflects the the Army Vision and Army modernization goals, 2010 Aviation 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 UH-60M Pre-Systems Development and Demonstration Phase began with the development of the UH-60 Modernization ORD and the UH Fleet Modernization Analysis General Officier Steering Committee (GOSC) recommendation. It was comprised of PMO program definition activities, including identification of the Block 1 performance baseline, development of the Test and Evaluation Master Plan (TEMP), systems engineering plan, market research, technology assessments, and contractual and milestone documentation. The current Systems Development and Demonstration Phase follows a favorable MS B decision (April 2001) and develops ECPs for application to the UH-60L production line and

# 7. Executive Summary (Cont'd) :

1.1

recapitalization/upgrade of UH-60A/L platforms to UH-60Ms. The ECPs incorporate the UH-60M configuration baseline, as well as airframe structural improvements, and a propulsion upgrade for the UH-60A. Four test articles will be developed to determine the engineering changes and production processes required to convert UH-60As, with and without External Stores Support System, UH-60Ls, and production line aircraft, into UH-60Ms. Key reviews during this phase include the System Requirements Review (SRR), Preliminary Design Review (PDR), Critical Design Review (CDR), and Developmental Test Readiness Reviews (TRR). Contractor and Government developmental testing will comprise system demonstration prior to Milestone C. Developmental testing will be conducted to evaluate system integration and performance. The UH-60M aircraft developed during this phase will be used during airworthiness flight qualification and developmental tests to demonstrate the system in its intended environment. Modeling and simulation will be used to assess maturity and demonstrate the ability of the system to operate in a useful way consistent with the validated ORD.

The following significant accomplishments occurred during this period: The Milestone B DAB Approved Entry into System Development and Demonstration Phase in April 2001. On 5 May 2001, a CPAF contract was awarded to Sikorsky Aircraft Corporation to Develop, Integrate and Qualify Design on 4 UH-60M prototypes. During September 2001, a Systems Requirements Review was conducted with positive results. No major issues were found, and the Sikorsky Aircraft Company was allowed to proceed to the next design phase. Two UH-60A aircraft and one UH-60L aircraft were inducted at the Sikorsky facility in Troy, AL. The Air Vehicle Preliminary Design Review was conducted during December 2001. A successful Integrated Baseline Review was completed during January 2002, which confirmed the validity of the contract cost/schedule baseline.

# 8. Threshold Breaches :

· . .

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
06M	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		Approved		Current		
	Estimat	te_	(SAR)	Progra	m (APB)	Est:	Imate
Milestone B	<b>ÀPR</b>	20	01	APR	2001	APR	2001
SDD Contract Award	APR	20	01	APR	2001	APR	2001
System PDR	NOV	20	02	NOV	2002	NOV	2002
System CDR	APR	20	03	APR	2003	APR	2003
First Flight	AUG	20	03	AUG	2003	AUG	2003
Milestone C	MAR	20	04	MAR	2004	MAR	2004
LRIP Contract Award	APR	20	04	APR	2004	APR	2004
OT Start	ரா	20	05	JUL	2005	JUL	2005
OT Complete	SEP	20	05	SEP	2005	SEP	2005
Full Rate Production IPR	MAR	20	06	MAR	2006	MAR	2006
FUE	SEP	20	06	SEP	2006	SEP	2006

b. Current Change Explanations -- None

# 10. Performance Characteristics : a. Performance --

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	Development Estimate (SAR)	Aş Progr Obj/1	proved am (APB) Threshold	Demon- strated <u>Perf</u>	Current Estimate
Troop Movement					
Airspeed (Sustained Cruise) (KTAS)	175	175	/ 145	TBD	175
One Engine Inopera- tive (KTAS)	100	100	/ 100	<b>TBD</b>	100
Combat Radius (w 20 min reserve) (KM)	500	500	/ 225	TBD	500
Vertical Rate of Climb (fpm)	750	750	/ 500	TBD	750
Vertical Rate of Climb w One Engine Incoperative (fpm)	200	200	/ 100	TBD	200
Internal Lift Capa- bility (290 lbs each)	11	11	/ 11	TBD	11
External Lift					
Payload (KPP)	10000	10000	/ 4500	TBD	10000
Vertical Rate of Climb (fpm)	500	500	/ 200	TBD	500
Combat Radius (w 20 min reserve)(KM)	275	275	/ 135	TBD	275
Self-Deploy Range (nautical miles)	1260	1260	/ 1056	TBD	1260
Ballistic Protection (ground fired armor piercing (mm))	14.5	14.5	/ 7.62	TBD	14.5
Maintainability (mhrs per flight hr)	4.6	4.6	/ 5.4	TBD	4.6
Unscheduled mhrs per flight hr	1.3	1.3	/ 2.1	TBD	1.3
Interoperability (meet information exchange rqmts) (KPP)	· A11	A11	/ All / Critical	TBD I	A11

b. Current Change Explanations -- None

# 11. Total Program Cost and Quantity (Dollars in Millions):

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		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	274.2	274.2	268.7
	Procurement	10388.8	10388.8	10140.6
	Flyaway	(9856.6)		(9613.4)
	Data	(8.2)		(8.2)
	Training	(81.1)		(90.9)
	Initial Support Equipme	(19.2)		(19.2)
	Transportation	(21.2)		(21.2)
	Logistics	(70.3)		(55.6)
	Total Other Wpn Sys	(200.0)		(195.1)
	Peculiar Support	(0.0)		(0.0)
·	Initial Spares	(332.2)		(332.1)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 2001 Base-Year \$	10663.0	10663.0	10409.3
	Escalation	3999.0	3999.0	2774.2
	Development (RDT&E)	(12.5)	(12.5)	(12.1)
	Procurement	(3986.5)	(3986.5)	(2762.1)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	14662.0	14662.0	13183.5
ь.	Quantity			
I	Development (RDT&E)	4	4	4
I	Procurement	1217	1217	1217
3	rotal	1221	1221	1221

c. Foreign Military Sales -- None.

Best copy available: black box is not a redaction.

12. Unit Cost Summary :

	UCR	Current	
Bas	eline	Estimate	Percent
(FEB 200	2 APB) (Dec	2001 SAR)	Change
\UC)			
;) 10	663.0	10409.3	
	1221	1221	
	8.733	8.525	-2.38
PUC)			
5) 10	388.8	10140.6	
	1217	1217	
	8.536	8.332	-2.39
	Bas (FEB 200) (FEB 200) (F	UCR Baseline (FEB 2002 APB) (Dec AUC) () 10663.0 1221 8.733 () 10388.8 1217 8.536	UCR Current Baseline Estimate (FEB 2002 APB) (Dec 2001 SAR) AUC) (FEB 2002 APB) (Dec 2001 SAR) 10663.0 10409.3 1221 1221 8.733 8.525 PUC) (5) 10388.8 10140.6 1217 1217 8.536 8.332

# 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	-	-	-	
Quantity	-	-	-	_
Schedule	-	- !	-	[ _
Engineering	-	-	_	
Estimating	-	-	-	-
Other		-	-	-
Support	-	-	-	-
Subtotal	-	+	-	-
Current Changes:				
Economic	-0.3	-232.9	-	-233.2
Quantity	-	- 1	-	-
Schedule	-	-1190.8	-	-1190.8
Engineering	-5.6		-	-5.6
Estimating	-		-	-
Other	-	-	-	-
Support		~48.9	-	-48.9
Subtotal	-5.9	-1472.6	-	-1478.5
Total Changes	-5.9	-1472.6	-	-1478.5
Current Estimate	280.8	12902.7	-	13183.5

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# 13a. Cost Variance Analysis (Cont'd) :

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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	-	-	-	-
Engineering	-	-	-	~
Estimating	-	-	-	-
Other	_	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-243.2	-	-243.2
Engineering	~5.5	-	-	-5.5
Estimating	-	-	- ]	-
Other	-	-	-	-
Support	-	-5.0	-	-5.0
Subtotal	-5.5	-248.2	-	-253.7
Total Changes	-5.5	-248.2	-	-253.7
Current Estimate	268.7	10140.6	-	10409.3

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year (1) RDT&E Revised escalation indices. (Economic) N/A Reductions in RDTE Funding from the APB -5.5 Required funding precludes funding the dual digital flight control capability for the UH-60M. The dual digital flight controls provide significant improvements in handling and safety in tactical and degraded visual environments. (Engineering) -5.5 RDT&E Subtotal

Procurement (2) N/A Revised Escalation indices. (Economic) -232.9 Change due to shift in procurement schedule. -1190.8 -243.2 Greater quantities are to be procured in each fiscal year, than originally scheduled. (QR) (Schedule) Support period is shortened because aircraft ~5.0 -48.9 are procured earlier due to increased quantities. Aviation Combined Arms Tactical Trainer (AVCATT) added to the

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~0.3

-5.6

-5.9

# 13b. Cost Variance Analysis (Cont'd) :

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<pre>b. Current Change Explanations training estimate (requirement not included in APP) (Surport)</pre>	(Dollars in Millions) Base-Year Then-Year
Procurement Subtotal	-248.2 -1472.6

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	Changes					PAUC			
Dev Est						Cur Est			
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.01	-0.191		-0.975	-0.005			-0.040	-1.21	10.80

b. Procurement Unit Cost (PUC) History

# Current SAR Baseline to Current Estimate

PUC	Changes					PUC			
Dev Est						Cur Est			
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
11.81	-0.191	-0.001	-0.978				-0.040	-1.21	10.60

# c. Schedule, Cost, and Quantity History

c. Schedule, Cost.	, and Quantity H	istory		
	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate (PdE)	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	MAR 2004
FUE	N/A	SEP 2006	N/A	SEP 2006
Total Cost	N/A	14662.0	N/A	13183.5
Total Quantity	N/A	1221	N/A	1221
Prog Acq Unit Cost	N/A	12.0	N/A	10.8

# 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E <u>New Contract:</u> Sikorsky Aircraft Corp. Stratford CT	Initial Contract Price Target Ceiling Qty
DAAH23-01-C0053, CPAF	\$219.7 \$219.7 4
Definitized: May 2, 2001	
Current Contract Price	Estimated Price At Completion
Target Ceiling Qty	Contractor Program Manager
\$219.7 \$219.7 4	\$219.7 \$219.7
	Cost Variance Schedule Variance
Previous Cumulative Variances	\$0.0 \$-2.3
Cumulative Variances To Date (12/31/01 Net Change	$\frac{\$-0.1}{\$-0.1} \qquad \frac{\$-4.2}{\$-1.9}$

# Explanation of Change:

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Unfavorable schedule variance is due to delayed staffing to meet UH-60M requirements. Management emphasis on obtaining quality staff and putting required subcontractors for avionics on the program has resulted in the correction of some schedule variances. Recovery is expected in this fiscal year.

# 16. Program Funding Susmary (Current Estimate in Millions of Dollars):

## a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY00-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-22)	Total
RDTAB	38.3	57.8	99.1	85.6	280.8
Procurement	-	-	-	12902.7	12902.7
MILCON	•	-	-	-	-
Mao	-	-	-	-	-
Total	38.3	57.8	99.1	12988.3	13183.5

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# 16b. Program Funding Summary (Cont'd) :

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# b. Annual Summary -- BLACK HAWK Upgrade

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 2001 Dollars Nonrec	Flyaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000			9.6	9.5	9.5
2001			26.0	28.4	28.8
2002			48.1	56.2	57.8
2003			78.9	94.8	99.1
2004			39.7	51.1	54.4
2005			18.3	21.7	23.5
2006			7.0	7.0	7.7
Subtotal	4		227.6	268.7	280.8

Appropriation: 2031 - Aircraft Procurement, Army

		Flyaway	Flyaway		
		FY 2001	FY 2001	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2004	10	1.1	107.2	127.5	136.6
2005	15	0.7	143.7	152.3	166.3
2006	37	2.7	368.6	396.9	441.6
2007	36	0.5	349.1	368.5	417.8
2008	74	4.7	667.3	701.8	810.7
2009	72	1.0	640.2	669.6	788.2
2010	75	1.4	655.0	694.0	832.4
2011	83	2.0	692.2	726.2	887.6
2012	89	1.9	718.9	763.3	950.B
2013	90	1.4	714.0	753.2	955.9
2014	95	1.9	744.0	787.5	1018.5
2015	95	1.4	737.2	777.8	1025.0
2016	103	2.3	731.3	768.1	1031.6
2017	100	1.5	674.2	711.7	974.0
2018	100	1.5	670.9	708.4	987.9
2019	100	1.5	668.0	710.5	1009.6
2020	43	0.6	303.5	320.8	464.5
2021				1.8	2.6
2022				0.7	1.1
Subtotal	1217	28.1	9585.3	10140.6	12902.7

Note:

RDTE :

During FY02, \$14M was added to the BLACKHAWK Recapitalization/Modernization (273744). These funds are intended for COSSI HUMS program and are not included in the funds reflected in this SAR. Funding in FY08-10 funded the Common Engine Program and is not included in

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#### 16b. Program Funding Summary (Cont'd) :

this SAR.

APA:

APA funding (AA0492) is shared with other BLACKHAWK Modifications, such as Crashworthy External Fuel System, UH-60Q Medical Equipment Package, other safety modifications.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1221	28.1	9812.9	10409.3	13183.5

## 17. Delivery/Expenditure Information :

Plan	Actual
0	0
0	0
	<u>Plan</u> 0 0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 24.9

Percent Total Program Expended: 0.2%

## 18. Operating and Support Costs :

a. Assumptions and Ground Rules --

The maintenance concept for the UH-60M is organic, three-level maintenance with the exception of the training base. The training base will continue Contractor Logistics Support. The Active Army OPTEMPO for each aircraft is 216 annual flight hours. The Reserve Component OPTEMPO for each aircraft is 141.6 annual flight hours. Replenishment Reparables per flight hour include turn in credit for serviceable parts. The estimated service life for each aircraft is 20 years. Induction will begin in FY04, with deployment scheduled to begin 18 months later. No scheduled depot overhaul is projected.

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

	BLACK HAWK Upgrade Average Cost per	UH-60L Avg Annual Cost per
Cost Element	Flight Hour	1,000 Flying Hours
Mission Pay & Allowances	2.7	N/A
Unit Level Consumption	0.2	N/A
Intermediate Maintenance	0.1	N/A
Depot Maintenance	0.9	24.9

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# 18b. Operating and Support Costs (Cont'd) :

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b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

Cost Element	BLACK HAWK Upgrade Average Cost per Flight Hour	UH-60L Avg Annual Cost per 1,000 Flying Hours
Contractor Support	0.1	N/A
Sustaining Support	0.1	N/A
Indirect Costs	N/A	N/A
Total	4.1	24.9

Total O&S_Cost	BLACK HAWK Upgrade	UH-60L
BY\$ (In Millions)	15950.9	N/A
TYS (In Millions)	35147.0	N/A

Report Creation Date: 03/16/2002 9:16:18 AM

DOD-1 BMDS

#### SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 823) PROGRAM: BMDS

AS OF DATE: December 31, 2001

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1. Designation and Nomenclature (Popular Name): Ballistic Missile Defense System (BMDS)

# 2. DoD Component: Other

# 3. Responsible Office and Telephone Number:

Missile Defense Agency	LT GEN RONALD KADISH
7100 Defense Pentagon	Assigned: June 14,
Washington, DC 20301-7100	DSN N/A; COMM 703 69

# 4. Program Blements/Procurement Line Items:

RDT&B: PE 0603175C PE 0603880C PE 0603881C PE 0603882C PE 0603883C PE 0603884C PE 0901585C PE 0901598C PE 0604865C

PE 0604867C

PE 0604861C PE 0208865C

ned: June 14, 1999 A; COMM 703 695-6344 ronald.kadish@mda.osd.mil

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02-C-0681

## 5. References:

SAR Baseline (Planning Estimate): Secretary of Defense Memorandum dated January 2,2002 established Missile Defense Agency (MDA) and the Ballistic Missile Defense System (BMDS). President's Budget FY 2003 represents current planned activity. A BMDS baseline should be established in Fall 2002. This is a limited SAR (RDT&E only).

Approved Program: None.

## 6. Mission and Description:

The missile defense program is in transition from a multi-system to an integrated single system focus and from a requirements-based to a capability-based approach. The objective of this new approach is to acquire a single, integrated, layered BMDS that provides multiple engagement opportunities along the entire flight path of a threat ballistic missile. The advantage of this integrated, single-system approach is that it provides the engineers with significant trade space to exploit the inherent capabilities of all the elements of the system optimizing performance of the single system. This advantage allows the BMDS to employ different combinations of sensor suites, weapons, battle management and command, control, and communications (BM/C2/C) elements as an overarching, integrated capability.

The development of a layered BMDS requires the collaboration of the best and most experienced people from industry and Government. This collaboration will be accomplished through the Missile Defense National Team (MDNT). The MDNT will develop and verify BMDS designs and products through the use of a virtual model and a common test bed for all ground-, sea-, air- and space-based assets envisioned for BMDS. The definition and flow down of BMDS capability specifications resulting from MDNT efforts in BM/C2 and systems engineering integration will guide the integration of elements into the BMDS, the BMDS BM/C2 architecture, and the test bed.

The BMDS is a development only program. Individual elements may transition to the Services for production and support.

#### 7. Executive Summary:

The Secretary of Defense established a single program to develop an integrated, layered BMDS. MDA was established to develop a BMDS that layers defenses to intercept ballistic missiles of all ranges in all phases of flight--boost, midcourse, and terminal. Any production of the system or of elements of the system will be conducted by the Services. MDA will work with the Military Departments to deploy elements of the overall BMDS using an acquisition approach that capitalizes on advances in missile defense technology and continually adjusts to changes in external factors (e.g., threat, policy, and priorities), as appropriate. Technologies will be developed and tested for

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# 7. Executive Summary (Cont'd):

prototypes and test assets to provide capability at the earliest opportunity. The BMDS test bed includes prototypes and surrogates of the System elements as well as supporting test infrastructure to provide trajectory, sensing, interception, and BM/C2/C scenarios that resemble conditions under which the system might be expected to operate. It will enable testing against faster, longer-range target missiles and it will allow testing of different geometric, operational, and element configurations. As they become available, prototypes and test assets could be deployed operationally to provide early capability if directed. A decision to deploy test assets would depend upon the success of the test, the appropriate positioning of test bed components, the availability of test interceptors and other assets, and the international security environment. The test infrastructure, in other words, will have an inherent, though rudimentary, operational capability.

The BMDS architecture will be based on periodic decisions and assessments within the MDA and Department's Senior Executive Council (SEC). Annual assessments will include evaluations of element test performance, system architecture, technological and basing alternatives, and the threats. The initial goal is to provide limited protection against long-range threats for the United States and potentially all allies within the FY 2004-2008 timeframe, while delivering more advanced capabilities against shorter-range threats.

The BMDS will use a capability-based approach to ensure that militarily useful technology can be deployed as soon as practicable. The acquisition approach supports effective engineering and integration of the BMDS and ensures a transition of effective, threat-relevant system capabilities to the Services for production, deployment, and operations.

The MDA acquisition strategy will engineer and test the system using a 2-year capability block approach, with the initial introduction of elements into the expanded test bed in FY 2004. The initial BMDS capability (Block 2004) will evolve as technologies mature and are demonstrated satisfactorily in the BMDS test bed. This capability will be increased incrementally through the introduction of new sensor and weapon components and through existing capabilities upgrades and augmentation.

Bach BMDS block will be comprised of selected element and component configurations integrated into the overall System BM/C2/C. Annual decision point assessments will be made on the basis of: effectiveness and synergy within the System, technical risk; deployment schedule; costs; and threat. This progress assessment will determine whether a given developmental activity will be accelerated, modified, or terminated. Implementing changes expeditiously and prudently maximizes investment values and allows more rapid program adjustments based on threat projections and technological progress. Each subsequent block will build on and be integrated into the capabilities provided by preceding blocks that make up the BMDS. This evolutionary strategy allows MDA to put the high performance technologies in play sconer than would be possible otherwise. Once demonstrated, system elements or their components will be available for emergency use, if directed, or for transfer to the Military Departments for production as part of a standard acquisition program.

#### 7. Executive Summary (Cont'd):

The MDA allocates resources required for the BMD System which comprises System Engineering and Integration, BM/C2/C, Targets and Countermeasures, Test and Evaluation, Producibility and Manufacturing Technology, and Program Operations (which includes Headquarters Management and Pentagon Reservation). Funding in the BMDS segment provides resources to define, select, test, integrate, and demonstrate the elements in the Terminal Defense, Midcourse Defense, Boost Defense, and Sensor segments. The tasks included in this segment will benefit the BMDS, not just a particular element. This segment also includes management efforts to ensure architectural consistency and integration of the system elements within the overarching missile defense.

The terminal defense segment involves the development and upgrades of missile defense capabilities that engage short- to medium-range ballistic missiles in the terminal phase of the trajectory. Elements of this segment include Theater High Altitude Area Defense (THAAD), Patriot Advanced Capability Level 3 (PAC-3), Medium Extended Air Defense System (MEADS), and Sea-based Terminal concept definition elements (successor to the Navy Area activities). Additionally, other funded elements are Israeli Arrow Deployment Program (which includes the Israeli Test Bed) Arrow System Improvement Program, and studies via the Israeli Systems Architecture and Integration effort.

The midcourse defense segment elements engage threat ballistic missiles in the exoatmosphere after booster burnout and before the warhead reenters the earth's atmosphere. The BMDS ground-based midcourse defense and sea-based midcourse defense elements are the successor to the National Missile Defense and Navy Theater Wide programs. The sea-based midcourse activity includes a cooperative missile technology development effort with Japan.

The boost defense segment addresses directed energy (DE) and kinetic energy (KE) boost phase intercept (BPI) missile defense capabilities to create a defense layer near the hostile missile's launch point. To engage ballistic missiles in this phase, quick reaction times, high confidence decision making, and multiple engagement capabilities are desired. The development of high-powered lasers and faster interceptor capabilities is required to engineer KE and DE capabilities to provide options for multiple shot opportunities and basing modes in different geographic environments. The BMDS will demonstrate the Airborne Laser (ABL) for the Block 2004 test bed. It will define and evolve Space-based Laser (SBL) technologies. At the appropriate time, based on mature system concepts and technologies, a focused demonstration of the boost defense concept will be initiated in the test bed.

The sensor segment will have multiple mission capabilities to enhance detection of and provide critical tracking information about ballistic missiles in all phases of flight. The Space-based Infrared System-Low (SBIRS-L) element will incorporate new technologies to enhance detection; improve reporting on ballistic missile launches regardless of range or launch point; and provide critical midcourse tracking and discrimination data for the BMDS. When SBIRS-L is integrated with other space-based infrared, interceptor, and surface-based radar sensors, the BMDS will have a capability to counter a broad array of

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# 7. Executive Summary (Cont'd):

midcourse countermeasures. Moreover, SBIRS-L will not carry many of the risks associated with forward deployed ground-based sensors, which can be vulnerable to attack and which require negotiating foreign basing rights.

This initial Selected Acquisition Report (SAR) provides top-level information for the BMDS. In this regard, there are some significant improvements from last year in the President's Budget FY 2003. The RDT&E estimate in this report reflects the funding for all programs for the FY 2003-2007 Future Years Defense Program. In addition, FY 2002 Defense Appropriation dollars are included for cancellation of the Navy Area and for the initiation of follow-on-sea-based terminal defense activity; restructuring the SBIRS-L element; and redirecting SBL. As such, many program details may not be available until later in the year.

The PAC-3 program has submitted a separate SAR for procurement during this period. However, this BMDS SAR includes RDT&B funds for PAC-3 FY 2003 through FY 2007 for program improvements to be managed by MDA.

## 8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	NO
MILCON	No
06M	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 BMDS Program was initiated in January 2002. Initial baseline should be set in Fall 2002.

- 9. Schedule:
  - a. Milestones --

	Planning	Approved	Çurrent
	Estimate (SAR)	Program (APB)	Estimate
BMD System			
Develop TOG	APR 2002	N/A	APR 2002
Develop ACD	APR 2002,	N/A	APR 2002
Develop BMDS SCS	JUN 2002	N/A	JUN 2002
Develop System Evolution Plan (Block Plan)	JUN 2002	N/A	JUN 2002
Conduct Annual Review/ Update System Evolution Plan (Block Plan)	NOV 2002	N/A	NOV 2002
BLOCK 2004			
Define BM/C2 Architecture	MAR 2003	N/A	MAR 2003
Begin Integration of Block 2004 Test Bed	JAN 2004	N/A	JAN 2004
Deliver Block 2004 BM/C2 Initial Capability	JUN 2004	N/A	JUN 2004
Deliver Expanded Target and Countermeasures Options for BMDS Testing	SEP 2004	n/a	SEP 2004
Determine Block 2004 Military Utility	DEC 2005	N/A	DEC 2005
BLOCK 2006			
Deliver Block 2006 BM/C2 Capability	DEC 2005	N/A	DEC 2005
Begin Integration of Block 2006 Test Bed	JAN 2006	N/A	<b>JAN 2006</b>
Determine Block 2006 Military Utility	DEC 2007	N/A	DEC 2007

BLOCK 2008 AND BEYOND

BLOCK CONTENT GOALS:

BLOCK 2004: PAC-3, Airborne Laser test bed, GMD test bed, THAAD test bed, Sea-based Midcourse test bed

BLOCK 2006: Block 2004 with improvements plus: SBIRS-Low test bed adjunct, integrated BM/C2, THAAD

ACRONYM DEFINITIONS: ACD - Adversary Capabilities Document BM/C2 - Battle Management Command and Control GMD - Ground Based Midcourse Defense PAC - Patriot Advanced Capability SBIRS - Space Based Infared System SCS - System Capabilities Specifications THAAD - Theater High Altitude Area Defense TOG - Technical Objectives and Goals

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#### 9a. Schedule (Cont'd):

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Annual Review/System Evolution Plan (Block Plan) Update will be conducted each year.

b. Current Change Explanations -- None

# 10. Performance Characteristics:

a. Performance ---

BLOCK 2004	Planning Estimate (SAR)	Proc Obj/	pproved gram (APB) Threshold	Demon- strated Perf	Current Estimate
System Bffectiveness	Defense Against Limited Threats	N/A	/ N/A	TBD	Defense Against Limited Threats
BLOCK 2006					
System Effectiveness	Bofense Against Moderate Threats	N/A	/ N/A	TBD	Defense Against Moderate Threats
BLOCK 2008 and Beyond					
System Effectiveness	Defense Against More Complex Threats	N/A	/ N/A	TBD	Defense Against More Complex Threats

At this time, System effectiveness is a qualitative assessment of demonstrated test bed capability. It reflects the increasingly integrated system capability, which uses layered and interoperable defense capabilities to defeat threats of various ranges. It is derived from several relevant attributes such as robustness, flexibility, compatibility, demonstrability and affordability. These attributes and their relative importance will also evolve as the system capability increases. The BMDS will show progress towards the realization of a fully integrated interoperable and affordable layered defense against ballistic missiles of all ranges. These defenses will include air, land, sea and space-based capabilities.

Block 2004 planned capabilities include Ground-based defense against short range missiles, limited ground-based defense against long range missiles and limited boost phase defense.

Block 2006 will expand the 2004 capability with an area defense capability against short and medium range missiles and improved ground-based defense against long range missiles.

Block 2008 and beyond capabilities will continue to expand system effectiveness through:

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# 10a. Performance Characteristics (Cont'd):

Improved layered defenses (increased segment coverage, basing modes and threat range coverage)
Enhanced interoperability and battle management and command and control (ability to share data, cue and eventually provide fire control)
Ability to provide mutual support (synergistic capability of collective performance)
Improved sensor suites (improved discrimination, track and fire control)
Improved military utility and integration into the total defense architecture

#### b. Current Change Explanations -- None

## 11. Total Program Cost and Quantity (Dollars in Millions):

		Planning	Approved	Current
<b>a</b> .	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	44740.1		44740.1
	Procurement	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
	Acquisition O&M	0.0		0.0
	Total FY 2002 Base-Year \$	44740.1	*	44740.1
	Escalation	2477.0		2477.0
	Development (RDT&E)	(2477.0)		(2477.0)
	Procurement	(0.0)		(0.0)
	Construction (MILCON)	(0.0)		(0.0)
	Acquisition O&M	(0.0)		(0.0)
	Total Then Year \$	47217.1		47217.1

The BMDS is an RDT&E only program and does not have a system cost estimate. The planning and current estimates above are based strictly on FY 2002-2007 budgetary data. MILCON funding in the amount of \$80 million (base year) and \$85 million (then year) is included in the Future Years Defense Program for design and upgrade of test bed facilities associated with the BMDS RDT&E. This MILCON funding is not included in this SAR estimate.

BMDS RDT&E funding allocation is shown below (dollar in millions).

		Planning	Approved	Current
Base 1	Year RDT4E	stimate (SAR) P	rogram (Baseline)	Istimate
Block	2004	22823.5		22823.5
Block	2006			
and	Beyond	21916.6		21916.6

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lla. Total Program Cost an BMD System	d <u>Quantity</u> (Cont'd):	
Total FY 2002 Base-Year	44740.1	44740.1
Escalation		
Block 2004	754.9	754.9
Block 2006		
and Beyond	1722.1	1722.1
Total Escalation	2477.0	2477.0
Then Year RDT45		
Block 2004	23578.4	23578.4
Block 2006		
and Beyond	23638.7	23638.7
Total Program Then Year	47217.1	47217.1

b. Quantity --

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Development	(RDT&E)	N/A	N/A	N/A
Procurement		N/A	<u>N/A</u>	_N/A
Total		N/A	N/A	N/A

The BMDS is a development program only. Quantities for individual elements will be determined upon transition from MDA to the Services.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

# 12. Unit Cost Summary:

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Not required for Pre-Milestone B programs in accordance with Section 2433, Title 10, USC.

The BMDS is a development program only. Quantities for individual elements will be determined upon transition from MDA to the services.

## 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTLE	PROC	MILCON	TOTAL
Planning Estimate	47217.1	-	-	47217.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering		-		-
Estimating	-	-	-	-
Other		-	-	-
Support		-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	- 1	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-			
Subtotal	-	-	-	-
Total Changes	-		-	-
Current Estimate	47217.1	-	-	47217.1

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# 13a. Cost Variance Analysis (Cont'd):

Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Planning Estimate	44740.1	-	-	44740.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	~	-	-	-
Engineering	~	-	-	-
Bstimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-		-
Current Changes:				
Quantity	- ]	-	-	-
Schedule	-	-	-	-
Engineering		-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	
Subtotal		-	-	-
Total Changes	-			-
Current Estimate	44740.1	-	-	44740.1

Program was established January 2002.

b. Current Change Explanations -- None

# 14. 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.

# 14c. Unit Cost and Other History (Cont'd):

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate (PE)	Estimate(DE)	Estimate (PdE)	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	N/A	N/A
100	N/A	N/A	N/A	N/A
Total Cost	0.0	N/A	N/A	47217.1
Total Quantity	0	0	0	0
Prog Acq Unit Cost	0.0	N/A	N/A	0.0

c. Schedule, Cost, and Quantity History

Procurement quantities and specific unit costs will be covered by Element-Specific Baselines and SARs when the Element is transitioned to the Service for production.

This is a limited SAR (RDT&E only). MILCON funding in the amount of \$80 million (base year) and \$85 million (then year) are included in the Future Years Defense Program for design and upgrade of test bed facilities associated with the BMDS RDT&E. This MILCON funding is not included in the SAR estimate.

## 15. Contract Information (Then-Year Dollars in Millions):

These are legacy contracts and will be restructured to align with the planned Block developments.

ACRONYM DEFINITIONS: ABL - Airborne Laser ALI SM-3 - AEGIS Leap Intercept Standard Missile-3 BM/C3 - Battle Management Command, Control and Communications GMD - Ground-based Midcourse Defense JNIC - Joint National Integration CenterSBIRS - Space Based Infared Radar System PDRR - Program Design and Risk Reduction SE&I - Systems Engineering and Integration THAAD - Theater High Altitude Area Defense

a. RDT&E --

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BMDS, December 31, 2001

15a. Contract Information (Cont'd):

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	Initial	Contract Price
ABL PDRR:	Target	Ceiling Oty
The Boeing Company, Seattle, WA		
F29601-97C-0001, CPAF	\$1534.9	N/A
Award: November 12, 1996		
Definitized: November 12, 1996		
Current Contract Price	Estimated Pr	ice At Completion
Target Ceiling Qty	Contractor	Program Manager
\$1534.9 N/A	\$1534.9	\$1534.9
	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (11/22/01)	\$-19.5	\$-12.1
Net Change	\$-19.5	\$-12.1

# Explanation of Change:

The cumulative unfavorable cost variance is primarily overruns on the aircraft modifications efforts and laser manufacturing. The cumulative unfavorable schedule variance was caused by late hardware deliveries to the aircraft and by segment deliveries to the weapon element contractors.

Contract Comments: ABL PDRR is Airborne Laser Program Definition/Risk Reduction contract efforts.

GMD Prime:	Initial <u>Target</u>	Contract Price Ceiling Qty
The Boeing Company, Anaheim, CA HQ0006-01-C-0001, CPAP Award: December 22, 2000	\$5953.5	N/A
Definitized: January 30, 2001		
Current Contract Price	Estimated Pr	ice At Completion
Target Ceiling Qty	Contractor	Program Manager
\$8033.0 N/A	Cost Variance	Cohodulo Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/01)	\$3.0	\$-85.2

Net Change

Explanation of Change:

The cumulative cost variance is favorable and insignificant. The cumulative unfavorable schedule variance was caused by booster vehicle delays and

\$3.0

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\$-85.2

# 15. Contract Information (Cont'd):

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Pathfinder redirection activities.

Contract Comments: GMD Prime is ground missile defense prime contract effort.

SBIRS-LOW PDRR:	Initial Co <u>Target Co</u>	ontract Pr Biling	rice <u>Qty</u>
PO4701-99-C-0048, PFP	\$284.0	N/A	
Award: August 16. 1999	400000	,	
Definitized: August 16, 1999			
Current Contract Price	Estimated Price	ce At Com	oletion
Target Ceiling Qty	Contractor	Prograt	Manager
\$204.0 N/A	\$284.0	\$2	284.0
Explanation of Change:			
None.			
Cost and Schedule variance reportin FFP contract.	ng is not required of	on this	
Contract Comments: SBIRS-Low PDRR is space based infra reduction.	ared system-low pro	gram defi	nition/risk
	Initial C	ontract P	rice
SBIRS-LOW PDRR:	Target C	eiling	Qty
TRW, Redondo, CA			
F04701-99-C-0047, FFP	\$284.0	N/A	
Award: December 30, 1999 Definitized: December 30, 1999			
Current Contract Price	Estimated Pri	ce At Com	pletion
Target Ceiling Qty	Contractor	Progra	n Manager
\$284.0 N/A	\$284.0	\$	284.0

Explanation of Change:

None.

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# 15. Contract Information (Cont'd):

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Cost and Schedule variance reporting is not required on this PFP contract.

Contract Comments: SBIRS-Low PDRR is space based infrared system-low program definition/risk reduction.

THAAD DEV: Lockheed Martin Space, Sunnyvale C	Initial Contract Price Target Ceiling Oty
DASG60-00-C0072, CPAF/CPFF Award: June 28, 2000	\$4103.0 N/A
Definitized: August 30, 2000	
Current Contract Price	Estimated Price At Completion
Target Ceiling Qty	Contractor Program Manager
\$4103.0 N/A	\$4418.1 \$4418.1
	Cost Variance Schedule Variance
Previous Cumulative Variances	N/A N/A
Cumulative Variances To Date (11/2)	(01) <u>\$21.6</u> <u>\$13.7</u>
Net Change	<b>\$21.6 \$13</b> .7

Explanation of Change:

The contractor's cumulative cost and schedule variance are attributed to early completion of missile systems engineering tasks and to Boeing working ahead on design verification test, attitude control system, and divert control system.

	Initial Con	tract Price
ALI SM-3:	Target Cei	ling Qty
Raytheon Company, Tucson, AZ		
N00024-98-C5364, CPAF	\$558.0	N/A
Award: January 9, 1998		
Definitized: January 31, 1998		
Current Contract Price	Estimated Price	At Completion
Target Ceiling Qty	Contractor	Program Manager
\$558.0 N/A	\$589.4	\$591.2

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# 15. Contract Information (Cont'd):

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	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/21/01)	\$-41.5	\$-11.4
Net Change	\$-41.5	\$-11.4

Explanation of Change:

Definitized: N/A

This contract is for design and development of the guided missiles for the AEGIS LEAP Intercept (ALI) portion of the Sea-based Midcourse Defense element (former NTW). The schedule was baselined in Pebruary 2000 to reflect a revised contract schedule. The unfavorable cost and schedule variance are due to technical issues in the solid divert and attitude control system.

Contract Comments: ALI SM-3 is Aegis Leap Intercept Standard Missile-3 contract effort.

	Initial C	contract Pri	.ce
Space-Based Laser:	Target C	eiling	Qty
JV/Lockheed Boeing TRW, ,			
F04701-99-C-0026, CPAF	\$127.4	N/A	
Award: November 1, 1999			
Definitized: November 1, 1999			
Current Contract Price	Estimated Pri	ce At Compl	etion
Target Ceiling Qty	Contractor	Program	Manager
\$320.7 N/A	\$320.7	\$32	0.7
	Cost Variance	Schedule Va	riance
Previous Cumulative Variances	\$0.2	\$-2.9	>
Cumulative Variances To Date (11/26/01)	\$0.3	\$-3.9	1
Net Change	\$0.1	\$-1.0	5
Explanation of Change:			
Net cost and schedule variances are	insignificant.		
	Initial C	ontract Pri	ce
<u>SE4I:</u>	Target C	eiling	Qty
Boeing, Huntsville, AL			
HQ00060290001, CPAF	\$23.9	N/A	
Award: June 17, 2002			

Current Contract PriceEstimated Price At CompletionTargetCeilingQtyContractorProgram Manager

\$

# 15. Contract Information (Cont'd):

\$23.9	N/A
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\$

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

# Explanation of Change:

This is a letter contract with a not to exceed of \$23.9 million, with a target definitization date of 17 June 2002. Earned value reporting hasn't begun on this letter contract.

BM/C3: Lockheed Martin, Gaithersburg, MD HQ00060290002, CPAF Award: June 1, 2002 Definitized: N/A	Initial Contract Price Target Ceiling Oty \$23.0 N/A
Current Contract Price Target <u>Ceiling</u> Qty \$23.0 N/A	Estimated Price At Completion <u>Contractor</u> \$ Program Manager \$
Previous Cumulative Variances Cumulative Variances To Date Net Change	Cost VarianceSchedule Variance\$0.0\$0.0\$\$\$\$\$0.0\$0.0

# Explanation of Change:

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This is a letter contract with a not to exceed of \$23.0 million, with a target definitization date of 01 June 2002. Earned value reporting hasn't begun on this letter contract.

		Initial	Contract	Price
JNIC:		Target	Ceiling	Qty
TRW, Colorado Springs, CO				
F0560495D9001, CPAF		\$269.0	N/A	
Award: October 27, 1994				
Definitized: October 27, 1994				
Current Contract Price		Estimated H	Price At Co	mpletion
Target Ceiling	Qty	Contractor	Progi	ram Manager
\$430.0 N/A		\$		\$

BMDS, December 31, 2001

# 15. Contract Information (Cont'd):

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$9.5	\$0.0
Net Change	\$9.5	\$0.0

**Explanation of Change:** 

Net cost and schedule variances are insignificant.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u>	Budget Year (FY02)	Budget Year (FY03)	Balance To Complete (FY04-07)	Total
RDT&B	~	6969.3	6959.3	33288.5	47217.1
Procurement	•	~	-	-	-
MILCON	-	-	-	-	-
O&M	-	~	-	-	-
Total	-	6969.3	6959.3	33288.5	47217.1

b. Annual Summary -- BMD System

Appropriation: 0400 - RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				6908.5	6969.3
2003				6533.3	6690.8
2004				6970.8	7265.0
2005				7489.5	7950.1
2006				7330.5	7928.7
2007				7927.3	8737.5
Subtotal	· · · · · · · · · · · · · · · · · · ·			43159.9	45541.4

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 \$
2003				262.2	268.5
2004				439.5	458.0

# 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 \$
2005				331.5	351.9
2006				276.5	299.1
2007				270.5	298.2
Subtotal				1580.2	1675.7

Army RDT&E Funds shown are evolving changes to the Medium Extended Air Defense System (MEADS) and the Patriot Advanced Capability 3(PAC-3). The PAC-3 program SAR does not include these funds.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD				43159.9	45541.4
Army				1580.2	1675.7
Grand Total				44740.1	47217.1

# 17. Delivery/Expenditure Information:

<b>1</b> .	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): \$ 50

Percent Total Program Expended: 0.1%

As a new effort established this year, the BMDS is capturing historical data to the beginning of FY 2002.

# 18. Operating and Support Costs:

Not applicable for Pre-Milestone B programs.

Report Creation Date: 04/04/2002 8:45:52 AM

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SELECTED ACOUISITION REPORT (RCS: DD-AST(OSA)823) PROGRAM: JDAM

AS OF DATE: December 31, 2001

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1. <u>Designation and Nomenclature (Popular Name)</u>: Joint Direct Attack Munition (JDAM)

2. DoD Component: USAF

AF-14 JOAM

Joint Participants: USAF, Navy

3. <u>Responsible Office and Telephone Number</u>: AAC/YU, Bldg 11 GM-1: Joint Direct Attack Munition JPO Assid 102 West D Ave Suite 300 DSN 1 Eglin AFB, FL 32542-6807 COMM

GM-15 W. Michael Hatcher Assigned: June 5, 2000 DSN 872-3525 x3005 COMM 904-882-3525 x3005 mike.hatcher@eglin.af.mil

4. Program Elements/Procurement Line Items:

RDT6E: PE 0604618F PE 0604618N PROCUREMENT: APPN 1507 ICN 0550 (Navy) APPN 3011 ICN 353620 (Air Force)

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP).

Air Force and Navy Procurement funding does not include PIP funding. Navy Procurement funding includes BLU-109 warheads but not Joint Programmable Fuze (JPF).

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02.0-0440

JDAM, December 31, 2001

# 5. <u>References</u>:

SAR Baseline (Development Estimate): DAE Approved Acquisition Program Baseline (APB) dated September 20, 1995.

Approved Program / Production Estimate (PdE): DAE Approved Acquisition Program Baseline (APB) dated March 23, 2001.

## 6. Mission and Description:

Operation DESERT STORM confirmed the need for, and Operation ALLIED FORCE confirmed the utility of a more accurate weapon delivery capability in adverse weather conditions from medium/high altitudes. Failure to satisfy this requirement would allow the enemy to continue to take advantage of the sanctuary of weather and/or prevent United States air power from prosecuting a conflict on its own terms. The JDAM is a joint Air Force and Navy munitions program to correct these shortfalls, with the Air Force as the Executive Service. JDAM will upgrade the existing inventory of general purpose bombs (MK-84, BLU-109, MK-83/BLU-110 and MK-82/BLU-111) by integrating them with a guidance kit consisting of a Global Position System aided Inertial Navigation System (INS/GPS). JDAM will provide an accurate (13 meters) adverse weather capability. JDAM threshold aircraft are B-52H, F-22, AV-8B and F/A-18C/D. JDAM objective aircraft are B-2, B-1B, F-16, F-15E, and other aircraft. Selective Availability Anti-Spoofing Module (SAASM) integration effort will begin in 2003. An effort to develop and integrate anti-jam capabilities into the JDAM receiver will also begin in 2003. The Precision JDAM program will develop improvements for the JDAM system yielding 3 meter accuracy.

#### 7. Executive Summary:

#### **Baseline Transition**

This SAR is Phase I of a baseline transition (Dev Est to Prod Est).

#### JDAM 2000 lb/1000 lb Variants

JDAM development was a two-phased Engineering and Manufacturing Development (EMD) effort. Phase I emphasized competitive design and manufacturing processes and was completed in October 1995. Phase II emphasized full scale hardware build and flight test to verify system performance and supported OT&E. Phase II ended December 2000.

JDAM Low Rate Initial Production (LRIP) began in April 1997.

The US Navy Operational Test Force completed F/A-18 pin-lock flight testing in August 2000.

On November 2, 2000, the JDAM Joint Program Office received the General Bernard A. Schriever Award recognizing the program office as the "Best PEO Program in the Air Force for 1999."

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# 7. Executive Summary (Cont'd):

The JDAM program received approval for Full Rate Production at the Milestone III Defense Acquisition Board (DAB) Review on March 12, 2001. This was officially documented in the Acquisition Decision Memorandum signed by USD (AT&L) on March 23, 2001. The first Full Rate Production lot was awarded on March 29, 2001.

Boeing manufactured the 10,000th JDAM tail kit on May 15, 2001.

On May 17, 2001, Initial Operational Capability (IOC) was declared on the F/A-18C/D for the JDAM MK-84 and BLU-109 variants.

On October 11, 2001, the Principal Deputy Assistant Secretary (Acquisition and Management) approved initial production for the MK-83 JDAM program. On October 26, 2001, a contract was awarded for the initial buy of MK-83 JDAMs for the US Navy.

In October 2001, the F-14B successfully completed operational testing with MK-84 JDAMs.

#### JDAM MK-82 (500 lb) Variant

Congress approved a reprogramming action for development of the MK-82 JDAM on July 31, 2000. On September 8, 2000, the program office received approval for MK-82 JDAM development from the Assistant Secretary of the Air Force (Acquisition), and a contract was awarded September 22, 2000.

A successful System Requirements Review was held for the MK-82 JDAM development program in January 2001.

The Critical Design Review (CDR) for the MK-82 JDAM variant was successfully completed in December 2001.

#### Precision JDAM

In August 2001, Navy N78 directed development of a Precision JDAM, with an Initial Operational Capability (IOC) of mid FY2006.

#### Defense Emergency Response Funds (DERF)

The first increment of emergency funds were received on September 29, 2001 in support of Enduring Freedom. An Undefinitized Contract Action (UCA) was awarded on October 5, 2001 to accelerate the JDAM Lot 5 deliveries and put in place a production capacity of 1200/month.

In December 2001, we received additional funds and awarded a contract to accelerate Lot 5 deliveries to 1500/month and purchased additional tail kits to fill the production gap caused by acceleration. A facilitization contract providing the capability to continue acceleration to 3000/month was also awarded.

# 7. Executive Summary (Cont'd):

#### Foreign Military Sales (FMS)

The Government of Israel signed a Letter of Offer and Acceptance (LOA) to purchase JDAMs on February 9, 2000.

On May 31, 2000, a contract was awarded to the Boeing Company to integrate MK-84 JDAM variant onto the Israeli Air Force's Peace Marble II and III aircraft.

A contract was awarded to procure 432 JDAMs for the Government of Israel on September 29, 2000.

A contract for the first phase of JDAM integration on the new Israeli Peace Marble V aircraft was awarded on May 18, 2001.

#### 8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

	Breach					
Schedule	Schedule					
Perform	Performance					
Cost	RDT&E	Yes				
	Procurement	Yes				
	MILCON	No				
	OSM	NO				
	Program Acquisition Unit Cost (PAUC)	No				
	Average Procurement Unit Cost (APUC)	NO				

b. Nunn-McCurdy Unit Cost:

	Item			Brea	ch
Program Ac	quisition	Unit	Cost	No	
Average Pr	ocurement	Unit	Cost_	No	

# c. Explanation of Breach:

#### Schedule Breach

New schedule milestones were added in the Production Baseline dated March 23, 2001. OTSE Complete (1000 lb kit/FA-18C/D) was added with an objective date of July 2001. Milestone III (1000 lb on FA-18C/D) was added with an objective date of February 2002.

Since that date, COMOPTEVFOR has mandated that the required number of MK-83 JDAM test assets be increased from 10 to 29. These assets were not available and had to be procured. The hardware lead-time and increased scope of testing

# 8c. Threshold Breaches (Cont'd):

caused an 18-month slip to the program. Since Milestone III is based upon these test results, this date has also slipped. A Program Deviation Report (PDR) has been submitted to report the schedule breach and to request the Acquisition Program Baseline (APB) be updated.

OT&E/OPEVAL Complete (1000 lb kit/FA-18C/D) date has changed from July 2001 to January 2003.

Milestone III (1000 lb on FA-18C/D) date has changed from February 2002 to February 2003.

#### RDT&E Cost Breach

The current approved baseline does not include AF and Navy funding for the JDAM MK-82 variant. In addition, Navy Precision JDAM is not included in the approved baseline.

Funds were transferred from the Air Force procurement account for Selected Availability Anti-Spoofing Module (SAASM) integration.

A Program Deviation Report (PDR) has been submitted requesting the APB be revised to reflect these funding updates.

#### Procurement Cost Breach

During the FY2003 President's Budget cycle, a Program Decision Memorandum (PDM) and Program Budget Decision (PBD) increased AF and Navy funding in FY2003-2007 to procure additional kits. A Program Deviation Report (PDR) will be submitted to update the Acquisition Program Baseline (APB).

9. <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program: PdE	<u>Estimate</u>
Milestone 0	JUN 1992	JUN 1992	1992 אטנ
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 Onl	y FEB 1998	FEB 1998	AUG 1998
Operational Assessment	-		
Start	OCT 1995	OCT 1995	OCT 1995
Complete	MAR 1997	MAR 1997	JAN 1997

## JDAM, December 31, 2001

#### 9a. <u>Schedule (Cont'd)</u>:

	Development <u>Estimate (SAR)</u>	Approved <u>Program:PdE</u>	Current <u>Estimate</u>
CTSE/OPEVAL Complete (1000 15 Kit/F-22)	MAY 2001	N/A	N/A (Ch-2)
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	) SEP 1999	NOV 2000	FEB 2001(Ch-1)
Milestone III (1000 lb on F-22)	SEP 2001	N/A	N/A (Ch-2)
Milestone I JDAM PIP	SEP 1999	SEP 2002	SEP 2002
Milestone III (2000 lb)	APR 1998	NOV 2000	MAR 2001(Ch-1)
Exercise Lot 2 Option (LRIP)	APR 1998	APR 1998	JUN 1998
IOT&E/OPEVAL (Dedicated 2000 lb Kit) Complete	N/A	SEP 2000	SEP 2000
LRIP (1000 1b)	DEC 1997	N/A	N/A (Ch-2)
Award Lot 3 (LRIP)	N/A	JUN 1999	JUN 1999
OT&E/OPEVAL Complete (1000 lb Kit)	N/A	N/A	N/A (Ch-4)
Milestone III (1000 lb)	N/A	N/A	N/A (Ch-4)
OT&E/OPEVAL Complete (1000 lb Kit/FA-18C/D)	N/A	JUL 2001	JAN 2003(Ch-3)
Milestone III (1000 1b on FA-18C/D)	N/A	FEB 2002	FEB 2003(Ch-3)

#### Notes:

Lot 1 Decision was based on sufficient testing on B-52H, F/A-18C/D, B-2A, B-1B, and F-16C/D.

ACRONYMS: AUR - All Up Round LRIP - Low Rate Initial Production RAA - Required Assets Availability

b. Current Change Explanations --"(Ch-1) Development delays caused a slip to the operational test schedule which delayed Milestone III decision. APB change 4 dated June 1, 2000 updated the following schedule milestones.

The Initial Operational Capability (IOC) (F/A-18) date changed from September 1999 to November 2000. IOC was achieved in February 2001.

Milestone III (2000 lb) date changed from November 1999 to November 2000. The Defense Acquisition Board (DAB) granted approval for full rate production on March 12, 2001.

(Ch-2) These following schedule milestones were deleted in the Production Baseline dated March 23, 2001

OT&E/OPEVAL Complete (1000 lb kit/F-22) Milestone III (1000 lb on F-22) LRIP (1000 lb)

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## 9b. <u>Schedule (Cont'd)</u>:

(Ch-3) New schedule milestones were added in the Production Baseline dated March 23, 2001.

OTSE Complete (1000 lb kit/FA-18C/D) was added with an objective date of July 2001.

Milestone III (1000 lb on FA-18C/D) was added with an objective date of February 2002.

Since that date, COMOPTEVFOR has mandated that the required number of MK-83 JDAM test assets be increased from 10 to 29. These assets were not available and had to be procured. The hardware lead-time and increased scope of testing caused an 18-month slip to the program. Since Milestone III is based upon these test results, this date has also slipped. A Program Deviation Report (PDR) has been submitted to report the schedule breach and to request the APB be updated.

OTSE/OPEVAL Complete (1000 lb kit/FA-18C/D) date has changed from July 2001 to January 2003.

Milestone III (1000 lb on FA-18C/D) date has changed from February 2002 to February 2003.

(Ch-4) These schedule milestones have no dates in the APB and should be deleted.

OT&E/OPEVAL Complete (1000 lb kit) Milestone III (1000 lb)

#### 10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program;PdE <u>Obi/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Weather Capability	Adverse	Adverse / Adverse	Adverse	Adverse
Accuracy (CEP)				
(Meters)				
GPS Available,	13	13 / 13	8.0	13
Impact Angles >	Horizon-	Horizon-/ Horizon-		Horizon-
60 Deg	tal	tal / tal		tal
5	Targets	Targets / Targets		Targets
Inflight Re-targeting	Yes	Yes / Yes	Yes	Yes
Capability (captive carry)				
Carrier Operability	Yes	Yes / Yes	Yes	Yes

#### 10a. Performance Characteristics (Cont'd):

		App	roved	Demon-	
	Development	Progr	am; PdE	strated	Current
	Estimate (SAR)	Obj/Th	reshold	Perf	Estimate
Warhead Compatibility	MK-82,	MK-82/BL	/ NO	BLU-109,	BLU-109,
	MK-83	U-111,	/ change	MK-84.	MK-84.
		MK-83,	/	MK-83	MK-83
		Improved	/		
		1000-1b.	/		
		BLU-113/	/		
		116/117	,		
Aircraft			<i>,</i>		
Compatibility					
Bomber	8-1B,	8-18.	/ 8-52#	Yes	B-52H
	B-2	8-2	/	100	5 524
Fighter Attack	FA-18	F-16C/D.	/ / F/A-18C/	Ves	FA-18C/
	C/D	F/A-18E/	/ D. F-22	100	D.
	(MK-83).	F.	/ (MK-B3).		F-22A
	F-16	F-117A.	/ AV-88 c		AV-RR
	C/D.	F-15E.	/ F/A-18C/		A, 65
	FA-18	F-14A/B/	/ D		
	E/F.	D. P-3.	/ (MK-83)*		
	F-117A.	5-3.	/ *Thresho		
	E-15E.	JSF.	/ ld. but		
	P-3	Δ-10	/ not KDP		
	5-3	A 10 /	MOU NEE		
	5-14				
Mission Polishility	90	90	/ 90	942	90
TONM DID Accuracy	3	3	/ 3	.992 TRD	3
(CPD) (Meters)	2	5 /	, 3	100	2
(CEF) (Meters)	Advorse	Advorao	Adverse	TOD	Advorco
Capability	UU16196	Auverse /	UNACTOC	100	HUVEI DE
TDAM DID Warboad	MK - 9.2	MK-82	/ 81.11-109	TRD	p111-100
Compatibility	MK - Q 2	MY-93	/ MK-84	100	MK-6%
compacipitity	MK - 0 J	WV-02	/ MIN-04		MV-04

#### 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

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# 10a. Performance Characteristics (Cont'd):

MIL-STD-1553/1760 data bus interface to the weapon from existing aircraft stores management hardware and modified software.

(4) JDAM will be capable of operation on aircraft carriers to include withstanding 25 aircraft carrier catapult launches and arrested landings, and operating within the carriers' electromagnetic environments.

(5) Physical compatibility with the B-1B, B-2, FA-18C/D, AV-8B and B-52H were successfully demonstrated during actual fit test in EMD Phase 1. F-22A physical compatibility was also demonstrated using computerized physical fit analysis during this phase. Integration with the F-15E, F-16C/D, F-117, FA-18E/F, F-14D, S-3, and P-3 will be addressed as follow-on integration efforts. The A-6E aircraft was deleted by Chief of Naval Operations (CNO) Letter, Serial Number N880D5/4UG59112, dated 2 February 1994. The F-111F has been deleted (Reference AF/XOR Message 2601112 January 1994).

(6) F-22 compatibility will be limited to internal carriage of the MK-83/BLU-110 configuration. The AV-8B is a funded, non-key performance parameter, threshold aircraft.

(7) Mission reliability commences when the aircrew accepts the loaded aircraft and ends at weapon impact. Mission reliability for the guidance kits does not include reliability for the fuze.

ACRONYMS: CEP - Circular Error Probable

DEG – Degree

GPS - Global Positioning System

MSL - Mean Sea Level

PIP - Product Improvement Program

TBD - To Be Determined

b. Current Change Explanations --

Demonstrated Performance for Accuracy (CEP) changed from 9.5 meters to 8.0 meters. Previous value was based on development test and operational test missions. We now have lot acceptance test results that represent JDAM production assets.

Demonstrated Performance for Mission Reliability changed from .913 to .942. This is based on Free Flight and Captive Carriage Reliabilities.

# 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program: PdE	Estimate
	Development (RDT&E)	490.3	490.3	694.0
	Procurement	2090.6	1810.0	2696.7
	Hardware	(1638.9)		(2417.6)
	Tooling & Test Equipme	n (7.9)		(0.0)
	System Engineering & P	r (40.5)		(0.0)
	Containers	(39.9)		(0.0)
	Warranty	(73.3)		(0.0)
	Engineering Change Ord	e (46.8)		(56.6)
	Lot Acceptance Test	(15.8)		(4.1)
	Nonrecurring Flyaway	(60.7)		(82.3)
	Total Flyaway	(1923.8)		(2560.6)
	Warhead	(65.4)		(25.9)
	Product Support Cost	(79.8)		(62.5)
	Total Other Wpn Sys	(145.2)		(88.4)
	Peculiar Support	(21.6)		(47.7)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition OSM	0,0	0.0	0.0
	Total FY 1995 Base-Year \$	2580.9	2300.3	3390.7
	Escalation	811.4	306.4	474.7
	Development (RDT&E)	(27.0)	(27.0)	(46.1)
	Procurement	(784.4)	(279.4)	(428.6)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	<u>. (0.0)</u>	<u></u>
	Total Then Year \$	3392.3	2606.7	3865.4

This baseline does not include AF and Navy funding for the Joint Programmable Fuze (JPF). Navy Procurement funding includes BLU-109 warhead costs.

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP). Air Force and Navy Procurement funding does not include PIP funding.

The RDT&E cost increase is due to Navy funding for the Precision JDAM program. The decision to fully fund the program was made during the PB00 budget cycle.

Tooling & Test Equipment, systems engineering and program management, containers and warranty are now included as part of the hardware costs.

Defense Emergency Response Funds (DERF) received in FY2001 and FY2002 are not included.

#### 11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --

Development (RDT&E)	630	630	778
Procurement	<u>87496</u>	88435	<u>135971</u>
Total	88126	89065	136749

Note: Excludes 81 RDT&E prototypes from the SAR Baseline and 81 from the Current Estimate that are not considered fully configured.

The Low Rate Initial Production (LRIP) quantities approved in the NOTE: Acquisition Decision Memorandum (ADM) at Milestone II were 425 units for Lot 1. Subsequent FY97 budget cycle decisions approved a buy-to-budget approach for determining annual quantities. With the lower than expected unit costs, LRIP quantities were 937 for Lot 1. A second LRIP lot (Lot 2) was approved in December 1997 for 2,202 tailkits. In December 1998, LRIP Lot 2A was approved. Lot 2A quantities were 2,527 tailkits. On June 22, 1999, the AFPEO/WP provided authorization to procure additional quantities to fill the production gap created from acceleration of Lots 1, 2 and 2A. Lot 3 was awarded on June 24, 1999 for 1,308 tailkits and Lot 3A was awarded on November 9, 1999 for 861 tailkits. On December 2, 1999, written notification was sent to the four Congressional Defense committees notifying them of the Air Force's intent to exceed the ten percent limit on LRIP with award of Lot 4. This LRIP was required to replenish weapons inventories depleted during Operation Allied Force. During the week of February 14, 2000, the plan was briefed to professional staff members of the House Armed Services Committee, the Defense Subcommittee of the House Appropriations Committee, and the Defense Subcommittee of the Senate Appropriations Committee. All of the staff members concurred with the plan to award LRIP Lot 4 as briefed. Additionally, the professional staff of the Senate Armed Services Committee reviewed and concurred with the Air Force request. Lot 4 was awarded on February 24, 2000 for 8,163 tailkits.

Additional RDT&E quantities are for the MK-82 flight test program which begins in February 2002.

Additional procurement quantities are a result of AF and Navy funding added in FY2003-2007.

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, \$29.997M Purpose: Procure 432 JDAMs and support (Lot 4 contract)
11d. Total Program Cost and Quantity (Cont'd):

d. Nuclear Costs --None.

12. Unit Cost Summary:

UCR	Current	
Baseline	Estimate	Percent
(MAR 2001 APB) (	Dec 2001 SAR)	Change
2300.3	3390.7	
89065	136749	
0.026	0.025	-3.85
1810.0	2696.7	
88435	135971	
0.020	0.020	0.00
	UCR Baseline (MAR 2001 APB)( 2300.3 89065 0.026 1810.0 88435 0.020	UCR         Current Estimate           Baseline         Estimate           (MAR_2001_APB)(Dec_2001_SAR)         2300.3           2300.3         3390.7           89065         136749           0.026         0.025           1810.0         2696.7           88435         135971           0.020         0.020

## 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	517.3	2875.0	-	3392.3
Previous Changes:				
Economic	-11.8	-252.8	-	-264.6
Quantity	+16.8	-	-	+16.8
Schedule	-	+156.1	-	+156.1
Engineering	-19.0	-	-	-19.0
Estimating	+85.9	-717.9	-	-632.0
Other	-	-	-	-
Support	-	-23.2	-	-23.2
Subtotal	+71.9	-837.8	-	-765.9
Current Changes:				
Economic	+1.7	+3.9	-	+5.6
Quantity	-	+1149.2	-	+1149.2
Schedule	-	+159.6	-	+159.6
Engineering	+153.5	-	-	+153.5
Estimating	-4.3	-186.0	-	-190.3
Other	-	-	-	-
Support		-38.6	-	-38.6
Subtotal	+150.9	+1088.1	-	+1239.0
Total Changes	+222.8	+250.3	#	+473.1
Current Estimate	740.1	3125.3	-	3865.4

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## 13a. Cost Variance Analysis (Cont'd):

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Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	490.3	2090.6	-	2580.9
Previous Changes:				
Quantity	+15.7	-	-	+15.7
Schedule	-	+124.1	-	+124.1
Engineering	-16.5	-	-	-16.5
Estimating	+72.5	-440.1	-	-367.6
Other	-	- [	-	-
Support		-2.9	-	-2.9
Subtotal	+71.7	-318.9	-	-247.2
Current Changes:		}		
Quantity	**	+950.2	-	+950.2
Schedule	-	+167.0	-	+167.0
Engineering	+135.9	-	-	+135.9
Estimating	-3.9	-164.4	-	-168.3
Other	-	-	-	-
Support	-	-27.8		-27.8
Subtotal	+132.0	+925.0	-	+1057.0
Total Changes	+203.7	+606.1	-	+809.8
Current Estimate	694.0	2696.7		3390.7

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

11.			
(1)	RDTEE		
	Revised escalation indices. (Economic)	N/A	+1.6
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Funding added for new MK-82 development effort (Navy) (Engineering)	+30.6	+34.4
	Funding added for new Precision JDAM development effort (Navy) (Engineering)	+18.7	+22.1
	Funding added for new MK-82 development effort (AF). (Engineering)	+41.8	+45.6
	Funding added for new Selective Availability Anti-Spoofing Module (SAASM) and Anti-Jam development efforts (AF) (Engineering)	+44.8	+51.4
	Adjustment for Current and Prior Inflation. (AF) (Estimating)	-1.0	-1.0
	Adjustment due to Below Threshold Reprogramming (Navy) (Estimating)	-2.4	~2.7
	Change in Estimating Methodology (Navy) (Estimating)	-0.4	-0.5
	Adjustment for Current and Prior Inflation. (Navy) (Estimating)	-0.1	-0.1
	RDT&E Subtotal	+132.0	+150.9

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## 13b. Cost Variance Analysis (Cont'd):

(2)

b. Current Change Explanations --

. current change explanations	(Dollars in <u>Base-Year</u> )	n Millions) <u>Then-Year</u>
Procurement		
Economic adjustment for negative program change. (Economic)	N/A	+3.9
Total Quantity Variance associated with increase of 17796 units. (Navy)	+302.9	+367.7
Quantity increase of 17796 units. (Navy) (Quantity)	+370.7	+450.0
Allocation to Schedule variance resulting from Quantity Change, (Navy) (OR)(Schedule)	+26.6	+22.9
Allocation to Estimating variance resulting from Quantity Change (Navy) (OR)(Estimating)	-94.4	-105.2
Total Quantity Variance associated with	+532.8	+643.0
Quantity increase of 30679 units. (AF)	+579.5	+699.2
Allocation to Schedule variance resulting	+18.3	+15.6
Allocation to Estimating variance resulting	-65.0	-71.8
Acceleration of annual procurement buy	0.0	-17.1
Additional Schedule Variance. (Navy) (Schedule)	+58.1	+71.0
Acceleration of annual procurement buy profile. (AF) (Schedule)	0.0	-9.7
Additional Schedule Variance. (AF) (Schedule)	+64.0	+76.9
Adjustment for Current and Prior Inflation. (Navy) (Estimating)	-0.3	-0.3
Change in Estimating Methodology (Navy) (Estimating)	-10.7	-15.0
Adjustment for Current and Prior Inflation. (AF) (Estimating)	-0.8	-0.8
Change in Estimating Methodology (AF) (Estimating)	+6.8	+7.1
Adjustment for Current and Prior Inflation.	-0.2	-0.2
Change in Peculiar Support costs (Navy) (Support)	-12.4	-15.4
Change in Warhead costs (Navy) (Support)	-6.3	-7.5
Change in Product Support Cost (Navy) (Support)	+11.1	+13.8
Change in Peculiar Support (AF) (Support)	+43.7	+45.8
Change in Product Support Cost (AF) (Support)	-63.7	-75.1
Procurement Subtotal	+925.0	+1088.1

Procurement Subtotal

QR - Quantity related changes.

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## 13b. Cost Variance Analysis (Cont'd):

## 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Curren	۱t:	Estin	iate
--------------------------------	-----	-------	------

PAUC Dev Est	Changes						PAUC Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.038	-0.002	-0.005	+0.002	+0.001	-0.006			-0.010	0.028

### b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes						PUC			
Dev Est							Cur H	2st		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.033	-0.002	-0.003	+0.002		-0.007			-0.010	0.0	)23

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	OCT 1993	OCT 1993	N/A	OCT 1993
Milestone II	OCT 1995	SEP 1995	N/A	SEP 1995
Milestone III	JUL 1999	APR 1998	N/A	NOV 2000
IOC	SEP 1999	SEP 1999	N/A	NOV 2000
Total Cost	681.5	3392.3	N/A	3865.4
Total Quantity	378	88126	N/A	136749
Prog Acq Unit Cost	1.8	0.0	N/A	0.0

NOTE: SAR Planning Estimate (PE) total cost and total quantity only reflect RDTsE values.

## 15. <u>Contract Information</u> (Then-Year Dollars in Millions):

a. RDT&E		Initial	Contract P	rice
MK-82 EMD:		<u>Target</u>	Ceiling	Oty
Boeing, St. Louis, MO			· · · ·	
F08635-00-C-0101, CPAF		\$45.8	\$	158
Award: September 22, 2000	)			
Definitized: N/A				
Current Contract Pr	rice	Estimated P	rice At Com	pletion
<u>Target</u> <u>Ceiling</u>	<u>Otv</u>	Contractor	Progra	<u>m Manager</u>
\$51.3 \$	158	\$51.3		\$51.3
		Cost Varianc	e Schedule	Variance
Previous Cumulative Varia	inces	\$	\$	
Cumulative Variances To I	Date (12/31/01)	\$3.4	\$-1	.0
Net Change		\$3.4	\$-1	.0
Explanation of Change	21			

None.

b. Procure JDAM Lot 4:	ment		Initial <u>Target</u>	Contract P <u>Ceiling</u>	rice <u>Oty</u>
Boeing, St. Lo F08635-00-C-00 Award: Februar Definitized: N	uls, MO 32, FFP y 24, 2000 /A		\$162.6	N/A	8163
Current Target	Contract Pri <u>Ceiling</u>	ce <u>Otv</u> 8163	Estimated Pr <u>Contractor</u> S172 0	rice At Com <u>Progra</u>	pletion <u>m Manage</u> 172 0

<u>et</u>	<u>Ceiling</u>	Oty	Contractor	<u>Program Manager</u>
.0	N/A	8163	\$172.0	\$172.0

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

			Initial (	Contract I	Price
JDAM Lots	<u>5 &amp; 6:</u>		Target	<u>Ceiling</u>	<u>Oty</u>
Boeing, St. 1 F08635-01-C-6 Award: March Definitized:	Louis, MO 0027, FFP 29, 2001 N/A		\$235.6	N/A	12204
Current <u>Target</u> \$780.8	t Contract Pr: <u>Ceiling</u> N/A	lce <u>Oty</u> 30674	Estimated Pr <u>Contractor</u> \$780.8	ice At Com <u>Progra</u>	mpletion am <u>Manager</u> \$780.8

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### 15. Contract Information (Cont'd):

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments: Includes additional quantities procured with Defense Emergency Response Funds (DERF). Contract also includes acceleration and facilitization costs in support of Enduring Freedom.

Previously reported contract F08626-94-C-0003 is over 90 percent complete and will no longer be reported.

#### 16. <u>Program Funding Summary</u> (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY93-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	Total
RDT&E	491.5	71.3	65.5	111.8	740.1
Procurement	692.2	223.8	588.9	1620.4	3125.3
MILCON	-	-	-		-
O&M	•	-	-	-	-
Total	1183.7	295.1	654.4	1732.2	3865.4

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				7.9	7.9
1995				22.8	23.1
1996				25.3	26.1
1997				21.7	22.7
1998				12.3	13.0
1999				9.1	9.7
2000			T	10.0	10.8
2001			i	25.3	27.8
2002				49.9	55.8

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JDAM, December 31, 2001

#### 16b. Program Funding Summary (Cont'd):

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year S	Total Program Then-Year \$
2003				43.1	48.9
2004				31.2	36.0
2005				28.8	33.8
2006				6.0	7.2
Subtotal	114			317.1	346.0

JPF is not part of the JDAM program but is budgeted in the JDAM Navy RDTsE and Procurement PEs.

JPF funding: FY94 \$0.5M; FY95 \$1.0M; FY96 \$1.5M; FY97 \$2.8M; FY98 \$0.3M; FY99 \$0.1M

Appropriation:	3600	-	Research,	Development,	Test	+	Eval,	AF	
				•					

		Flyaway	Flyaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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				10.4	11.3
2001				9.7	10.7
2002				13.9	15.5
2003				14.6	16.6
2004	1			30.2	34.8
Subtotal	664			376.9	394.1

Excludes \$4.0M in FY00 and \$12.3M in FY02 for fuze development efforts.

#### 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	17.6	32.0	35.1
2001	2325	6.2	45.2	59.3	65.9
2002	1603	3.6	28.9	33.5	37.8
2003	9880	8.3	173.7	183.2	210.0
2004	7626	7.3	132.8	141.1	164.5
2005	5964	6.2	109.6	116.9	138.9
2006	7230	7.2	134.2	142.5	172.6
2007	6456	7.8	122.3	130.6	161.4
Subtotal	43292	63.9	787.1	892.1	1043.0

Joint Programmable Fuze (JPF) funding is not included. JPF is not part of the JDAM program but is budgeted in the JDAM Navy RDT&E and Procurement PEs. Navy Procurement funding includes BLU-109 warhead costs.

JPF funding: FY98 \$1.7M; FY99 \$1.8M; FY00 \$1.0M; FY01 \$3.2M; FY02 \$3.0M; FY03 \$16.0M; FY04 \$12.6M; FY05 \$10.0M; FY06 \$13.6; FY07 \$14.3

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.

		Flyaway	Flyaway	1	
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997	937	0.8	16.3	21.8	23.0
1998	1826	0.8	31.5	36.7	39.2
1999	3778	1.4	67.2	73.4	79.5
2000	8725	1.3	164.7	172.6	189.2
2001	8904	1.9	173.2	183.2	203.5
2002	8484	1.5	152.4	164.9	186.0
2003	17917	3.1	315.2	330.6	378.9
2004	10871	1.8	189.6	202.1	235.6
2005	12681	2.3	233.5	246.5	292.8
2006	12084	2.2	224.6	237.8	288.0
2007	6470	1.2	123.1	135.0	166.6
Subtotal	92679	18.3	1691.3	1804.6	2082.3

Appropriation: 3011 - Procurement of Ammunition, Air Force

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JDAM, December 31, 2001

Actual

#### 16b. Program Funding Summary (Cont'd):

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
Navy	43406	63.9	787.1	1209.2	1389.0
USAF	93343	18.3	1691.3	2181.5	2476.4
Grand Total	136749	82.2	2478.4	3390.7	3865.4

#### 17. Delivery/Expenditure Information:

a. Deliveries To Date

RDTEE	778	620
Procurement	15085	15265

<u>Plan</u>

Percent Total Program Quantities Delivered: 11.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 832.9

Percent Total Program Expended: 21.5%

Deliveries are as of December 31, 2001. Contractually, 620 baseline RDT&E Guided Test Vehicles (GTVs) have been delivered. The remaining 158 GTVs are scheduled to be delivered for the MK-82 flight test program beginning in February 2002.

Expenditures reflect program office records as of December 31, 2001.

#### 18. Operating and Support Costs:

a. Assumptions and Ground Rules --"Operating and Support (O&S) costs include both Air Force and Navy dollars.

O&S costs were updated for the Milestone III Defense Acquisition Board (DAB) held March 12, 2001.

The JDAM OSS cost estimate was based on the Joint Munitions OSS (JMOS) Model. This model estimated Air Force and Navy OSS costs for the JDAM tailkits only. Assumptions used in the OSS cost estimate are as follows: The total JDAM inventory used was 87,496 tailkits. The warranty assumed was a 20 year extended repair warranty to cover all tailkit repairs except for government induced failures. In the model, one half of a percent of the total JDAM failures were assumed to be induced out-of-warranty failures. The Milestone III estimate included calculations for 35 years. This was an increase of five years from the previous Milestone estimate. The model also included new assumptions to calculate unwarranted failures for 15 years after the warranty period ended and to include demilitarization costs.

There is no antecedent system for JDAM.

## 18a. Operating and Support Costs (Cont'd):

Note: "Other" costs are demilitarization costs.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

	JDAM	Total Cost for
	Avg Annual Costs for	Antecedent System
Cost Element	87,496 JDAM units	
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

Total OsS Cost	JDAM	Total Cost for
BY\$ (In Millions)	232.6	N/A
TY\$ (In Millions)	421.3	N/A

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· N-I AAAV

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: AAAV

#### AS OF DATE: December 31, 2001

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1. Designation and Nomenclature (Popular Name): Advanced Amphibious Assault Vehicle (AAAV)

2. DoD Component: USMC

3. Responsible Office and Telephone Number: Direct Reporting Program Manager AAA COL CLAYTON F. NANS DEPT. OF THE NAVY U.S. MARINE CORPS Assigned: June 28, 2001 991 ANNAPOLIS WAY DSN N/A; COMM (703) 492-3300 WOODBRIDGE, VA 22191-1215 nansc@aaav.usmc.mil

4. Program Elements/Procurement Line Items: RDT&E: PE 0603611M Project B0020 PROCUREMENT: APPN 1109 ICN 202200 (Navy) MILCON: PE 0206496M



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#### 5. References:

SAR Baseline (Development Estimate): Development Estimate Acquisition Program Baseline dated December 8, 2000.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated December 7, 2000.

#### 6. Mission and Description:

The Advanced Amphibious Assault Vehicle (AAAV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7Al (AAV7Al). The AAAV will provide the principal means of tactical surface mobility for the Marine Air Ground Task Force (MAGTF) during both ship-to-objective maneuver and subsequent combat operations ashore as part of the Navy and Marine Corps concepts within the Expeditionary Maneuver Warfare capstone. The AAAV will provide the Marine Corps with the capability to execute the full spectrum of military missions from humanitarian operations to conventional combat operations.

The AAAV is a self deploying, high water-speed, amphibious, armored, tracked vehicle capable of operating in all weather as well as Nuclear, Biological, and Chemical environments. The AAAV provides essential command, control, communications, and intelligence (C4I) functions for embarked personnel and AAAV units. The AAAV C4I systems are compatible with other Marine Corps assets as well as with Army, Air Force, Navy, and NATO C4I assets. Along with the Landing Craft Air Cushion (LCAC) and the MV-22 Osprey, the AAAV will provide Marine Corps Warfighters with the tactical mobility assets required to spearhead the concepts within the Expeditionary Maneuver Warfare capstone.

The AAAV is the Marine Corps' number one priority ground system acquisition program as well as the only ACAT-ID program managed by the Marine Corps. Acquisition of the AAAV is critical to the Marine Corps' transformation effort. AAAV transitioned to the SDD phase in November 2000 by successfully completing Milestone II. Low-Rate Initial Production (LRIP) Milestone C is scheduled for October 2004 (this date and the following dates reflect the AAAV program restructure). Full Rate Production and Deployment Phase is scheduled for 2008 through 2017. A total of 1,013 AAAVs will be produced with Initial Operational Capability (IOC) scheduled for 2007 and Full Operational Capability (FOC) scheduled for 2017.

#### 7. Executive Summary:

The AAAV program entered the System Development and Demonstration (SDD) phase of its acquisition in November 2000. The next major program milestone supports the Low Rate Initial Production (LRIP) decision in FY04, approving the production of approximately 100 vehicles. The AAAV Acquisition Objective is 1,013 vehicles.

In February 2001, GDLS was awarded the SDD Phase contract for long lead

AAAV, December 31, 2001

#### 7. Executive Summary (Cont'd):

material. The SDD contract effort was definitized in July 2001. During the AAAV SDD Phase, nine second generation prototypes will be fabricated for extensive reliability testing and a tenth vehicle will be fabricated to be a Live Fire Test and Evaluation asset. The SDD assets will reflect the prototyping of manufacturing and support processes planned for LRIP and Full Rate Production. The program remains within budget and the technical issues are being resolved as they arise.

An adjustment to the schedule has been made to add one year of testing prior to the Low-Rate Initial Production (LRIP) decision. The additional year will prepare the program for production by providing time to support development and operational tests on the SDD prototypes to provide a more mature system design prior to LRIP. Navy and OSD have endorsed the schedule adjustment and a formal change to the APB has been processed.

The land mobility phase of an Early Operational Assessment (EOA) was conducted in 2001 in conjunction with Combined Arms Exercises at 29 Palms, California. An Early Operational Assessment of the Command Variant C4I suite was conducted in July 2001. The Gunnery phase of the EOA will be conducted in March 2002, and the amphibious operations will be assessed for operational effectiveness, using the existing AAAV(P) prototypes, in November 2002.

The AAAV weapons station (MK-46) has been selected by the Navy for use on the LPD-17 class and is being considered for the DD(X), LHD7, CVN77 and DDG51 classes of ships and the Coast Guard's Deep Water Program.

#### 8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
0&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:

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a.	Mileston	nes

a. Milescones						
	Devel	opment	Appı	roved	Curi	rent
	Estimat	e (SAR)	Progra	am (APB)	Esti	imate
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 (DT1)						
Start	JAN	2000	JAN	2000	JAN	2000
Complete	FEB	2001	FEB	2001	FEB	2001
Operational Test (OT1/EOA)						
Start	FEB	2001	FEB	2001	AUG	2001
Complete	MAY	2001	MAY	2001	NOV	2002(Ch-1)
Milestone II DAB Review	DEC	2000	DEC	2000	DEC	2000
Award of EMD Contract	APR	2001	APR	2001	APR	2001(Ch-2)
EMD Prototype Deliveries						
Start	JUN	2003	JUN	2003	JUN	2003
Complete	JUN	2004	JUN	2004	JUN	2004
Developmental Testing II						
Start	JUN	2003	JUN	2003	JUN	2003
Complete	AUG	2005	AUG	2005	AUG	2006(Ch-3)
Award of LRIP	NOV	2003	NOV	2003	NOV	2004 (Ch-3)
LRIP Vehicle #1 Delivery	MAY	2005	MAY	2005	MAY	2006(Ch-3)
IOT&E						
Start	AUG	2005	AUG	2005	AUG	2006(Ch-3)
Complete	MAR	2006	MAR	2006	MAR	2007 (Ch-3)
Live Fire (FUSL)						
Start	MAY	2004	MAY	2004	MAY	2005(Ch-3)
Complete	DEC	2005	DEC	2005	DEC	2006(Ch-3)
Milestone III DAB Review	AUG	2006	AUG	2006	AUG	2007 (Ch-3)
IOC	SEP	2006	SEP	2006	SEP	2007 (Ch-3)
Full Rate Production Deliveries Star	t MAY	2008	MAY	2008	MAY	2009(Ch-3)
Organic Support Capability	FEB	2009	FEB	2009	FEB	2010(Ch-3)
Service Depot Support	FEB	2009	FEB	2009	FEB	2010 (Ch-3)
FOC	MAR	2016	MAR	2016	MAR	2017 (Ch-3)
Pre-LRIP #1 OA						
Start	FEB	2001	FEB	2001	MAY	2003(Ch-3)
Complete	JUN	2003	JUN	2003	APR	2004 (Ch-3)
EMD Prototype OA						
Start	JAN	2004	JAN	2004	MAR	2004 (Ch-3)
Complete	MAR	2004	MAR	2004	APR	2004 (Ch-3)

The AAAV Milestone II decision occurred in December 2000. The program entered the Systems Design and Demonstration (SDD) phase at this time. The next milestone will be a Milestone C.

Acronyms:	
DAB	Defense Acquisition Board
Dem/Val	Demonstration/Validation
EMD	Engineering and Manufacturing Development

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### 9a. Schedule (Cont'd):

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Early Operational Assessment
Full Operational Capability
Full-up System Live Fire
Initial Operational Capability
Initial Operational Test & Evaluation
Live Fire Test & Evaluation
Low Rate Initial Production
Operational Assessment

b. Current Change Explanations --(Ch-1) The Operational Test complete date is changed from NOV 2001 to NOV 2002 to reflect the planned completion of the amphibious testing phase of the EOA at that time.

(Ch-2) The Award of the EMD Contract (SDD Contract) is changed from FEB 2001 to APR 2001 to reflect the Approved Program.

(Ch-3) The dates for the events listed below are the result of the schedule adjustment which added a year of development and operational testing prior to the Low-Rate Initial Production decision:

	From	n	То	
Developmental Testing II				
Complete	AUG	2005	AUG	2006
Award of LRIP	NOV	2003	NOV	2004
LRIP Vehicle #1 Delivery	MAY	2005	MAY	2006
IOT&E				
Start	AUG	2005	AUG	2006
Complete	MAR	2006	MAR	2007
Live Fire (FUSL)				
Start	MAY	2004	MAY	2005
Complete	DEC	2005	DEC	2006
Milestone III DAB Review	AUG	2006	AUG	2007
TOC	SEP	2006	SEP	2007
Full Rate Production Deliveries	MAY	2008	MAY	2009
Organic Support Capability	FEB	2009	FEB	2010
Service Depot Support	FEB	2009	FEB	2010
FOC	MAR	2016	MAR	2017
Pre-IRTP #1 OA				
Start	FEB	2001	MAY	2003
Complete	TUN	2003	APR	2004
EMD Protovoe OA	000	2000	•••	200.
Start	TAN.	2004	MAR	2004
Complete	MAR	2004	APR	2004
rombraca	6.46.24 V			-001

### 10. Performance Characteristics:

a. Performance --

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		App	ord	oved	Demon-		
	Development	Progra	m	(APB)	strated	Current	
	Estimate (SAR)	Obj/Th	1re	eshold	Perf	Estimate	}
High Water Speed (kts) (SS-3, 36 in SWH)	25	25	1	20	30	24	(Ch-1)
Forward Speed on a Hard Surface Road (kph)	72	72	/	69	72	72	
Armor Protection Against (mm/m)	30/1000	30/1000	/	14.5/300	14.5/300	14.5/300	)
Carry Capacity (AAAV(P)) (Marines)	18	18	/	17	17	17	
<pre>Firepower (AAAV(P)) (m) (MER) Reliability (hrs)</pre>	2000	2000	/	1500	2000	2000	
MTBOMF	95	95	1	70	TBD	70	(Ch-2)
Interoperability Objective-100% of Top Level IERs Threshold-100% of Critical Top	100%	100%	/	100%	TBD	100%	
Level IERs							

Acronyms:	
IER	Information Exchange Requirements
m	Meters
MÉR	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 AAAV demonstrated an average speed of 28 knots in calm seas in the combat loaded weight condition in Nov 2001. An average speed of 33 knots was achieved in calm seas in the lightly loaded weight condition in Sep 2001. An average sustained speed of 30 knots was achieved in Sea State 2 in the lightly loaded condition in Oct 2000. Speeds with full combat loads in sea state 3 will be demonstrated in future testing. -Forward Speed on a Hard Surface Road: The AAAV achieved an average speed of 73.6 kph (45 mph) in Oct 2000. -Armor Protection Against: A full scale AAAV ballistic hull and turret

underwent live fire testing in 2001. Results from the live fire testing correlate to AAAV armor validation data, which statistically demonstrated

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### 10a. Performance Characteristics (Cont'd):

the required ballistic performance. -Firepower (AAAV(P)): The AAAV demonstrated performance in excess of the objective range at Eglin, AFB in Jul 2001. The AAAV 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 High Water Speed (kts) Current Estimate changed from 22 kts to 24 kts based on data from the water mobility testing conducted at Patuxent River, MD.

(Ch-2) The Reliability MTBOMF Current Estimate changed from 74 hrs to 70 hrs based on latest accumulated test data.

Note:

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Interoperability: PM's current estimate for the Threshold Interoperability is 100% of the critical top level IERS.

## 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	1199.9	1199.9	1389.6
	Procurement	5381.4	5381.4	5798.5
	Rollaway	(4959.1)		(5286.2)
	Nonrecurring Rollaway			(81.4)
	Total Rollaway	(4959.1)		(5367.6)
	Other Weapon System	(252.4)		(175.8)
	Peculiar Support	(10.4)		(18.8)
	Initial Spares	(159.5)		(236.3)
	Construction (MILCON)	69.1	69.1	71.3
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1993 Base-Year \$	6650.4	6650.4	7259.4
	Escalation	2074.8	2074.8	2380.9
	Development (RDT&E)	(179.1)	(179.1)	(230.0)
	Procurement	(1879.8)	(1879.8)	(2130.7)
	Construction (MILCON)	(15.9)	(15.9)	(20.2)
	Acquisition Q6M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	8725.2	8725.2	9640.3

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### 11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --

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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.

## 12. Unit Cost Summary:

£	UCR Baseline (DEC 2000 APB)	Current Estimate (Dec 2001 SAR)	Percent <u>Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1993 BY\$)	6650.4	7259.4	
(2) Quantity	1025	1025	
(3) Unit Cost	6.488	7.082	+9.16
b. Avg. Proc. Unit Cost (APUC)	}		
(1) Cost (FY 1993 BY\$)	5381.4	5798.5	
(2) Quantity	1013	1013	
(3) Unit Cost	5.312	5.724	+7.76

## 13. Cost Variance Analysis:

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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	-	+101.6	+5.5	+107.1
Quantity	-	-	-	-
Schedule	-	-	-	_
Engineering	-	-	-	-
Estimating	+0.4	+16.4	-4.1	+12.7
Other	-	-	- '	-
Support	-	-	-	-
Subtotal	+0.4	+118.0	+1.4	+119.8
Current Changes:				
Economic	-3.0	-140.8	-5.2	-149.0
Quantity	-	-	-	-
Schedule	-1.3	+127.0	+4.4	+130.1
Engineering	-	+512.6	-	+512.6
Estimating	+244.5	+29.4	+5.9	+279.8
Other	-	-	_	_
Support	-	+21.8	-	+21.8
Subtotal	+240.2	+550.0	+5.1	+795.3
Total Changes	+240.6	+668.0	+6.5	+915.1
Current Estimate	1619.6	7929.2	91.5	9640.3

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	- 1	-	-	-
Schedule	-	-	~	- 1
Engineering	-	-	-	- 1
Estimating	-8.4	+11.3	-3.2	-0.3
Other	-	-		-
Support	-	+1.3		+1.3
Subtotal	-8.4	+12.6	-3.2	+1.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-1.5	+0.9	-	-0.6
Engineering	-	+373.8	-	+373.8
Estimating	+199.6	+22.5	+5.4	+227.5
Other	-	-	-	-
Support	-	+7.3		+7.3
Subtotal	+198.1	+404.5	+5.4	+608.0
Total Changes	+189.7	+417.1	+2.2	+609.0
Current Estimate	1389.6	5798.5	71.3	7259.4

The Previous Changes have been adjusted in Phase II of completing the transition to a Development SAR. All RDT&E variances have been zeroed except

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(Dollars in Millions)

#### 13a. Cost Variance Analysis (Cont'd):

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Estimating, which is set to the TY and BY dollar values such that the Baseline, Previous and Current Changes equal the Current Estimate. In Procurement, a Support change of \$1.3M in BY dollars is made in the Previous changes so that the difference between the Baseline and Dec 2001 SAR is eliminated. An offsetting \$-1.3M has been made to Previous changes, Estimating.

b. Current Change Explanations --

		Base-Year	<u>Then-Year</u>
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-3.0
	Full-Up System Live Fire (FUSL) and	-1.5	-1.3
	Initial Operational Testing & Evaluation		
	(IOT&E) moved one year for the insertion of		
	the added year of Developmental Testing (DT)		
	and Operational Testing (OT) (Schedule)		
	and operational resting (OI) (Schedule)	0.0	
	Adjustment for current and prior inflation.	-0.3	-0.3
	(Estimating)		
	System Development and Demonstration (SDD)	+158.2	+193.1
	contract award values plus additional		
	estimates for the added year of DT and OT		
	testing (Estimating)		
	DT / OT Testing Events increased based on	+21.3	+26.0
	added year for testing and actual costs for		
	using test facilities (Estimating)		
	Training Devicesrealignment of funds from	+12 1	+15 0
	procurement to RAD funding (Estimating)	. 1 4 . 1	110.0
	Program Office Operations increase for	+10 0	.12.0
	addad waar of tasting (Estimation)	+10.9	+13.8
	Deviced year of testing (Estimating)		
	Revised program estimates (Estimating)	-2.6	-3.1
	BDT&F Subtotal	+198 1	+240 2
	-pide papidis	1130.1	1240.2
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-140 8
	Shift of annual procurement profile one	0 0	+125 0
	year due to adding one year for testing in	0.0	+123.0
	SDD (Schedule)		
	Special Teoling and Special Test Fruitment for		
	IBID and modulation (non-new planet)	+0.9	+2.0
	LKIF and production (nonrecurring rollaway		
	Costs) in Fi2004 instead of Fi2003 and Fi2004		
	(Schedule)		
	Vetronics components redesigned to eliminate	-126.3	-173.1
	components and make use of COTS circuit board	ls	
	(Engineering)		
	Armor material changes and substitutions	+110.5	+151.5
	<pre>made to reduce vehicle weight (Engineering)</pre>		
	Bow flap redesigned to reduce weight and add	+175.9	+241.3
	structural rigidity (Engineering)		

## 13b. Cost Variance Analysis (Cont'd):

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	b. Current Change Explanations		
		(Dollars	in Millions)
		Base-Year	Then-Year
	Hydraulics high pressure supply design changed to remote intensifier units (Engineering)	+153.3	+209.9
	Environmental control units redesigned for increased capacity to meet internal temperature requirement (Engineering)	+60.4	+83.0
	AAAV(C) C4I suite equipment selected to meet mission and interoperability requirements (Estimating)	+28.8	+39.5
	Advance ProcurementFY2002 not appropriated by Congress; Start of LRIP is one year later for adjusted test schedule (Estimating)	-1.9	-2.2
	Revised program estimates (Estimating)	-4.4	-7.9
	Initial Spares increased (Support)	+76.4	+109.7
	Portable maintenance device (PMD) costs added (Support)	+8.4	+11.8
	Training device funding realignment (procurement to R&D) and revised Program Office support costs (Other Weapon System) (Support)	-77.5	-99.7
	Procurement Subtotal	+404.5	+550.0
(3)	MILCON		_
	Revised escalation indices. (Economic)	N/A	-5.2
	Align Reserve Component site improvements with the fielding plan (Schedule)	0.0	+4.4
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
	Revised Project Estimates for 3rd Battalion, Jacksonville and Galveston sites (Estimating)	+5.3	+5.8
	MILCON Subtotal	+5.4	+5.1

### 14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

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PAUC	Changes								PAUC
Dev Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.51	-0.041	+0.001	+0.127	+0.500	+0.285		+0.021	+0.893	9.41

#### b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est	st c							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.17	-0.039		+0.125	+0.506	+0.045		+0.022	+0.659	7.83

## c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	AUG 2006	N/A	AUG 2007
IOC	DEC 2007	SEP 2006	N/A	SEP 2007
Total Cost	934.1	8725.2	N/A	9640.3
Total Quantity	13	1025	N/A	1025
Prog Acq Unit Cost	71.9	8.5	N/A	9.4

The AAAV Milestone II decision occurred in December 2000. The program entered the Systems Design and Demonstration (SDD) phase at this time. The next milestone will be a Milestone C.

#### 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E - <u>SDD:</u>			Initial <u>Target</u>	Contract Pri <u>Ceiling</u>	ice <u>Qty</u>
GENERAL DYNAMICS, WOODBRIDGE, M67854-01-C-0001, CPAF Award: February 14, 2001 Definitized: July 3, 2001		VA	\$712.1	N/A	0
Current <u>Target</u> \$714.0	Contract Price Ceiling N/A	Qty 0	Estimated P <u>Contractor</u> \$714.0	rice At Compl Program \$71	Letion <u>Manager</u> 14.0

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AAAV, December 31, 2001

## 15a. Contract Information (Cont'd):

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	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/01)	\$-4.6	\$-9.3
Net Change	\$-4.6	\$-9.3

### Explanation of Change:

The contract baseline was established in mid-December. This is the first reported performance measurement. Effort to establish the baseline lasted longer than anticipated, and therefore some of the early planned efforts became variance.

Contract Comments: This is a new contract. The early award (February) was limited to the the purchase of long-lead material.

#### 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	Total
RDT&E	532.6	260.6	272.1	554.3	1619.6
Procurement	-	-	15.2	7914.0	7929.2
MILCON	-	-	28.6	62.9	91.5
OGM	-	-	-	-	-
Total	532.6	260.6	315.9	8531.2	9640.3

b. Annual Summary -- AAAV

Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Rollaway	Rollaway		
1		FY 1993	FY 1993	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				22.4	23.6
1996				30.0	32.1
1997				51.4	55.7
1998				61.5	67.2
1999				90.9	100.6
2000				98.8	110.9
2001				124.7	142.5
2002				224.7	260.6

## 16b. Program Funding Summary (Cont'd):

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Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Rollaway FY 1993 Dollars Nonrec	Rollaway FY 1993 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				231.1	272.1
2004				205.9	246.7
2005				103.3	126.1
2006				88.6	110.2
2007				56.3	71.3
Subtotal	12			1389.6	1619.6

Appropriation: 1109 - Procurement, Marine Corps

		Rollaway	Rollaway		
		FY 1993	FY 1993	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003	1		12.0	12.8	15.2
2004		81.4		92.7	112.5
2005	23		207.7	216.6	267.7
2006	24		180.4	203.0	255.7
2007	54		358.6	399.9	513.2
2008	120		695.6	762.8	997.4
2009	120		645.3	700.3	933.1
2010	120		612.0	661.9	898.7
2011	120		588.8	623.5	862.7
2012	120		569.4	603.3	850.6
2013	120		555.3	588.6	845.7
2014	120		543.4	576.2	843.5
2015	71		317.7	339.0	505.7
2016				8.9	13.6
2017				9.0	13.9
Subtotal	1013	81.4	5286.2	5798.5	7929.2

Appropriation: 1205 - Military Construction, Navy

	n - Carlon Balling of Shalling of S	Rollaway FY 1993	Rollaway FY 1993	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2003				23.9	28.6
2004				1.1	1.3
2005				17.2	21.3
2006				1.7	2.2
2007					
2008				5.3	7.0
2010				3.0	4.1
2011				3.1	4.3

## 16b. Program Funding Summary (Cont'd):

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Appropriation: 1205 - Military Construction, Navy

Fiscal		Rollaway FY 1993 Dollars	Rollaway FY 1993 Dollars	Total	Total
Year	Otv	Nonrec	Rec	Base-Year S	Then-Year S
2012				9.9	14.0
2013				5,6	8.0
2014					
2015				0.5	0.7
Subtotal				71.3	91.5

		Rollaway	Rollaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1025	81.4	5286.2	7259.4	9640.3

## 17. Delivery/Expenditure Information:

a.	Deliveries To Date	Plan	Actual
	RDT&E	3	3
	Procurement	0	0

Percent Total Program Quantities Delivered: 0.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 507.4

Percent Total Program Expended: 5.3%

### 18. Operating and Support Costs:

a. Assumptions and Ground Rules --The costs for a steady state year of operations and support are divided by the number of equivalent operating vehicles to provide an annual value.

The AAAV maintenance concept is for two levels of maintenance. Therefore Intermediate Maintenance costs are estimated as zero.

The date for this O&S cost estimate is December, 2000.

NOTE: There is no antecedent system.

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## 18b. Operating and Support Costs (Cont'd):

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b. Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

	AAAV	Antecedent System
Cost Element	Per Operating System	
Mission Pay & Allowances	0.1	N/A
Unit Level Consumption	0.1	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	0.3	N/A
Indirect Costs	0.0	N/A
Total	0.5	N/A

Total O&S Cost	AAAV	Antecedent System
BY\$ (In Millions)	8220.7	N/A
TY\$ (In Millions)	16004.7	N/A

Report Creation Date: 03/25/2002 8:11:11 AM

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# N-19 SSN 774

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: VIRGINIA CLASS SUB

## AS OF DATE: December 31, 2001

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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 PEO SUBMARINES 614 SICARD STREET, SE WASHINGTON NAVY YD, DC 20376-7022 CAPT JOHN HEFFRON Assigned: August 17, 2001 DSN 326.1294; COMM 202.781.1294 HEFFRONJS@NAVSEA.NAVY.MIL



VIRGINIA CLASS SUB, December 31, 2001

#### 5. (U) References:

SAR Baseline (Development Estimate): (U) DAE Approved Acquisition Program Baseline dated June 30, 1995.

#### Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated December 30, 2000.

#### 6. (U) Mission and Description:

(U) The VIRGINIA Class (SSN 774) Submarine Program is bringing forward a critical national security asset designed to flexibly address the unique multi-mission requirements of the post-Cold War era. Capable of performing traditional submarine missions, dominating the littoral battle space and adapting to future requirements, the VIRGINIA Class Submarine will satisfy any assigned role well into the Twenty-First Century. Intended to replace the fleet of SSN 688 Class submarines ending service in large numbers early next century, the VIRGINIA Class Submarine is characterized by state-of-the-art stealth, enhanced features for special operations forces, and cost effective Command, Control, Communication and Intelligence capability. With an array of armament including the MK48 (ADCAP) torpedo and cruise missile vertical launch capability, the VIRGINIA Class Submarine maintains total undersea superiority at an affordable cost.

## 7. (U) Executive Summary:

(U) The period 2000-2001 marked a significant increase in design and construction building progress. The VIRGINIA Class design is over 99% complete. The lead ship of the class, VIRGINIA (SSN 774), is more than 65% complete. Benefits of modular construction are clearly evident as this ship is scheduled to be 84% complete when the final pressure hull weld is completed at Electric Boat by October 2002. Ships of previous classes were less than 60% complete at a similar point in schedule. The second ship, TEXAS (SSN 775), will be delivered at Northrop Grumman Shipbuilding in June 2005, one year after the lead ship, and is now more than 45% complete. The third ship, HAWAII (SSN 776), which began in October 2000, is already 10% complete. Long lead time material procurement and fabrication for the fourth ship, NORTH CAROLINA (SSN 777), began in 2001. Full funding for SSN 777 was appropriated in the FY02 budget.

A major advance was the startup of the Command and Control Systems Module (CCSM) Off-hull Assembly and Test Site (COATS). The COATS facility will be used to test VIRGINIA Class CCSM units prior to shipyard delivery. The first CCSM was outfitted with the requisite Non-Propulsion Electronics Systems and was shipped to COATS at Groton, CT, in late 2000. Systems testing and integration started in January 2001. By the end of the year, over 40% of the test program was completed 2.5 years in advance of ship delivery. Off-hull testing completes in February 2002 followed by land-based operational testing. After testing is complete, the CCSM will be end-loaded into its hull section. The second hull CCSM will start testing at COATS in early 2002. The COATS facility combined with the modular construction of the CCSM units will provide

## *** UNCLASSIFIED *** VIRGINIA CLASS SUB, December 31, 2001

#### 7. (U) Executive Summary (Cont'd):

substantial savings to the VIRGINIA Class Program.

The VIRGINIA Class Submarine program projected a requirement for an additional \$1.234B over the original cost estimate of \$9.5B to complete the design and construction of hulls 1-4. This shortage of requirements to budget was extensively briefed to Navy and DoD leadership in the Summer and Fall of 2001. Only about 2% of the total program funding shortfall is cost growth. The growth consists of class design cost increases and new requirements. The remainder of the shortfall is due to: budget reductions to pay for other programs; material cost increases; increased shipbuilder labor and overhead costs; and directly charging Navy engineering services to the VIRGINIA Program. Despite this shortfall, the program detailed design is essentially complete, and lead ship construction is on schedule for the planned 2004 delivery. FY03-07 ships have been repriced to include lessons learned from the first four ships. This increase is fully funded in PB03. Out-year ships (FY08-15) were also repriced. To date the Program Manager has received \$414M to apply against the \$1.234B shortfall. The remainder of the shortfall is funded in FY03-06 in PB03.

Summary of breaches:

The program is reporting four APB breaches: RDT&E, Procurement, Program Average Unit Cost (PAUC), and Average Procurement Unit Cost (APUC). The program has not experienced any Nunn-McCurdy cost breaches.

Growth in RDT&E is attributable to increased funding of requirements for Propulsion Systems, Full Ship Shock Tests (FSST), Logistics, Ship Control and Ship Signature Reduction, along with increased Test & Evaluation (T&E) and Technology Insertion funds in FY06-08.

Growth in Procurement is attributable to funding the \$1.234B shortfall, plus repricing of FY03-07 and out-year (FY08-15) ships based on lessons learned from the first four ships.

The PAUC and APUC grew due to increases in RDT&E and Procurement as detailed above.

Conclusion:

The quality of the VIRGINIA design and the progress of the construction process have been superior. Specifically:

The state-of-the-art computer-aided design project is delivering design products superior to those used in any previous Navy shipbuilding program and earlier in the shipbuilding cycle. Consequently, production line changes have been less by a factor of ten than in past experience.

Design products are being delivered on time to support construction schedules.

The Electric Boat/Northrop Grumman teaming arrangement is yielding significant,

#### 7. (U) Executive Summary (Cont'd):

positive results in terms of product quality.

These results are making the VIRGINIA Class an unprecedented success for a major shipbuilding program.

#### 8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	No
O&M	No
Program Acquisition Unit Cost (PAUC)	Yes
Average Procurement Unit Cost (APUC)	Yes

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

c. (U) Explanation of Breach:

Since APB Change (2) in DEC 2000, RDT&E costs in BY95\$s have increased by 10.8% above APB Objective. The threshold of 10% has been breached with the submission of the FY03 President's Budget (PB03). The total RDT&E increase in BY95\$ is \$369.3M. The RDT&E cost breach is attributable to funding previously identified shortfalls over the last two budget cycles. These shortfalls are not part of the program's current baseline. The budget increase funded requirements for the Propulsion System, Full Ship Shock Testing, Logistics, Ship Control and Ship Signature Reduction. Additionally, a portion of the RDT&E increase is attributed to Testing & Evaluation being added to the baseline cost during FY06-08. The remainder of the RDT&E cost increase is attributed to Technology Insertion being added to the baseline cost during FY06-08.

Since APB Change (2) in DEC 2000, Procurement cost in BY95\$s has increased by 10.9% above APB Objective. The threshold of 10% has been breached with the submission of PB03. The total Procurement increase in BY95\$s is \$5.311B. Growth in the amount of \$1.234B on the design and construction of the first ships is attributable to: increased material costs, overhead rates; higher than expected costs for special hull treatment (SHT) on SEAWOLF (on which the VIRGINIA estimate is based); delays in software development; changes in accounting for Engineering Services (services were previously directly funded and are now

*** Contraction ***

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## Sc. (U) Threshold Breaches (Cont'd):

reimbursable) and minor requirements growth.

Based on these increased costs for the first four ships, the FY03-15 ships (26 total) were repriced to include these cost factors.

Since APB Change (2) in DEC 2000, Program Acquisition Unit Cost (PAUC) in BY95\$s has increased by 12.1%. This is attributed to the above mentioned RDT&E and SCN growth.

Since APB Change (2) in DEC 2000, Average Procurement Unit Cost (APUC) in BY95\$s has increased by 11.6%. This is attributed to the above mentioned SCN growth.

A Program Deviation Report (PDR) and a request for a revised Acquisition Program Baseline (APB) will be submitted to ASN in March 2002.

#### 9. (U) <u>Schedule</u>:

a. Milestones ---

	Devel	opment	Appı	roved	Curr	ent
<u>Es</u>	<u>timat</u>	<u>:e (SAR)</u>	Progra	am (APB)	<u>Esti</u>	mate
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	OCT	1995	OCT	1995	JAN	1996
and Process Development Contract Award						
Program Review (LRIP)	SEP	1997	SEP	1997	JAN	1997
Organizational Support (by Fast Cruise)	APR	2004	APR	2004	APR	2004
Lead Ship Delivery	JUN	2004	JUN	2004	JUN	2004
LFT&E Shock Tests	OCT	2004	JUN	2006	MAY	2005
Initial Operational Test & Evaluation						
Start	JUL	2004	JUL	2004	JUL	2004
Complete	OCT	2004	JUN	2007	JUN	2007
IOC (Lead Ship)	OCT	2005	JAN	2006	JUN	2006
Intermediate Support (by IOC)	OCT	2005	JAN	2006	JAN	2006
Milestone III	OCT	2007	OCT	2007	OCT	2007
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	(1)	Cherry N		<b>BETREVIEWERS</b>	AL THE TH	
Reactor Vessel in Yard	~~					
Start Pre-fill Testing	·					
Power Unit Landed						

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9a. (U) Schedule (Cont'd):



Start Alpha Trials MK-48 ADCAP Torpedo Modification Program LRIP MS III IOC Block IV

Approved	Current
) Program (APB)	Estimate
N/A	-
	1
N/A	(b)(1)
N/A	
N/A	12
	Approved ) Program (AFB) N/A N/A N/A 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.

b. Current Change Explanations --(U) None

## 10. (U) Performance Characteristics:

a. Performance --

		Approved	Demon-		
	Development Estimate (SAR)	Program (APB) Obj/Threshold	strated <u>Perf</u>	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 (Al1/ A.1 horizon-/ (beam tal / aspect aspects)/ only).	TBD	Figure A.1	
Narrowband Noise	(b)(1)		TBD	(0)(1)	
			and a second		

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10a. (U) Performance Characteristics (Cont'd):

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#### 10a. (U) Performance Characteristics (Cont'd):



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#### *** CONCLUSION ***

Current <u>Estimate</u>

(1)

### 10a. (U) Performance Characteristics (Cont'd):

90-Day Basic Functions

	Approved	Demon-
Development	Program (APB)	strated
Estimate (SAR)	Obi/Threshold	Perf
(b)(1)		TBD (
	· · · · · · · · · · · · · · · · · · ·	

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	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
	Development (RDT&E)	3405.0	3408.1	4025.5
	Procurement	42228.1	48774.1	54444.2
	Sailaway	(42130.9)		(53984.6)
	Other Wpn System Costs	(16.5)		(129.6)
	Peculiar Support	(0.0)		(165.8)
	Initial Spares	(80.7)		(164.2)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1995 Base-Year \$	45633.1	52182.2	58469.7
	Escalation	25447.7	13324.8	14970.4
	Development (RDT&E)	(409.0)	(299.1)	(298.7)
	Procurement	(25038.7)	(13025.7)	(14671.7)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	71080.8	65507.0	73440.1

(U) The December 2001 SAR Current Estimate (CE) includes \$1.047B of FY02-06 Prior Year Completion funding. These SCN funds are separately authorized under Appropriation Budget Activity #5, Budget Line item 5300.

b. (U) Quantity --

Development	(RDT&E)	0	0	0
Procurement		<u> </u>	30	30
Total		30	30	30

(U) Low Initial Rate Production (LRIP) quantity of 14 exceeds 10%, which is normal for shipbuilding programs. The LRIF quantity was approved June 30, 1995 by USD(Acquisition & Technology).

c. (U) Foreign Military Sales --

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## 11c. (U) Total Program Cost and Quantity (Cont'd):

None

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d. (U) Nuclear Costs --\$12,940M (TY\$).

12. (U) Unit Cost Summary:

а,	<ul> <li>(U) Prog. Acq. Unit Cost (PAUC)</li> <li>(1) Cost (FY 1995 BY\$)</li> <li>(2) Quantity</li> <li>(3) Unit Cost</li> </ul>	UCR Baseline (DEC 2000 APB)(Dec 52182.2 30 1739.407	Current Estimate 2001 SAR) 58469.7 30 1948.990	Percent Change +12.05
b.	<ul> <li>(U) Avg. Proc. Unit Cost (APUC)</li> <li>(1) Cost (FY 1995 BY\$)</li> <li>(2) Quantity</li> <li>(3) Unit Cost</li> </ul>	48774.1 30 1625.803	54444.2 30 1014.807	+11.63

## 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	-234.5	-13484.0	-	-13718.5
Quantity	-	-	-	-
Schedule	-	+1008.0	-	+1008.0
Engineering	+106.5	+1090.8	-	+1197.3
Estimating	+191.7	+5630.8	-	+5022.5
Other	-	+280.0	-	+280.0
Support		+7.4	-	+7.4
Subtotal	+63.7	-5467.0	-	-5403.3
Current Changes:				
Economic	+8.2	+178.3		+186.5
Quantity	-	-	-	-
Schedule	-	+345.1		+345.1
Engineering	+75.0	-	-	+75.0
Estimating	+363.3	+6359.8	-	+6723.1
Other	) –	-	-	
Support	·	+432.9	-	+432.9
Subtotal	+446.5	+7316.1	-	+7762.6
Total Changes	+510.2	+1849.1	_	12359.3
Current Estimate	4324.2	69115.9		73440.1

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## *** UNCLASSIFIED *** VIRGINIA CLASS SUB, December 31, 2001

## 13a. (U) Cost Variance Analysis (Cont'd):

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(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	+97.2	+797.9	-	+895.1
Estimating	+154.0	+5785.0	-	+5939.0
Other	-	+216.3	-	+216.3
Support	-	+16.8	-	+16.8
Subtotal	+251.2	+6904.6	-	+7155.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	1 –		-
Engineering	+60.9	- 1	-	+60.9
Estimating	+308.4	+4965.9	-	+5274.3
Other	-	-	-	-
Support	-	+345.6	-	+345.6
Subtotal	+369.3	+5311.5		+5680.8
Total Changes	+620.5	+12216.1	-	+12836.6
Current Estimate	4025.5	54444.2	-	58469.7

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

(1)	RDTEE		
	Revised escalation indices. (Economic)	N/A	+8.2
	Adjustment for Current and Prior Inflation. (Estimating)	-5.8	-6.4
	Add'l funds to reflect revised program estmate (Estimating)	+93.1	+107.0
	<pre>(N77) Add'l funds to reflect revised program estimate (Estimating)</pre>	+88.4	+101.0
	Congresionally directed technology insertion (Engineering)	+60.9	+75.0
	Add'l funds for Tactical control rapid COTS insertion (Estimating)	+19.5	+22.3
	Add'l funds for Development Test & Evaluation Program (Estimating)	+113.2	+139.4
	RDT&E Subtotal	+369.3	+446.5
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+178.3
	Stretchout of annual procurement buy profile. (Schedule)	0.0	+345.1
	Adjustment for Current and Prior Inflation. (Estimating)	-123.5	-134.4

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## 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations	(Dollars in	Millions)
Updated estimate for program re-pricing (Estimating)	<u>Base-Year</u> +4057.8	+5442.9
Prior Year Completion Funds (FY02-06) (Estimating)	+1031.8	+1051.5
Add'1 OPN funds for major shore spares. (Support)	+345.4	+432.7
Correction to align Sailaway and Support Cost		
(Estimating)	-0.2	-0.2
(Support)	+0.2	+0.2
Procurement Subtotal	+5311.5	+7316.1

## 14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Guillenc	SAR Dase	TINC LO	CULLENC	DOCAMACC					
PAUC	Changes					PAUC			
Dev Est					-				Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2369.36	-451.07	+0.003	+45.10	+42.41	+418.19	+9.33	+14.68	+78.64	2448.00

Current SAR Baseline to Current Estimate

## b. (0) Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Dev Est	st						Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2242.23	-443.52	-0.003	+45.10	+36.36	+399.69	+9.33	+14.68	+61.64	2303.86

#### c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	AUG 1994	AUG 1994	N/A	AUG 1994
Milestone II	JUN 1995	JUN 1995	N/A	JUN 1995
Milestone III	OCT 2007	OCT 2007	N/A	OCT 2007
IOC	OCT 2005	OCT 2005	N/A	JUN 2006
Total Cost	N/A	71080.8	N/A	65677.5
Total Quantity	N/A	30	N/A	30
Prog Acg Unit Cost	N/A	2369.4	N/A	2189.3

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## 15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E (U) <u>Nuclear Components:</u> Rephts Nachinery, Scherestedy, NY	Initial <u>Target</u>	Contract Price <u>Ceiling</u> <u>Oty</u>	<u>/</u>
N00024-96-C-4053, CPFF Award: December 15, 1995 Definitized: December 15, 1995	\$307.5	N/A	
Current Contract Price	Estimated Pr	rice At Completion	L

<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program Manager
\$307.5	N/A		\$307,5	\$307.5

Explanation of Change:

(U) Increase in target price from \$61.6 to \$307.5 reflects the modifications of the contract for FY97, FY98, FY99 and FY00 component procurements.

Cost and Schedule variance reporting is not required on this CPFF contract.

b. Procure	ement		Initial	Contract Pr	rice
(U) <u>IPPD96</u>	Contract:		Target	<u>Ceiling</u>	Oty
Gen Dyn, EB Co	orp, Groton, C	T			
N00024-96-C-21	100, CPFF w/PI		\$1587.2	N/A	0
Award: January	y 29, 1996				
Definitized: N	May 9, 1996				
Current	Contract Price	e	Estimated Pr	ice At Comp	pletion
Target	<u>Ceiling</u>	<u>Oty</u>	Contractor	Program	<u>Manager</u>
\$1587.2	N/A	0	\$1525.2	\$10	510.3
			<u>Cost Variance</u>	Schedule V	Variance
Previous Cumul	Lative Varianco	es	\$-84.2	\$-15	.7
Cumulative Var	riances To Date	e (12/31/01)	\$-116.4	\$-11	. 4

Explanation of Change:

Net Change

(U) Contract type was erroneously reported in December 1999 SAR was CPFF. The correct contract type is CPFF w/PI (PI=Performance Incentives).

\$-32.2

\$4.3

The cost and schedule variance changes include the adjudication of High Frequency Conformal Array (HFCA), Non Propulsion Electronic System (NPES) and Exterior Communications System (ECS) efforts. The increase in Program Managers Estimate at Completion (PMEAC) reflects the increase in the Contract Budget Baseline (CBB). Without further improvement in cost variance, this will result in a contract overrun of \$73.0M at contract completion, assuming remaining management reserve is applied to the overrun.

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\$-30.2

\$-23.9

#### 15. (U) Contract Information (Cont'd):

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(U) <u>SSN 774:</u> Gen Dyn, EB Corp, Groton, CT N00024-96-C2100A, CPFF Award: September 30, 1998 Definitized: September 30, 1998		Initial ( <u>Target</u> (	Contract Pr Seiling	ice <u>Otv</u>
		\$1028.0 N/A 1		
Current Co <u>Target</u> \$1072.2	ntract Price <u>Ceiling Oty</u> N/A 1	Estimated Pri <u>Contractor</u> \$1012.8	ce At Comp. <u>Program</u> \$10	letion <u>Manager</u> 82.5
Previous Cumulat	ive Variances	<u>Cost Variance</u> \$~16.9	Schedule V	<u>ariance</u> 3

Previous Cumulative Variances\$-16.9Cumulative Variances To Date (12/31/01)\$-88.3Net Change\$-71.4

#### Explanation of Change:

(U) Contract type was erroneously reported in December 1999 SAR was CPFF. The correct contract type is CPIF.

Cost and schedule variance changes reflect impacts related to: higher than expected labor/overhead rates and material costs. The labor/overhead rates increased due to higher forecast of future costs and growth of shipyard overhead and fringe benefits. Increased material costs are a result of increases in computer and component costs.

(U) <u>SSN 775:</u>	Initial Contract Price <u>Target Ceiling</u> <u>Otv</u>
N00024-96-C2100B, CPIF Award: December 8, 1998 Definitized: December 8, 1998	\$1083.7 N/A 1
Current Contract Price <u>Target Ceiling Oty</u> \$1137.9 N/A 1	Estimated Price At Completion <u>Contractor</u> \$1143.0 Program Manager \$1215.6
Previous Cumulative Variances	Cost Variance Schedule Variance \$-14.8 \$-4.7

 Cumulative Variances To Date (12/31/01)
 \$-110.1
 \$-13.8

 Net Change
 \$-95.3
 \$-9.1

## Explanation of Change:

(U) Cost and schedule variance changes reflect impacts related to: additional cost increases that were driven by workload, recent labor agreements, labor mix at Northrop Grumman, workers' compensation, computer and component cost

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#### 15. (U) Contract Information (Cont'd):

increases.

(U) <u>Design Studies IPPD:</u>	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Oty</u>
Gen Dyn, EB Corp, Groton, CT N00024-00-C-2112, CPFF Award: September 30, 2000 Definitized: September 30, 2000	\$482.1	N/A	0
Current Contract Price	Estimated P	rice At Co	mpletion

Currenc	Concrace rrioo			ne compaceron
<u>Target</u>	<u>Ceilina</u>	<u>Oty</u>	Contractor	Program Manager
\$106.8	N/A	0	\$106.8	\$106.8

## Explanation of Change:

(U) This is a level of effort contract and does not invoke Earned Value Measurement.

Cost and Schedule variance reporting is not required on this CPFF contract.

(U) <u>SSN 776:</u>	Initial Contract Price <u>Target Ceiling Oty</u>
Gen Dyn, EB Corp, Groton, CT N00024-96-C2100C, CPIF Award: September 30, 1998 Definitized: September 30, 1998	\$1063.0 N/A 1
Current Contract Price <u>Target Ceiling Oty</u> \$1070.2 N/A 1	Estimated Price At Completion <u>Contractor</u> <u>Program Manager</u> \$1058.9\$\$1058.9
Previous Cumulative Variances	Cost Variance Schedule Variance \$0.0 \$0.0

Cumulative Variances To Date (12/31/01) Net Change

1058.9	\$1028.9
Cost Variance	Schedule Variand
\$0.0	\$0.0
\$-17.0	\$-16.7
\$-17.0	\$-16.7

## Explanation of Change:

(U) Cost and schedule variance changes reflect impacts related to: computer and engineered component cost, recent labor agreements, workers' compensation, Northrop Grumman Newport News Shipbuilding (NGNNS) labor rate, and overhead cost increases.

(U) Contract Comments: Contracts N00024-95-C-2103 and N00024-96-C-4051, previously reported in

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#### 15. (U) Contract Information (Cont'd):

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the December 1999 SAR, were omitted from this report because they no longer meet dollar value reporting requirements. They were superceded by contracts N00024-00-C-2112 and N00024-96-C2100C.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY92-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-21)	Total
RDT&E Procurement	3008.2 8486.1	231.4 2500.5	246.0 2514.3	838.6 55615.0	4324.2
MILCON		-		_	-
O&M	-	-	-	-	-
Total	11494.3	2731.9	2760.3	56453.6	73440.1

b. Annual Summary -- VIRGINIA CLASS SUBMARINE

Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Sailaway	Sailaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992				23.9	22.8
1993				68.0	66.3
1994				367.5	365.3
1995				449.8	455.7
1996				416.4	429.0
1997				435.5	454.2
1998				363.6	382.4
1999				289.6	308.3
2000				265.5	286.8
2001				216.0	237.4
2002				207.3	231.4
2003				217.2	246.0
2004				180.7	208.3
2005				157.3	184.7
2006				153.6	183.7
2007				149.8	182.6
2008				63.8	79.3
Subtotal				4025.5	4324.2

(U) Current RDT&E shipbuilding profile FY92-08. Expect future RDT&E build profile to extend FY09-20 for Test & Evaluation

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## 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
1996		758.7		758.7	790.3
1997		735.1		735.1	775.7
1998	1	314.1	2297.0	2297.0	2464.2
1999	1		1792.6	1792.6	1944.3
2000		417.3		675.6	744.5
2001	1		1577.9	1577.9	1767.1
2002	1		2195.2	2195.2	2500.5
2003	1		2168.4	2168.4	2514.3
2004	1		2091.7	2091.7	2470.5
2005	1		2449.2	2449.2	2947.6
2006	1		2420.7	2420.7	2968.7
2007	1		2994.1	2994.1	3741.7
2008	3		5345.9	5345.9	6807.5
2009	3		4848.0	4848.0	6290.8
2010	3		4487.4	4487.4	5933.2
2011	2		3732.7	3732.7	5029.4
2012	3		4647.7	4647.7	6381.3
2013	3		4008.7	4008.7	5608.6
2014	3		3102.8	3102.8	4423.3
2015	1		1073.9	1073.9	1560.0
2016		112.7		112.7	166.9
2017		117.9		117.9	177.8
2018		137.3		137.3	211.0
2019		120.5		120.5	188.8
2020		18.6		74.3	118.6
2021		18.5		18.6	30.2
Subtotal	30	2750.7	51233.9	53984.6	68556.8

(U) The current funding profile includes \$1.047B of FY02-06 Prior Year Completion funding. These SCN funds are separately authorized under Appropriation Budget Activity #5, Budget Line item 5300.

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 \$
2002					
2003					
2004					
2005				18.2	21.5

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## 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1810 - Other Procurement, Navy

		Sailaway	Sailaway		<u> </u>
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2006			Ţ	202.1	243.6
2007				239.3	294.0
Subtotal				459.6	559.1

		Sailaway	Sailaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	30	2750.7	51233.9	58469.7	73440.1

#### 17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

es To Date	<u>Plan</u>	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): \$ 7895
  - (U) Percent Total Program Expended: 10.8%
- (U) Total expenditures as of 11 Feb 02.

## 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

As of date: 11 Feb 02. Operations and Support (0&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. The source of antecedent data is the Visibility and Management of Operation and Support Cost (VAMOSC) data for LOS ANGELES Class (SSN-680) submarines.

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## 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

	VIRGINIA CLASS SUBMARINE	LOS ANGELES CLASS
	Ship	Ship
Cost Element	Average Annual Cost	Average Annual Cost
Mission Pay & Allowances	6.3	7.2
Unit Level Consumption	3.4	2.0
Intermediate Maintenance	2.1	0.4
Depot Maintenance	12.2	14.8
Contractor Support	0.1	0.0
Sustaining Support	5.3	0.8
Indirect Costs	0.0	0.9
Indirect Support	5.4	0.0
Total	34.8	26.1

Total O&S Cost	VIRGINIA CLASS SUBMARINE	E LOS ANGELES CLASS
BY\$ (In Millions)	31343.0	N/A
TY\$ (In Millions)	50312.0	N/A

Report Creation Date: 03/25/2002 12:11:32 PM

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#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: E-3 AWACS RSIP

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AS OF DATE: December 31, 2001

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1. (U) <u>Designation and Nomenclature (Popular Name)</u>: E-3 AWACS Radar System Improvement Program (RSIP)

2. (U) DoD Component: USAF

AF-3 AWACS RSIP

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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#### 5. (U) References:

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated March 6, 2000.

Approved Program:

(U) AFSAE Approved Acquisition Program Baseline (APB) dated March 6, 2000.

#### 6. (U) Mission and Description:

(U) The purpose of the RSIP modification is to provide Air Combat Command (ACC) with new and improved capabilities for the E-3 AWACS radar. The AWACS RSIP provides improvements in radar sensitivity/electronic counter countermeasures (ECCM) performance, radar performance monitoring and control, and reliability/maintainability (R&M) to maintain system effectiveness against the projected operational environment of the 1990's and into the next century.

The RSIP program is made up of three phases: 1) System Definition/Risk Reduction (Pre-Engineering and Manufacturing Development), 2) Engineering and Manufacturing Development (EMD), and 3) Production Modification. This program results in hardware and software changes to the AWACS.

The modifications are primarily to the AWACS Surveillance Radar Functional Group (SRFG) which:

(1) Replaces the existing Radar Data Correlator (RDC) and Digital Doppler Processor (DDP) with the Surveillance Radar Computer (SRC).

(2) Modifies the existing Radar Control Maintenance Panel (RCMP) with dual Cathode Ray Tube (CRT) displays and a new keyboard and cursor control.

(3) Completes minor redesigns of the receiver, the Stable Local Oscillator (STALO), the Synchronizer, and the antenna phase control electronics, and replaces the analog to digital converter.

(4) Replaces the existing Surveillance Radar Computer Program (SRCP) with a new SRCP.

#### 7. (U) Executive Summary:

(U) The Milestone II approval to start EMD occurred in December 1988. EMD contracts were awarded in September 1989 to Northrop Grumman (formerly Westinghouse) for the radar upgrade, and to Boeing for system integration and testing. Test flights conducted in February-March 1990 successfully demonstrated the RSIP pulse compression waveform concept. Radar algorithm simulations in June 1990 confirmed the viability of the RSIP two-slant signal processing technique. The 8.6 dB lab radar demo was successfully completed in September 1992, and the government verified test results showing a 10.34 dB improvement in the laboratory environment. Also In 1992, NATO formally joined the program by way of a Cooperative International R4D Agreement.

In November 1993, Test System-3 (TS-3) Installation & Check Out (I&CO) was completed, and the first Development Test and Evaluation flight occurred. The qualification phase of the DT&E flight test program began in November 1994.

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#### 7. (U) Executive Summary (Cont'd):

Flight Qualification, Software Formal Qualification Testing (FQT) and In-Plant Formal Qualification were all completed with satisfactory radar detection performance. Concurrent U.S./NATO IOT&E testing began in October 1995. Other key events in 1995 were the signing of the RSIP Operational Requirements Document (ORD) and the U.S. Low Rate Initial Production (LRIP) approval. The initial IOT&E results unexpectedly indicated inconsistent radar tracking and poor long range fighter detection in the dense clutter environment of Europe. Consequently, IOT&E was extended in order to satisfactorily resolve these issues.

In February 1996, a production contract was awarded to Boeing for 13 U.S. kits (basic [2], plus 3 options [11]), 18 NATO kits and 8 UK kits; this included specific contract language to minimize expenditures pending the resolution of the open IOT&E issues. From January-July 1996, software updates were developed and tested, critical Deficiency Report (DR) fixes were implemented and training/tech order handbook deficiencies were resolved. In July 1996, a final IOT&E software version was released, following successful integration, regression and flight testing. U.S. and NATO operational flight tests in August-September 1996 confirmed the validity of the software fixes and provided the basis for NATO's full-rate production decision in November 1996. The award of U.S. production option #1 for 2 additional LRIP units and U.S. IOT&E completion both occurred in October 1996.

The Milestone III full rate production decision was made on September 11, 1997. Key events leading to the Milestone III and NATO retrofit readiness decisions in September 1997 included the development and implementation of new radar software versions to resolve remaining critical software deficiencies, the establishment and execution of a joint U.S./NATO EMD closeout plan and completion of development and test of the SRC R4400 processor to replace the Diminishing Manufacturing Sources R3000. The Option II award for 4 additional RSIP kits was awarded on October 31, 1997. In addition, the RSIP production and retrofit contract was modified to implement a process for mating software updates (managed by the software change working group [SCWG]) similar to the process that was successfully used as part of the IOT&E and post-IOT&E corrective action plans. The SCWG will manage the software updates to clean-up discrepancies remaining from EMD and new problems discovered during the U.S., NATO and UK retrofit programs.

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 FY00 POM funding disconnects. The program restructuring caused a delay in the completion of the RSIP production and installation program. The restructuring was not caused by any RSIP activities, but was caused by the overall weapon system funding constraints. One (1) additional RSIP kit was procured from this contract for the USAF. This kit was originally on contract to satisfy NATO requirements, but became excess due to the loss of one of their aircraft.

In September-November 1999, the follow-on production effort experienced a number of events which significantly changed the program cost estimates.

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#### 7. (U) Executive Summary (Cont'd):

First, the Program Office revised its cost estimate, based on experience from the NATO production and retrofit program and the retrofit of the first two U.S. aircraft. Costs associated with installation and checkout support, diminishing manufacturing sources (DMS) resolution, hardware anomaly resolution, and software ICS had been significantly underestimated and had to be revised upward. Second, costs for the Avionics Integration Support Facility (AISF) RSIP APY-2 configuration, which had been dropped by the program office due to prior year budget cuts, were added back into the program estimate to meet operational support requirements. Third, the production of two RSIP kits was deferred two years as a result of a \$10M Congressional reduction in RSIP funding in FY00. Fourth, the RSIP contractors submitted a draft proposal which showed the Government estimate had underestimated the impact of the RSIP production break and had overestimated efficiencies achievable by the contractor in the follow-on production effort. Fifth, program office support costs (e.g. computer support, administrative support), which had been funded separately, were reallocated to the various AWACS programs, resulting in a significant growth in total program costs. The APB was updated in March 2000 to reflect these changes.

In the winter of 1999, the Secretary of the Air Force directed the acceleration of the RSIP program in order to complete the retrofit of the entire US AWACS fleet in FY05. The decision was based on the need to get the vital RSIP capability fielded as soon as possible and to reduce the number of unique AWACS configurations. The value of RSIP was demonstrated during operations in support of the Air War Over Serbia. NATO aircraft modified with RSIP consistently detected hostile aircraft well before US AWACS, which did not have RSIP capability.

To comply with this direction, the Air Force provided the RSIP program an additional \$9.5M in FY00 through the FY00 Omnibus, \$9.999M in FY01 through a Below Threshold Reprogramming Action, \$21.475M in FY01 through an Above Threshold Reprogramming Action, and \$40M in the FY02 BES. These actions also had the effect of fixing program funding shortfalls. The program is currently funded to procure all of the required 32 RSIP kits.

The Program Office awarded the follow-on production contract F19628-99-C-0042 on June 9, 2000 via an undefinitized contract action (UCA). The UCA was required to minimize the complications of a production break. The UCA was definitized on Nov 13, 2000. Eighteen RSIP kits plus the AISF APY-2 kit are being procured on this contract.

RSIP Required Assets Available (RAA) was declared on December 15, 2000. This met the APB threshold. Air Combat Command declared Initial Operational Capability (IOC) on June 14, 2001. Currently, there are Ten USAF AWACS modified with RSIP.

# 7. (U) Executive Summary (Cont'd):

## 8. (U) Threshold Breaches:

,

## a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	NO
Cost RDT&E	No
Procurement	No
MILCON	No
06M	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) <u>Schedule</u>: a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
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 1995
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(Ch-1)
-			

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#### 9b. (U) Schedule (Cont'd):

b. Current Change Explanations --(U) (Ch-1) The Required Assets Available was changed from June 2000 to December 2000 due to the time required for conversion of the RSIP technical orders into the new digital format. RAA was declared December 15, 2000, which met the APB threshold.

## 10. (U) Performance Characteristics:

a. Performance --

Improve System Sensitivity (dB) Detection Range

degrees)

ECCM

Overland Mission MTBCF (hrs)

noise jammer at

(dBw/MHz)

off main beam jammer (nm) (dBW/MHz) Inband frequency change (msec) Maintainability (SRC/SRCMP)

Mean Repair Time

detected (%) Reliability (Radar

(hrs)

Set)

	A	pproved	Demon-	
Production	Prog	ram (APB)	strated	Current
Estimate (SAR)	Obj/	Threshold	Perf	Estimate
13.0	13.0	/ 10.6	10.9 (1)	10.6



Performance Characteristics, Reference Notes

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(U) 8. US IOT&E was completed in October 1996.

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# 10b. N Performance Characteristics (Cont'd):

b. Current Change Explanations --(U) None

Acronyms: MTBCF - Mean Time Between Critical Failure, ECCM - Electronic Counter-counter Measures, SRC - Surveillance Radar Computer, SRCMP -Surveillance Radar Computer Maintenance Panel.

#### 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Production	Approved	Current
а.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	465.5	465.3	465.5
	Procurement	424.6	520.1	550.7
	Flyaway	(296.2)		(311.3)
	Other Weapon Systems	(102.6)		(196.9)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(25.8)		(42.5)
	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	1016.2
	Escalation	1.2	-10.7	-9.9
	Development (RDT&E)	(-41.1)	(-40.9)	(-41.1)
	Procurement	(42.3)	(30.2)	(31.2)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	891.3	974.7	1006.3

(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.

#### *** *********

11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales --NATO/UK: The RSIP Memorandum of Agreement (MOA) between the USAF and the NATO Airborne Early Warning and Control (AEW&C) Program Management Organization (NAPMO), signed on May 7, 1992, sets forth the terms for the RSIP Cooperative Development Program. Two U.S. RSIP EMD contracts were modified with Boeing and Northrop Grumman for the NATO RSIP Phase I effort. During Phase I Northrop Grumman provided one more RSIP Group B radar set modification kit and instrumentation for the NATO E-3A aircraft. Boeing Phase I effort provided one RSIP Group A Kit and the NATO Airborne Operational Computer Program (AOCP) software. In Phase II, added in January 1994, Northrop Grumman developed the logistics support for the RSIP hardware and software components and supported Boeing during the test program. Boeing installed and integrated the RSIP prototype Group A and B kits into the NATO E-3A test aircraft and conducted the test program. The AWACS SPO, working with NATO, developed a comprehensive strategy to implement a joint U.S. - NATO development test program for RSIP. Under the joint test concept, NATO participates in testing on the U.S. test aircraft and accomplishes the majority of NATO testing on the same aircraft. Joint test was implemented as part of the Phase II portion of the NATO RSIP On March 31, 1993, the United Kingdom (UK) signed a \$5.6M Letter of effort. 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. The study consisted of two parts: Phase IA provided technical information sufficient to identify differences in the UK configuration while Phase IB designed any adaptations necessary and prepared the production Request for Proposals (RFPs) and LOA. The Boeing Company was placed on contract (EST 93-UK-04A) July 13, 1993 with the Northrop Grumman Corporation placed on directed subcontract on September 1, 1993 to support Phase I. Including the \$5.8M Phase IB LOA option, the study lasted for approximately two years. UK requirements include acquisition of production kits for all 7 UK aircraft and 1 ground laboratory.

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The U.S., NATO and UK joined together and awarded a contract on February 9, 1996 to purchase 28 aircraft worth of RSIP kits (2 U.S., 18 NATO, and 8 UK) under the production program. The U.S. contracted for 11 more aircraft worth of kits in three follow-on options in FY97, FY98 and FY99. Option 1 to acquire two kits for the U.S. was awarded on October 31, 1996. Option 2 was awarded October 31, 1997 to acquire four kits. Option 3 was awarded in October 8, 1998 to acquire an additional 5 kits. The initial set of kits for NATO, N-2 and N-1, were delivered on September 30, 1997 and October 31, 1997, respectively and retrofit for N-2 began on December 8, 1997. NATO completed the retrofit of its fleet in December 1999 and the UK completed in December 2000.

d. (U) Nuclear Costs --None.

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## 12. (U) Unit Cost Summary:

	UCR	Current	
	Baseline	Estimate	Percent
	(MAR 2000 APB) (De	c 2001 SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1997 BY\$)	985.4	1016.2	
(2) Quantity	32	32	
(3) Unit Cost	30.794	31.756	+3.12
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1997 BY\$)	520.1	550.7	
(2) Quantity	32	32	
(3) Unit Cost	16.253	17.209	+5.88

## 13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	424.4	466.9	-	891.3
Previous Changes:				
Economic	) –	-20.9	-	-20.9
Quantity	-	-	~	
Schedule	-	+27.1	*	+27.1
Engineering	-	-	-	-
Estimating	í -	-7.6	-	-7.6
Other	-	-	-	-
Support		+84.4	-	+84.4
Subtotal	-	+83.0	-	+83.0
Current Changes:				
Economic	-	+1.9	-	+1.9
Quantity	) -	-	-	-
Schedule		-2.2	-	-2.2
Engineering	) -	-	-	-
Estimating	- 1	-3.2	-	-3.2
Other	-	-	-	-
Support	-	+35.5	-	+35.5
Subtotal	-	+32.0	-	+32.0
Total Changes		+115.0	-	+115.0
Current Estimate	424.4	581.9	-	1006.3

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## 13a. (U) Cost Variance Analysis (Cont'd):

• •

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	465.5	424.6	-	890.1
Previous Changes:				
Quantity		-	-	-
Schedule	-	+22.2	-	+22.2
Engineering	-	-	-	-
Estimating	-	-4.1	-	-4.1
Other	-	-	-	-
Support	-	+78.6	-	+78.6
Subtotal	-	+96.7	-	+96.7
Current Changes:				
Quantity	-	- (	~	-
Schedule		-	- ]	-
Engineering	-	-	- ]	-
Estimating		-3.0	-	-3.0
Other	-	- (	-	-
Support	-	+32.4	-	+32.4
Subtotal	-	+29.4	-	+29.4
Total Changes		+126.1	-	+126.1
Current Estimate	465.5	550.7	-	1016.2

b. (U) Current Change Explanations --

(Dollars in Millions) <u>Base-Year Then-Year</u>

-----

			ALL AND A
(1)	Procurement		
	Revised escalation indices. (Economic)	N/A	+1.9
	Accelerated annual procurement buy profile, by moving kit buys from FY03 to FY00-FY02. (Schedule)	0.0	-2.2
	Adjustment for current and Prior Inflation. (Estimating)	-1.0	-1.0
	Estimating change due to negotiated contract for the RSIP Production follow-on contract, reduction in Engineering Change Orders (ECO), and congressinal reductions. (Estimating)	-2.0	•2.2
	Adjustment for current and Prior Inflation. (Support)	-0.5	-0.5
	Change in Other Weapon Systems. Decrease requirements in Diminishing Manufacturing Sources (DMS), Follow-on Services support, and Tech Order data. (Support)	-10.9	-12.0
	Change in Initial Spares. Increase in Readiness Spares Package (RSP) requirements due to previous underfunding. (Support)	+19.7	+21.5

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## 13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

			(Dollars in <u>Base-Year</u> T	Millions) hen-Year
Change in Other Weapon Syste Software Integration Lab ( installation rate, depot t operations support. (Supp	ms. Increases SIL) support, cooling and SPO port)	in	+24.1	+26.5

Procurement Subtotal

+29.4 +32.0

## 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	Changes						PAUC		
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.85	-0.594	-0.002	+0.778		-0.338		+3.75	+3.59	31.45

b. (U) Procurement Unit Cost (PUC) History

## Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Prod Est		C C C C C C C C C C C C C C C C C C C					Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.59	-0.594	-0.002	+0.778		-0.338		+3.75	+3.59	18.18

## c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	1006.3
Total Quantity	N/A	34	32	32
Prog Acg Unit Cost	N/A	20.3	27.9	31.5

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## 15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procure	ement		Initial	Contract Pi	rice
(U) AWACS I	RSIP PRODUCTION		<u>Target</u>	<u>Ceiling</u>	Oty
The Boeing Con	apany, Seattle,	WA			
F19628-95-C-00	)41, FFP		\$156.9	\$156.9	13
Award: Februar	ry 9, 1996				
Definitized: H	February 9, 199	6			
Current	Contract Price	1	Estimated P:	rice At Comp	pletion
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$156.9	\$156.9	13	\$156.9	\$:	156.9
<u>Explanatic</u>	on of Change:				
None.					
<b>.</b>					
Cost and S	Schedule varian	ice report	ing is not required	d on this	
FFP contra	ict.				
(U) Contra	ict comments:				
This Conti	ract is more th	an 90% Co	mpiere and will no	t be reporte	ed in the
next SAR.					
			Tnitial	Contract P	rice
ITA AWACS I	STP PRODUCTION	1.	Target	Ceiling	Otv
The Boeing Con	nany Seattle	<u>ы</u> ша	THATEL	<u>Wear ing</u>	<u>MLY</u>
F19628-99-C-00	142. FFP	W6	\$195.4	\$195.4	18
Award: Novembe	er 12, 2000		+=>>	122311	20
Definitized: 1	November 13. 20	00			
Current	Contract Price	:	Estimated P:	rice At Com	oletion
Target	Ceiling	OLY	Contractor	Program	<u>Manager</u>
\$195.4	\$195.4	18	\$195.4	\$	195.4

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: RSIP Services contract is not reported because it doesn't meet the \$40M threshold.

## E-3 AWACS RSIP, December 31, 2001

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY89-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-05)	<u>Total</u>
RDTSE	424.4	-	-	-	424.4
Procurement	433.3	89.5	26.2	32.9	581.9
MILCON	-	-	-	-	-
06M	~	-	-	-	-
Total	857.7	89.5	26.2	32.9	1006.3

(U) RSIP Development (RDT&E) is a cooperative program with NATO. The total \$424.2M (TY\$) is the U.S. share of the cooperative development program.

b. Annual Summary -- RSIP MOD

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway FY 1997	Flyaway FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1989				52.8	44.2
1990				73.8	63.7
1991				80.2	71.8
1992				127.1	117.1
1993				16.4	15.4
1994				40.1	38.4
1995				43.8	42.7
1996				31.3	31.1
Subtotal				465.5	424.4

Appropriation: 3010 - Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY 1997 Dollars Noprec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	2	16.6	22.4	51.4	51.9
1997	2	1.6	15.0	46.6	47.5
1998	4	0.1	28.5	64.5	66.2
1999	5		41.0	60.3	62.6
2000	2		59.1	81.5	86.1
2001	8		75.6	111.2	119.0
2002	9		51.4	82.3	89.5
2003				23.7	26.2
2004				22.0	24.7
2005	İ			7.2	8.2

#### E-3 AWACS RSIP, December 31, 2001

Actual

#### 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	293.0	550.7	581.9

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	32	18.3	293.0	1016.2	1006.3

#### 17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

	-	
RDTSE	0	0
Procurement	10	10

Plan

(U) Percent Total Program Quantities Delivered: 31.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 681.4

(U) Percent Total Program Expended: 67.7%

(U) Deliveries are the number of aircraft retrofitted. Expenditures data are as of December 31, 2001, 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 August 1997. The concept of operation is for a fleet of 32 aircraft, which does not include the TS-3, flying 1000 hours per year each with two-level maintenance. In the updated 06S cost, a comparison was made between the Post-RSIP and the Pre-RSIP configurations. These two estimates were separately prepared to reflect the annual steady-state cost, the phase-out of the predecessor system AN/APY-1/2 radar and the phase-in to the steady-state of the Post-RSIP modification to the AN/APY-1/2 radar. The Pre-RSIP system estimated FY96 as the steady-state year with complete phase out by FY04. The 06S cost of the Pre and Post systems are used to compare the differences in support cost in the steady-state mode. The mission personnel element includes the cost of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support a discrete electronic system. Unit level consumption includes consumables, condemnations, second destination

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*** UNCLASSIFIED *** E-3 AWACS RSIP, December 31, 2001

#### 18a. (U) Operating and Support Costs (Cont'd):

transportation, and organizational level simulator maintenance. The depot maintenance includes the cost of labor, material, and overhead incurred in performing major overhauls or maintenance on an electronic system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The contractor support includes the cost of contractor labor, materials, and depreciable assets used in providing all or part of the logistics support to a weapon system, subsystem, or related support equipment. Sustaining support includes the cost of replacement support equipment, modification kits, sustaining engineering, software maintenance support and simulator operations. Indirect support includes the costs of personnel support for specialty training, permanent changes of station, and medical care. Indirect cost also includes the costs of relevant host installation services, such as base operating support and real property maintenance. The Total O&S Cost is for FY98-FY25, and the Annual Steady-State year is FY12.

Cost Element	RSIP MOD Annual Steady-State Radar with RSIP	Annual Steady-State Fleet Predecessor E3 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

b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

Total O&S Cost	RSIP MOD	Annual Steady-State
BY\$ (In Millions)	830.7	29.3
TY\$ (In Millions)	1373.1	47.6

Report Creation Date: 03/29/2002 8:49:09 AM

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: CGS

#### AS OF DATE: December 31, 2001

SUBJECT	PAGE	
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Mission and Description	2	
Executive Summary	2	and the second
Threshold Breaches	3	
Schedule	3	
Performance Characteristics	4	
Total Program Cost and Quantity	10	
Unit Cost Summary	11	
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Unit Cost and Other History	13	•
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Delivery/Expenditure Information	16	
Operating and Support Costs	16	

1. Designation and Homenclature (Popular Name) : Common Ground Station (formerly Ground Station Module)

#### 2. DoD Component : Army

A-6 CGS

## 3. Responsible Office and Telephone Humber :

INDEX

SFAE-IEW-JS FT. Monmouth, NJ 07703-5304

COL. Ronald J. Nelson Assigned: June 19, 2000 DSN 987-5165; COMM 908-427-5165 ronald.nelson@iews.monmouth.army.mi 1

## 4. Program Elements/Procurement Line Items :

RDT&E: PE 64770A Project D202 PROCUREMENT : APPN 2035 ICN BA1080 (Army) APPN 2035 ICN BS9724 (Army)

# CLEARED FOR OPEN PUBLICATION

MAR 2 0 2002 15

DIRECTORATE FOR FREEDO CONTROLATION AND SECURITY RELING DEPARTMENT OF DEFENSE

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12-0-0593

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#### 5. References:

SAR Baseline (Development Estimate) : FY 2001 President's Budget dated February 7, 2000.

Approved Program / Production Estimate (PdE) : DAE Approved Acquisition Program Baseline (APB) dated August 29, 2000.

## 6. Mission and Description :

The Joint Surveillance Target Attack Radar System (Joint STARS) is a surveillance, battle management and targeting radar system. It is a Joint Army and Air Force Program with the Air Force as the executive service. The Joint STARS radar is an airborne multimode radar system, incorporating an electronically scanned antenna and combining both Moving Target Indicator (MTI), Fixed Target Indicator (FTI) and Synthetic Aperature Radar (SAR) functions. The radar is carried aboard a modified E-8 Aircraft and broadcasts processed radar data to the Army Common Ground Station (CGS) through an omnidirectional data link. CGSs also receive and process intelligence data from Unmanned Aerial Vehicles (UAV), Commander's Tactical Terminal (CTT) and Air Reconnaissance Low (ARL). Joint STARS fills a critical need for an effective capability to detect, delay, disrupt, and destroy first and second echelon mobile targets. Joint STARS is unique because it is a closed loop system for real-time detection, tracking, and attack information of enemy ground targets. The Army requires wide area surveillance to understand enemy force buildups and scheme-of-maneuver, in order to apply effective and timely maneuver of forces, battlefield management, and targeting of artillery, rockets and stand-off missles. There is no other system planned to provide this data in real-time. Joint STARS provides commanders at tactical and operational echelons a near real-time, wide area surveillance system to monitor enemy force movements into and through the joint battle area. This allows air and ground commanders to take timely actions to shape the pattle and decisively engage the enemy with fire and maneuver.

#### 7. Executive Summary :

This will be the final Common Ground Station (CGS) SAR. All systems have been delivered and the PM has commenced work on the migration of the CGS into the Distributed Common Ground System - Army (DCGS-A). DCGS-A will consist of a network centric environment in support of the Army Transformation objectives.

A successful Milestone III DAB was held in August 2000 and the resultant ADM authorized full production for the remaining 17 CGSs and the program was reclassified from ACAT 1D to ACAT 1C. The ADM also approved the program Acquisition Program Baseline (APB) and Acquisition Strategy Report (ASR) and directed that future CGS modifications associated with the Air Force Radar Technology Insertion Program (RTIP) will be included in the RTIP review process and this report includes the Army's planned integration funding.

The CGS was deployed in support of Operation Enduring Freedom. The final CGS

## 7. Executive Summary (Cont'd) :

delivery has occurred and the program has embarked upon a migration into the DCGS-A, which consists of a network centric environment. As noted above this will be the final CGS SAR.

## 8. Threshold Breaches :

a. Acquisition Program Baseline (APB):

		Item	Breach
Sche	Schedule		No
Perf	orm	ance	No
Cost		RDT&E	No
		Procurement	NO
		MILCON	NO
		OEM	NO
]		Program Acquisition Unit Cost (PAUC)	No
		Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

	Item		•		Breach
Program	Acquisition	Unit	Cost	1	No
Average	Procurement	Unit	Cost		NO

#### 9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
Decommission All Prior Ground Systems	N/A	JUN 1999	DEC 1999
DII COE Level 5 Certification	N/A	JAN 2000	MAY 2000
FOTEE I			
Start	N/A	FEB 2000	FEB 2000
Complete	N/A	MAR 2000	MAR 2000
Milestone III	N/A	JUN 2000	AUG 2000
Baseline CGS FP1 Fieldings Completed	N/A	JUL 2000	JAN 2001
USA/USAF Trainer Interoperability	N/A	DEC 2000	APR 2000(Ch-1)
Baseline CGS FP2 Fieldings Completed	N/A	JAN 2001	JUL 2001
DII COE Level 6 Certification	N/A	JAN 2001	AUG 2000(Ch-1)
LUT for Enhanced CGS (P3I Group)	N/A	APR 2001	MAR 2001 (Ch-1)
FUE for Enhanced CGS	N/A	JUN 2001	JUL 2001
LUT 2	N/A	APR 2004	APR 2004
RTIP MOT&E	N/A	APR 2008	APR 2008

## 9b. Schedule (Cont'd) :

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b. Current Change Explanations --(Ch-1) The CGS current estimates for the following milestones were updated to reflect the actual dates that these events occured.

Milestone	From	To
USA/USAF Trainer Interoperability	DEC 2000	APR 2000
DII COE Level 6 Certification	JAN 2001	AUG 2000
LUT for enhanced CGS (P3I Group)	FEB 2001	MAR 2001

## 10. Performance Characteristics :

a. Performance --

JSTARS DATA Receive, process, manipulate, store and display data from JSTARS E-8 aircraft	Development Estimate (SAR) N/A	Approved Program; PdE Obj/Threshold Receive / MTI/SAR and / at max process / data U2, MTI,/ rate, ARL/ACS// Process/ MTI/EO/ / display IR/ and / SAR, SIGINT, / Process/ UAV (via/ display/ GCS/TCS)/ manip- 72 hr / ulate on-line / MTI, 8 storage / hours on of E-8 / line radar / storage data / of radar / data	Demon- strated <u>Perf</u> MTI/SAR at max data rate, Process/ display manip- ulate MTI/SAR, 8 hours on line storage of radar data	Current Estimate Receive (Ch-1) and process JSTARS E8 and other sensor data to manip- ulate U2, MTI, ARL/ACS/ MTI/EO/ IR/ and SIGINT, UAV video (via
E-8 MTI Dissemination	N/A	Dissem- / Dissem- inate / inate E-8 MTI / E-8 MTI in / in readily / readily useable / useable formats / formats USMTF, / (USMTF, JTIDS, / JTIDS, NITF, / NITF, VMF) and/ VMF) imagery / and / graph- / ical /	Dissem- Inate E-8 MTI in readily useable formats (USMTF, JTIDS, NITF, VMF)	GCS/TCS) Dissem- inate E-8 MTI in readily useable formats (USMTF, JTIDS, NITF, VMF) and imagery and graph- ical

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# 10a. Performance Characteristics (Cont'd) :

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Operational Availa- bility (HW&SW)	Development Estimate (SAR)	Approved Program; PdE <u>Obj/Threshold</u> dissem-/ ination:/ capa-/ bility,/ inter-/ face/ with/ USMC/ IAS,/ dissem-/ inate/ via IDM/ .90/.75	Demon- strated Perf	Current Estimate dissem- ination capa- bility, inter- face with USMC, IAS, dissem- inate via IDM .90
Relocate	N/A	A crew / A crew of six / of six person- / person- nel must/ nel must emplace / emplace or dis- / or dis- place / place the CGS / the CGS system / system within / within 30 min- / 30 min- utes / utes (login / (login panel / panel display-/ display- ed) / ed) under / under tactical/ tactical con- / con- ditions / ditions in / in average / average climate / climate and / and non-NBC / non-NBC	30 min- ute emplace/ displace of CGS	30 min- (Ch-1) ute emplace/ displace of CGS
Interoperability	N/A	Achieve / Achieve all CGS / the Infor- / Critical mation / Infor- Exchange/ mation Require-/ Exchange	Certif- ied IER Interop- er- ability for V1	Achieve (Ch-1) JITC and CTSF Intra- Army Interop-

# 10a. Performance Characteristics (Cont'd) :

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	Development Estimate (SAR)	Approved Program; PdE Obj/Threshold ments / Require / ments; / Receive / Moving / Target / Indic- / ator an / Syn- / thetic / Apertur / Radar / data / from th / E-6; / Transmi / Ar- / Lillery / Target / Intell- / igence; / Coord-	Demon- strated <u>Perf</u> - CGS	Current <u>Estimate</u> erabil- ity certif- ication of V2 CGS
UAV Interface	N/A	/ Inate Receive / Receive TUAV and/ UAV via MAE UAV / wirelin (Pred- / to UAV ator) / ground sensor / station products/ directly/ from UAV/ air / platform/	Achieved level 4 e connec- tivity to Predator Level I connect- ivity to TUAV	Level IV(Ch-1) TUAV interop- erabil- ity
Data Dissemination	N/A	Receive / Receive & trans-/ & trans mit data/ mit sto graphic / message and / formats overlays/ to ASAS to ASAS / and and / AFATDS AFATDS /	Receive & trans- mit data and MTI overlays	Receive & trans mit data/gra phic and overlays to ASAS and AFATDS
Maintenance (HW&SW) Mean Time to Repair	N/A	30 / 60	30	30
(MTTR) (MITR) (MTTR) DS/GS (MITR)	N/A	60 / 180	60	60

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## 10a. Performance Characteristics (Cont'd) :

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	Approved	Demon-
Develop	oment Program; PdE	strated Current
Estimate	(SAR) Obj/Threshold	Perf Estimate
DII COE Implementation N/A	Level 7 / Level 5	Level 5 Level 7
	certifi-/ certifi-	certif- certif-
	cation / cation	ication ication
Beyond Line of Sight N/A	Receive / Retrans-	Receive Receive (Ch-1)
(BLOS) Operations	& / mit	& pro- & pro-
	process / JSTARS	cess cess
	JSTARS, / data to	JSTARS, JSTARS,
	ARL & / BLOS	ARL at ARL &
	Longbow / loca-	BLOS Longbow
	sensor / tions	loca- sensor
	data at /	tions data at
	BLOS /	BLOS
	tions (	1008-
Simultaneous Sensor N/A	Deceive / Peceive	Peceive Beceive
Operations	s / s	k k
0201001000	process / process	process process
	data / data	data data
	from / from	from from
	minimum / minimum	minimum minimum
	5 / 3	3 5
	sensors / sensors	sensors sensors
Imagery Storage (hrs)		
Digital Radar N/A	72 / 8	8 72
Video N/A	8 / 2	2 8
Operator Assistance N/A	Provide / Provide	Provide Provide (Ch-1)
Tools	soitware/ soitware	software software
	ieatures/ leatures	reatures reatures
	unclude / include	Lo Lo Laciude Laciude
	imagery / time	
	regis- / compres-	compres- matic
	tration / sion.	sion, target
	& manip-/ time	time recomme
	ulation,/ integra-	integra- tion
	radar / tion	tion, (ATR)
	shadow / area of	vehicle capabil-
	masking / interest	counts itles
	analysis/ alerts,	and time (in
	& auto- / vehicle	of addition
	matic / counts	arrival to curr
	target / and time	esti- entry
	recogni-/ or	mates demon-
	(ATD) / artivat	reals capabil.
	canabil_/ mates	regio- capacit-
	ities /	& manip-
	ACAGO /	a manuf

# 10a. Performance Characteristics (Cont'd) :

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	Development	Approved Program; PdE	Demon- strated Current
	<u>Estimate (SAR)</u>	Obj/Threshold (in / addition/ to T/H / rqmt) /	Perf Estimate ulation, radar shadow masking analysis
Target Files Tracked	N/A	96, / 96, 16 SW / 3 SW tracked / tracked	TBD 96, 16 SW
Remote Data Display	N/A	Full / Ability function/ to capabil-/ display ity to / & mani- CGS / pulate remote / JSTARS work- / data at station / remote up to / work- 1000m / stations via / up to wireless/ 300m via LAN / cable / connect-	Ability Full to function display capabil- & manip- ity to ulate CGS JSTARS remote data at work- remote station work- up to stations 1000m up to via 300m via wireless cable LAN connec-
Nuclear Survivability	N/A	/ Ions Hardened/ Hardened against / against FMP / FMP	Hardened Hardened against against
Embedded Training	N/A	Fully / Ability DIS com-/ to run pliant, / simula- able to / ted run / training remote / or exer- / recorded cises, / mission simula- / tapes or tions & / stand live / alone/ mission / cluster- data / ed CGSs simula-/	Fully Fully DIS com- pliant, plaint, able to able to run run remote remote exer- cises, cises, simula- tions & tions & live mission mission data data simulta- simulta-
CGS Trainors	N/A	neously / Opera- / Stand- tor, / alone trainer / operator inter- / & main- operable/ tenance w/USAF / trainer	neously neously Cpera- Opera- tor, tor, trainer trainer inter- inter- operable operable w/USAF w/USAF

## 10a. Performance Characteristics (Cont'd) :

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		Approved	Demon-	
	Development	Program; PdE	strated	Current
	Estimate (SAR)	Obj/Threshold	Perf	Estimate
		trainer /	trainer	trainer
Tactical Internet	N/A	Direct / Indirect	Direct	Direct
		connect-/ connect-	connect-	connect-
		ivity / ivity	ivity	ivity
		via em- / via TOC	via em-	via em-
		bedded / LAN	bedded	bedded
		com /	COR	com
		links /	links	links

b. Current Change Explanations --(Ch-1) These changes were made to reflect revisions to the anticipated capabilities of the CGS in view of the extensive P3I modifications being made to the system

Characteristic	From	То
Receive, process, Manip- ulate, store and display data from JSTARS E-8 air- craft	Receive and process U2, MTI, ARL/ACS/MTI/ EO/IR and SIGINT, UAV (via GCS/TCS) 72 hr on-line storage of E-8 radar data	Receive and process JSTARS F8 and other sensor data to manip ulate U2, MTI,ARL/ADS/ MTI/EC/1R and SIGINT, UAV video via 325/003
Relocate	A crew of six person- nel must emplace or the CGS system within 30 minutes (login panel displayed) under tact- ical conditions in aver- age climate and non-NBC environment	30 minute emplace/dis place of CGS
Interoperability	Achieve JITC certifica- tions of V2 CGS	Achieve JITF and CTSF Intra-Army interoper- ability certification of V2 CGS
UAV Interface	Control and receive TJAV sensor products	Level IV TUAV interop- erability
Beyond Line of Sight (BLOS) Operations	Direct transmission of JSTARS data (MTI/SAR) from E-8 to ground units	Peceive and process JSTARS, ARL & Longbow sensor data at BITS locations
Operator Assistance Tools	Provide software fea- tures to include imag-	Provide software fea cures to include aito

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## 10b. Performance Characteristics (Cont'd) :

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ery registration & man- ipulation, radar shadow masking analysis & auto- matic target recognit- ion (ATR) capabilities (in addition to T/H requirement)	matic target recognit ion (ATR) capabilities (in addition to curr- ently demonstrated ca- pabilities
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------

# 11. Total Program Cost and Quantity (Dollars in Willions):

		Development	Approved	Current
a. Cost		Estimate (SAR)	Program; PdE	Estimate
Devel	opment (RDT&E)	170.2	196.0	162.4
Procu	rement	642.5	942.2	630.5
R	ecurring flyaway	(527.1)		(440.7)
N	onrecurring flyaway	(19.9)		(46.2)
Tot	al Flyaway	(547.0)		(486.9)
Oth	er Wpn System Cost	(59.6)		(79.7)
Pec	uliar Support	(0.0)		(0.0)
. Ini	tial Spares	(35.9)		(63.9)
Const	ruction (MILCON)	0.0	0.0	C. 0
Acqui	sition O&M	D.0	0.0	Ç
Total	FY 2000 Base-Year \$	812.7	1138.2	792.9
Escal	ation	7.5	87.4	4.2
Dev	elopment (RDT&E)	(4.0)	(6.0)	(1.4)
Pro	curement	(3.5)	(81.4)	(2.8)
Con	struction (MILCON)	(0.0)	(0.0)	(0.0)
Aca	uisition O&M	(0.0)	(0.0)	(0.0)
Total	Then Year \$	820.2	1225.6	797.1
b. Quant	ity			
Develo Procur Total	pment (RDT&E) ement	0 96 96	96 96	0 
10641				

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

## 12. Unit Cost Summary :

	UCR	Current	
	Baseline	Estimate	Percent
	(AUG 2000 APB) (De	C 2001 SAR)	Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	1138.2	792.9	
(2) Quantity	96	96	
(3) Unit Cost	11.856	8.259	-30.34
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	942.2	630.5	
(2) Quantity	96	96	
(3) Unit Cost	9.815	6.568	-23.08

## 13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	174.2	646.0	-	820.2
Previous Changes:				
Economic		-		-
Quantity	- 1	-21.1	- 1	-21.1
Schedule	- 1	-	-	-
Engineering		+313.5	-	+313.5
Estimating	+27.8	-	-	+27.8
Other	1 - 1	-	-	-
Support	- 1	+85.2		+85.2
Subtotal	+27.8.	+377.6	and the second sec	+405.4
Current Changes:	· Or man is play a president descent.			
Economic	-0.1	-0.2		-0.3
Quantity		-	-	-
Schedule	- 1	-	-	-
Engineering	-	-	-	-
Estimating	-38.1	-361.1		-399.2
Other	-	-	-	-
Support		-29.0	-	-29.0
Subtotal	-38.2	-390.3		-428.5
Total Changes	-10.4	-12.7	-	-23.1
Current Estimate	163.8	633.3	-	797.1
## 13a. Cost Variance Analysis (Cont'd) :

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TATOT.
Development Estimate	170.2	642.5		812.7
Previous Changes:				
Quantity	-	-20.4	-	-20.4
Schedule	-		-	-
Engineering		+248.8	-	+248.8
Estimating	+25.8	-	-	+25.8
Other	-	- 1	- 1	-
Support	-	+71.3	1	+71.3
Subtotal	+25.8	+299.7	-	+325.5
Current Changes:				
Quantity		-	-	-
Schedule	-	- 1	-	-
Engineering	-	- 1	-	-
Estimating	-33.6	-288.5		-322.1
Other		-	-	-
Support		-23.2		-23.2
Subtotal	-33.6	-311.7		-345.3
Total Changes	-7.8	-12.0	- 1	-19.8
Current Estimate	162.4	630.5		792.9

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

		2000 - 19H2	has a state
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-0.3
	Economic adjustment for negative program change. (Economic)	N/A	+0.2
	Adjustment for Current and Prior Inflation. (Estimating)	+C.1	+0.1
	Estimate/funding previously identified as CGS has been reallocated to the Distributed Common Ground System (DCGS). (Estimating)	-33.7	-38.2
	RDT&E Subtotal	-33.6	-39.2
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-4.4
	Economic adjustment for negative program change. (Economic)	N/A	+4.2
	Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
	Estimate/funding previously identified as CGS has been reallocated to the Distributed Common Ground System (DCGS). (Estimating)	-288.8	-361.4

CGS, December 31, 2001

## 13b. Cost Variance Analysis (Cont'd) :

b. Current Change Explanations	(Dollars :	in Millions)
	Base-Year	Then-Year
Adjustment to account for transfer of out year support costs from the CGS to the DCGS. (Support)	-23.2	-29.0
Procurement Subtotal	-311.7	-390.3

## 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	
8.54	-0.003	-0.223		+3.27	-3.87		+0.585	-0.241	8.30

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.73	-0.002	-0.225	~ =	+3.27	-3.76		+0.585	-0.132	6.60

## c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	AUG 1993	AUG 1993
Milestone III	N/A	N/A	AUG 2000	AUG 2000
IOC	N/A	N/A	JAN 1997	JAN 1997
Total Cost	N/A	820.2	1225.6	797.1
Total Quantity	N/A	0	96	96
Prog Acq Unit Cost	N/A	0.0	12.8	8.3

CGS, December 31, 2001

## 15. Contract Information (Then-Year Dollars in Millions):

a. Procurement	Initial	Contract	Price
CGS LRIP:	Target	Ceiling	Otv
General Dynamics, Scottsdale, AZ			
DAABO7-96-C-S204, FFP	\$70.6	N/A	18
Award: December 14, 1995			
Definitized: December 14, 1995			

Curren	c Contract Price	3	Escimated P	rice At Completion
Target	Ceiling	Qty	Contractor	Program Manager
\$469.5	N/A	96	\$469.5	\$469.5

Explanation of Change:

The adjusted target price includes additional end item units and current P3I efforts to upgrade the end item.

Cost and Schedule variance reporting is not required on this FFP contract.

### 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY01-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To Complete (FY04-07)	Total
RDT&E	127.9	8.0	4.7	23.2	163.8
Procurement	586.8	25.4	11.9	9.2	633.3
MILCON	-	-	-	-	
OEM	-	-	-		-
Total	714.7	33.4	16.6	32.4	797.1

b. Annual Summary -- COMMON GROUND STATION

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal		Flyaway FY 2000 Dollars	Flyaway FY 2000 Dollars	fotal Program	Total Program
Year	Qty	Nonzec	Rec	Easo-Year S	Then ar
1995			• • • • • • • •	39.8	5. 3
1996				15.8	15.3
1997				9.6	9.4
1998				6.6	6 5
1999				5.3	5.3
2000				25.2	25.5
2001				27.3	28.1

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## 16b. Program Funding Summary (Cont'd) :

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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 S
2002				7.6	8.0
2003				4.4	4.7
2004				4.5	4.9
2005				5.7	6.3
2006				5.5	6.2
2007				5.1	5.8
Subtotal				162.4	163.8

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 S
1995	8	1.1	52.5	60.3	58.3
1996	16	2.6	75.9	88.9	86.7
1997	16		71.3	94.6	93.4
1998	20	27.7	49.0	89.5	89.3
1999	12	14.8	52.4	87.4	88.2
2000	14		71.9	98.1	100.3
2001	10		50.1	68.0	70.6
2002			9.7	24.1	25.4
2003			7.9	11.1	11.9
2004				8.0	8.7
2005				0.5	0.5
Subtotal	96	46.2	440.7	630.5	633.3

Recurring flyaway in FY98/99 includes \$22.5M required to upgrade 16 MGSM units to the CGS configuration. Recurring costs in FY02 and beyond are P31 costs which will be required to upgrade the CGS.

	1	Flyaway Dollars	Flyaway Dollars	Program	Total Program
and the second s	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
Grand Total	96	46.2	440.7	792.9	797.1

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## 17. Delivery/Expenditure Information :

a. Deliveries To 1	Date
--------------------	------

Date	Plan	Actual
RDT&E	0	C
Procurement	96	96

Percent Total Program Quantities Delivered: 100.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 580.5

Percent Total Program Expended: 72.8%

#### 18. Operating and Support Costs :

a. Assumptions and Ground Rules --O&S costs are based on an assumed life cycle of 20 years. Sustainment is calculated on the cumulative fielded quantity of systems and appropriate personnel necessary to maintain the system. The source of O&S data is the July 2000 Joint STARS (Army) Army Cost Position (ACP). The GSM is an antecedent system.

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Thousands)

	COMMON GROUND STATION Avg Annual Cost CGS	C.214
Cost Element		
Mission Pay & Allowances	361.5	361.5
Unit Level Consumption	168.2	144.0
Intermediate Maintenance	0.0	14.0
Depot Maintenance	18.2	2.0
Contractor Support	15.8	18.0
Sustaining Support	90.0	50.0
Indirect Costs	2.1	N/A
Total	675.8	589.5

Total C	S Cost	COMMON	GROUND	STATION	GSN	
BY\$ (In Mill	ions)	1	298.2		38.8	
TYS (In Mill	ions)	1	766.3		38.3	1

Report Creation Date: 03/25/2002 11:59:07 AM

# N-4 AV-88 REMAN

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: AV-8B Remanufacture

#### AS OF DATE: December 31, 2001

SUBJECT	PAGE
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- 1. (U) Designation and Nomenclature (Popular Name): AV-8B/Attack, V/STOL, Close Air Support (Harrier II+ Remanufacture)
- 2. (U) DoD Component: Navy

#### 3. (U) Responsible Office and Telephone Number: Air ASW, Assault and Special Mission COL Thomas White, III Program (PMA-257), 47123 Buse Road Assigned: January 15, 1999 Unit IPT, Suite 161 DSN 757-5460; COMM (301) 757-5460 Patuxent River, MD 20670-1547 WHITETBIII@navair.navy.mil

4. (U) Program Elements/Procurement Line Items: PROCUREMENT: APPN 1506 ICN 0124 (Navy) (U)





02-6-0643

AV-8B Remanufacture, December 31, 2001

#### 5. (U) References:

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SAR Baseline (Production Estimate): (U) NAE Approved Acquisition Program Baseline dated June 30, 1994.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated February 26, 2000.

#### 6. (U) Mission and Description:

(U) The AV-8B (Harrier II) is a second generation, Vertical/Short Takeoff and Landing (V/STOL) light-attack jet aircraft utilized by the Marine Corps. The primary mission of the AV-8B is to provide responsive close air support for the ground forces. This single-piloted, advanced V/STOL aircraft can operate from short fields, forward sites, roads and surface ships providing minimum response time to target.

The AV-8B Remanufacture program converts older AV-8B aircraft to the most recent production configuration. The process requires disassembly of the aircraft; modification of selected subsystems and components; and reassembly of selected original, modified, and new production subsystem and parts. Production processes and tooling are used to fabricate new subsystems, parts and components as well as to assemble the aircraft.

AV-8B Remanufacture is an Acquisition Category IC program managed by the A/V Weapon Systems Program Manager, PMA-257. Because the remanufactured aircraft reflect the present production aircraft configuration, they satisfy existing Operational Requirements (OR) 025-05-85 of September 19, 1984 (Night Attack) and OR 224-05-89 of August 8, 1988 (Radar). Remanufacture provides the Marine Corps with increased quantities of aircraft capable of effective night fighting operations at a reduced cost by reusing major components of the day attack fleet aircraft.

### 7. (U) Executive Summary:

(U) The Remanufacture Program was reduced by \$4.5M in FY2000 that is necessary for the procurement of required peculiar support equipment. A Program Deviation Report (PDR) (i.e. breach to February 2000 APB) was issued to emphasize that identification of a revised Navy Support Date (NSD) objective and threshold is dependent on funds restoration date. The NSD is undefined until resolved.

Production line transition/shutdown (PLT) has been funded in the budget starting in FY2003 through FY2006. The Program Manager continues to explore PLT cost minimization strategies consistent with post production support requirements.

#### 8. (U) Threshold Breaches:

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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 AV-8B \$4.5M shortfall remains unfunded. The Navy Support Date (NSD) is undefined until resolved. Unless otherwise directed the AV-8B will continue to utilize commercial repair contracts to support Fleet needs.

## 9. (U) <u>Schedule</u>:

a. Milestones --

a. Milestones			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone IV/III Review	JAN 1994	JAN 1994	MAR 1994
Contract Award	FEB 1994	FEB 1994	MAY 1994
First A/C delivery	FEB 1996	FEB 1996	FEB 1996
DT-III			
Start	FEB 1996	FEB 1996	FEB 1996
Complete	AUG 1996	AUG 1996	AUG 1996
OT-IIIB FOT&E			
Start	FEB 1996	FEB 1996	FEB 1996
Complete	SEP 1996	MAY 1997	MAY 1997
IOC (Completion of FOT&E	DEC 1996	AUG 1997	SEP 1997
Report)			
FOC (Delivery of the 20th REMAN acft)	MAR 1999	MAR 1999	MAR 1999
Material Support Date 1/	MAR 1999	MAR 1999	APR 1995
Navy Support Date 2/	MAR 1999	OCT 2002	TBD (Ch-1)

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AV-8B Remanufacture, December 31, 2001

## 9b. (U) <u>Schedule (Cont'd)</u>:

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b. Current Change Explanations --(U) (Ch-1) The NSD changed from OCT 2002 to TBD due to the reduction of \$4.5M which precludes procurement of necessary peculiar support equipment. NSD is undefined until resolved.

### 10. (U) Performance Characteristics:

a. Performance ---

	Production Estimate (SAR)	Ap Progr <u>Obj/T</u>	proved am (APB) <u>hreshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Dimensions					
Length	47.97	47.97	/ 47.97	47.97	47.97
Height	11.65	11.65	/ 11.65	11.65	11.65
Span	30.33	30.33	/ 30.33	30.33	30.33
Weight Empty (lbs)	14,700	14,700	/ 14,730	14,730	14,730
Max VTOGW Wt (1bs)	19,200	19,200	/ 19,200	19,200	19,200
(Vertical Take-off					
Gross Weight)					
Max STOGW Wt (lbs)	29,750	29,750	/ 29,750	32,000	32,000
Speed Max. (Mach)	.83	.83	/ .83	1.00	1.00
Mission Radius (nm)					
CAS	142	142	/ 95	250	250
Interdiction	486	486	/ 440	486	486
Reliability (hrs)					
MFHBMCF(HW) - Oper	12.6	12.6	/ 12.6	32.6	32.6
Maintainability (hrs)					
MMH/FH(HW) Oper	3.2	3.2	/ 3.2	2.7	2.7
MTTR (Critical)	6.7	6.7	/ 6.7	4.4	4.4
Oper	(LAV(1))	2 Z-, ⁻ .			Contraction of the
Gun Accuracy (mils)	(0)(1)				
)Sea Surf Search (nm)	5.				
Air-to-Air Det Range					
(5 sq.m. tgt) (nm)					
Nose, VS 1000 (ft)					

b. Current Change Explanations -- None

Tail, RWS 2000 (ft)

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AV-8B Remanufacture, December 31, 2001

## 11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost Development (RDT&E) Procurement	Production <u>Estimate (SAR)</u> 0.0 1843.0	Approved <u>Program (APB)</u> 0.0 2044.3	Current <u>Estimate</u> 0.0 1991.6
Airframe Engine	(1163.2) (310.6)		(1133.2) (268.5)
Avionics Other GFE	(37.2)		(42.4)
Non-Recurring	(1512.1)		(50.1)
Other Wpn Sys Cost Peculiar Support	(0.0)		(0.0)
Initial Spares Construction (MILCON)	(82.6)	0.0	(76.7)
Acquisition O&M Total FY 1994 Base-Year S	<u>0.0</u> 1843.0	<u>0.0</u> 2044.3	<u>0.0</u> 1991.6
Escalation Development (RDT&E) Procurement Construction (MILCON) Acquisition O&M Total Then Year \$	315.4 (0.0) (315.4) (0.0) (0.0) 2158.4	277.7 (0.0) (277.7) (0.0) <u>(0.0)</u> 2322.0	175.0 (0.0) (175.0) (0.0) (0.0) 2166.6
b. (U) Quantity			
Development (RDT&E) Procurement Total	0 73 73	0 73 73	0 

(U) There are no LRIP quantities associated with this program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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AV-8B Remanufacture, December 31, 2001

## 12. (U) Unit Cost Summary:

	UCR Baseline	Current Estimate	Percent
	(FEB 2000 APB) (Dec	2001 SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1994 BY\$)	2044.3	1991.6	
(2) Quantity	73	74	
(3) Unit Cost	28.004	26.914	-3.89
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1994 BY\$)	2044.3	1991.6	
(2) Quantity	73	74	
(3) Unit Cost	28.004	26.914	-3.89

#### 13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	2158.4	_	2158.4
Previous Changes:				
Economic	-	-171.3	-	-171.3
Quantity	-	-20.9	-	-20.9
Schedule	-	+39.8	-	+39.8
Engineering	-	+69.3	-	+69.3
Estimating	-	-109.7	-	-109.7
Other			-	-
Support		+155.1	-	+155.1
Subtotal	-	-37.7	-	-37.7
Current Changes:				
Economic	-	+7.4	-	+7.4
Quantity	-	+42.1	_	+42.1
Schedule	-	+0.5	-	+0.5
Engineering	-	+0.8	-	+0.8
Estimating	-	+15.4	-	+15.4
Other	-	_	-	-
Support	-	-20.3	-	-20.3
Subtotal	-	+45.9	-	+45.9
Total Changes	-	+8.2	-	+8.2
Current Estimate	-	2166.6	-	2166.6

## 13a. (U) Cost Variance Analysis (Cont'd):

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	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	1843.0	-	1843.0
Previous Changes:				
Quantity	-	-16.6	-	-16.6
Schedule	-	+23.0	-	+23.0
Engineering	_	+60.3	-	+60.3
Estimating	-	-83.4	-	-83.4
Other	-	-	-	-
Support	-	+130.9	-	+130.9
Subtotal	-	+114.2	-	+114.2
Current Changes:				
Quantity	] –	+37.1	- '	+37.1
Schedule		+0.3	-	+0.3
Engineering	-	+0.8	-	+0.8
Estimating	-	+12.2	-	+12.2
Other	-	-	~~	
Support	-	-16.0	-	-16.0
Subtotal		+34.4	-	+34.4
Total Changes	-	+148.6	-	+148.6
Current Estimate	-	1991.6	_	1991.6

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

b. (U) Current Change Explanations --

	D. (0) Current Change Expranacions		
		(Dollars in Base-Year Th	Millions) hen-Year
(1)	Procurement		
(-)	Revised escalation indices (Economic)	N/A	+5 3
	Footomic adjustment for possible program	N / 71	+2.1
	change. (Economic)	NZA	72.1
	Total Quantity Variance associated with	+34.9	+39.6
	increase of 2 aircraft from 72 to 74.		
	Quantity increase of 2 aircraft. (Quantity)	+37.1	+42.1
	Allocation to Schedule variance resulting	+0.3	+0.5
	from Quantity Change, (OR) (Schedule)		
	Allocation to Engineering variance resulting	+0.8	+0.8
	from Quantity Change (OR) (Engineering)		
	Allocation to Fetimating variance resulting		-3.8
	from Quantity Change (OB) (Fetimating)	5.5	5.0
	Adjustment for Current and Drive Teflation	2 4	2 0
	Adjustment for current and Prior Inflation.	-0.4	-3.0
	(Estimating)	10.0	
	Adjustment to change in estimating	+18.9	+23.0
	assumptions to reflect acquisition strategy		
	(Estimating)		
	Adjustment for Current and Prior Inflation.	-1.5	-1.7
	(Support)		
	Change in Initial Spares primarily due to	-9.6	-12.2
	revised estimate. (Support)		

AV-8B Remanufacture, December 31, 2001

#### 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations --(Dollars in Millions) <u>Base-Year Then-Year</u> Change in Peculiar Support due to a change in -4.9 -6.4 revised estimate and quantity change. (Support) Procurement Subtotal +34.4 +45.9

QR = Quantity related changes.

#### 14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes						PAUC		
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.57	-2.21	-0.121	+0.545	+0.947	-1.27		+1.82	-0.289	29.28

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Prod Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.57	-2.21	-0.121	+0.545	+0.947	-1.27		+1.82	-0.289	29.28

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate (PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	JAN 1994	MAR 1994
IOC	N/A	N/A	DEC 1996	SEP 1997
Total Cost	N/A	N/A	2158.4	2166.6
Total Quantity	0	0	73	74
Prog Acg Unit Cost	N/A	N/A	29.6	29.3

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement	Initial	Contract Pr	ice
(U) <u>FY98 AIRFRAME:</u>	<u>Target</u>	Ceiling	<u>Oty</u>
MCDONNELL DOUGLAS CORP, ST. LOUIS MO N00019-97-C-0046, FFP Award: September 16, 1997 Definitized: Japuary 23, 1998	\$188.1	N/A	12
Current Contract Price	Estimated Pr	rice At Comp	oletion
<u>Target</u> <u>Ceiling</u> <u>Oty</u>	<u>Contractor</u>	<u>Program</u>	<u>Manager</u>
5188.1 N/A 12	\$188.1	S ¹	188.1

\$188.1 N/A 12

Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

Contract N00019-97-C-0046 is a four-year multiyear contract that is reported in three parts. The first part reflects the FY98 buy of 12 AV-8B (remanufacture) aircraft definitized January 23, 1998. The FY98 portion is a single year Firm Fixed Price (FFP) contract. The second part reflects a Fixed Price Incentive Fee (FPIF) FY99-FY01 buy of 32 AV-8B (remanufacture) aircraft. The third part reflects a FFP contract modification awarded May 04, 2001 for a buy of two AV-8B (remanufacture) aircraft added by Congress.

		Initial	Contract Pr	ice
(U) FY99-01 AIRFRAME:		Target	Ceiling	Otv
MCDONNELL DOUGLAS, ST. LOUIS,	MO			
N00019-97-C-0046, FPIF		\$489.0	\$505.5	32
Award: September 16, 1997		• • •	•	
Definitized: May 28, 1999				
Current Contract Price		Estimated P	rice At Comp	letion
Target Ceiling	Qty	Contractor	Program	Manager
\$489.0 \$505.5	32	\$505.5	\$5	02.1
		Cost Varianc	<u>e Schedule V</u>	ariance
Previous Cumulative Variances		\$-4.1	\$-10.	8
Cumulative Variances To Date	(11/25/01)	\$-11.8	\$-9.	6
Net Change		\$-7.7	\$1.	2

Explanation of Change:

(U) Latest revised Government and Contractor estimates at completion project that the multiyear contract will go beyond target cost. Analysis of over target costs on FY1999 is complete and has been funded at \$5.6M. \$3.0M of the FY2000 over target costs have been funded. The balance is still under

#### 15. (U) Contract Information (Cont'd):

analysis but will not exceed \$5.6M. FY2001 over target costs are being analyzed and will not exceed \$5.6M.

Cost and Schedule variances are a result of the following: Contractor direct and indirect rate increases due to Corporate increase in the Forward Rate and Pricing agreement, loss of manufacturing expertise and increase in manufacturing hours due to subcontractor facilities move (BAE to Brough) and divestiture impacts relative to Boeing fabrication facilities that were sold to GKN Corp.

	Initial	Contract B	Price
(U) <u>FY2001 AIRFRAME:</u>	<u>Target</u>	<u>Ceiling</u>	<u> Ot. y</u>
MCDONNELL DOUGLAS, ST LOUIS, MO			
N00019-97-C-0046, FFP	\$33.6	N/A	2
Award: May 4, 2001			
Definitized: May 4, 2001			
Current Contract Price	Estimated P	rice At Com	npletion
	A such some such as so		

<u>Target</u>	Ceiling	<u>Otv</u>
\$33.6	N/A	2

Estimated Price At Completion <u>Contractor</u> \$33.6 <u>Program Manager</u> \$33.6

Explanation of Change:

(U) None.

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Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

An Advanced Acquisition Contract (AAC) was signed on November 30, 2000 for two additional AV-8B (remanufacture) aircraft. The definitized Firm Fixed Price (FFP) modification was executed on May 04, 2001.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

## a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-06)	<u>Total</u>
RDT&E	-	-	-	-	
Procurement	2140.8	-	6.0	19.8	2166.6
MILCON	-	-	-	-	
O&M	_	-		-	
Total	2140.8	-	6.0	19.8	2166.6

b. Annual Summary -- AV-8B Remanufacture

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Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		
		FY 1994	FY 1994	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1994	4		135.8	141.0	145.4
1995	4	2.3	97.0	124.3	130.3
1996	8	13.1	176.7	240.4	255.5
1997	12	6.3	245.1	336.7	361.0
1998	12	6.0	225.4	299.5	325.0
1999	11		241.6	322.2	354.3
2000	11		198.2	276.9	309.3
2001	12	0.6	175.9	229.1	260.0
2002					
2003		5.1		5.1	6.0
2004		10.8		10.8	12.9
2005		4.1		4.0	4.9
2006		1.6		1.6	2.0
Subtotal	74	50.1	1495.7	1991.6	2166.6

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
· · · · · · · · · · · · · · · · · · ·	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	74	50.1	1495.7	1991.6	2166.6

AV-8B Remanufacture, December 31, 2001

#### 17. (U) <u>Delivery/Expenditure Information</u>:

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(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	55	53

(U) Percent Total Program Quantities Delivered: 71.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1743

(U) Percent Total Program Expended: 80.4%

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules -- There is no antecedent to the AV-8B.

Flight hours per aircraft per month17.1Number of aircraft/squadron16(10 aircraft per squadron with a six aircraft detachment)Consumption rate gal/hr686.4POL cost, JP-5, per barrel, FY 94\$46.75Date of estimate:25 January 2001Source:AIR-4.2 FY2000 Operating and Support Cost Update Report

Section b comments: Total Program costs span from FY1994 through 2015. Program costs were projected based upon attrition rate of 3.3% and ramped down to meet program completion at FY2015. Costs do include kit modifications costs.

The sections a and b does not include Fleet Readiness Support (FRS)costs.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Miilions)

	AV-8B Remanufacture Avg Annual Cost Per	Avg Annual Cost squadron/year
Cost Element	squadron/year	
Mission Pay & Allowances	10.8	N/A
Unit Level Consumption	16.8	0.0
Intermediate Maintenance	3.5	0.0
Depot Maintenance	3.3	0.0
Contractor Support	0.0	0.0
Sustaining Support	4.0	0.0
Indirect Costs	12.2	N/A
Total	50.6	0.0

## 18b. (U) Operating and Support Costs (Cont'd):

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	Total O&S Cost	AV-8B Remanufacture	Avg Annual Cost
BY\$	(In Millions)	4832.1	N/A
TY\$	(In Millions)	5689.0	N/A

Report Creation Date: 03/25/2002 11:03:29 AM

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# AF-19 NAS

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#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: NAS

AS OF DATE: December 31, 2001

SUBJECT Cover Sheet Information Mission and Description Executive Summary Threshold Breaches Schedule Performance Characteristics Total Program Cost and Quantity Unit Cost Summary Cost Variance Analysis Unit Cost and Other History Contract Information Program Funding Summary Delivery/Expenditure Information Operating and Support Costs	PAGE 1 2 4 4 5 7 8 8 10 11 12 15 15	in and a second se	- Chore - Line
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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 75 Vandenberg Drive

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Hanscom AFB Bedford, MA 01731-2103 GS-15 Alexander Kelley Assigned: April 2, 2001 DSN 478-4947; COMM (781) 377-4947 Alexander.Kelley@hanscom.af.mil

## 4. Program Elements/Procurement Line Items: RDT&E: PE 0204696N PE 0305137F PE 0604633A

**PROCUREMENT:** APPN 1810 ICN 24696N (Navy) APPN 3080 ICN 35137F (Air Force) APPN 2031 ICN 64633A (Army)

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

SAF/MAT

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#### 5. <u>References</u>:

SAR Baseline (Development Estimate): AFAE Approved Acquisition Decision Memorandum dated July 24, 1995.

Approved Program: AFAE Approved Acquisition Program Baseline (APB) dated August 8, 2001.

#### 6. Mission and Description:

The DoD National Airspace System (NAS) program will modernize the DoD radar approach control facilities in parallel with the Federal Aviation Administration (FAA). The DoD NAS program provides systems and facilities compatible/interoperable with the FAA modernization, prevents DoD flight delays and cancellations, continues DoD's access into Special Use Airspace, provides transparent services to military and civil aircraft, replaces aging DoD Air Traffic Control (ATC) systems, and increases flight safety. DoD will upgrade voice, data, and sensor systems as well as facility configurations and operations concepts to provide continued quantity and quality of ATC services to the aviation community. The NAS program also includes the Military Airspace. Management System (MAMS) which will schedule and manage special use airspace. MAMS is an automated Special Use Airspace (SUA) scheduling and utilization reporting tool which will enable DoD to more efficiently manage SUA. DoD military ATC and fighting/flying readiness will be maintained.

#### 7. Executive Summary:

DOD will acquire, to the maximum extent practical, systems on contract or systems to be on contract with the FAA to reduce development costs and prevent duplication. If the DoD does not modernize the DoD Air Traffic Control (ATC) system, the resulting reduced interoperability between current DoD and FAA facilities will negatively impact DoD flight operations.

1993 thru 1994 included the demonstration of the Military Airspace Management System (MAMS) prototype software at Edwards AFB, CA; the demonstration of a repackaged Federal Aviation Administration (FAA) Common Console into the DoD configuration; release of the MAMS Request for Proposal (RFP); formal approval of executive interagency agreements for test, procurement and support of FAA Automation Systems; Chief of Staff of the Air Force (CSAF) approval of updated National Airspace System (NAS) and MAMS Operational Requirements Documents (ORDs); DAC approval of MAMS Milestone II review; OSD approval of the NAS Test and Evaluation Master Plan (TEMP); and the FAA release of the Enhanced Terminal Voice Switch (ETVS) RFP. In August 1994, the DoD assumed from the FAA, the lead role for the Digital Airport Surveillance Radar (DASR) acquisition.

1995 thru 1996 included the NAS paper AFSARC Milestone II review; the Military Airspace Management System (MAMS) successful negotiations with SM-ALC to utilize their existing Advanced Technology Support Program (ATSP) contract for completion of the MAMS development effort; Federal Aviation Administration (FAA) Enhanced Terminal Voice Switch (ETVS) contract award to Denro, Inc.; Federal Aviation Administration (FAA) contract award of the Standard Terminal

#### 7. Executive Summary (Cont'd):

Automation Replacement System (STARS) to Raytheon Corporation on September 16, 1996. The DASR contract was awarded to Raytheon Corporation on August 9, 1996.

1997 thru 1998 included the AFAE approval of Change 1 to the NAS APB on February 27, 1997. A second key approval occurred on June 30, 1997 with the issuance of an amendment to the DoD National Airspace System (NAS) MS II Decision and Phase II Guidance which authorized NAS a quantity increase from 53 to 65 operational sites. Successful completion of the Military Airspace Management System (MAMS) Combined Test & Evaluation, favorable Milestone III Review, and multi-Service CONOPS approval also took place. The Voice Communications Switching System (VCSS) portion of NAS also experienced success with the completion of DT&E and the PEO approval of the OT&E certification briefing.

1999 thru 2000 included the declaration of the Military Airspace Management System (MAMS) IOC on January 21, 1999 and start of MAMS Full Rate Production on March 31, 1999. Completion of the DoD Advanced Automation System (DAAS) DT&E occurred October 1, 1999, with the completion of the Digital Airport Surveillance Radar (DASR) DT&E following in step on October 8, 1999. The Voice Communication Switching System (VCSS) achieved a successful Full Rate Production Decision on November 15, 1999. Change 3 to the NAS APB received AFAE approval on May 3, 1999. SAF/AQ approved an amendment to the DoD National Airspace System (NAS) MS II Decision and Phase II Guidance on May 3, 1999. The new ADM authorized NAS a quantity increase from 65 to 92 operational sites. The Digital Airport Surveillance Radar (DASR) systems commenced safe flight operations at Eglin AFB in June 2000 which have successfully continued uninterrupted to date.

2001 thru January 2002 included the AFAE approval of Change 4 to the NAS APB and an amendment to the DOD NAS MS II Decision and Phase II Guidance on August 8, 2001. The new ADM authorized a second Low Rate Initial Production (LRIP) of Digital Airport Surveillance Radar (DASR) and DoD Advanced Automation System (DAAS) equipment and delegated approval authority to the PEO. DAAS became operational at McGuire AFB in September 2001. Completed formal DT&E testing of Primary Surveillance Radar (PSR) software enhancements at Eglin AFB December 2001 in preparation for MOT&E. Second DAAS LRIP Tri-Service coordination obtained early February 2002. Anticipate PEO Second LRIP approval of the DAAS equipment during 2Qtr FY02.

## 8. Threshold Breaches:

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	NO
Cost RDT&E	No
Procurement	NO
MILCON	NO
OSM	No
Program Acquisition Unit Cost (PAUC)	: No
Average Procurement Unit Cost (APUC)	NO NO

b. Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

9. <u>Schedule</u>: a. Milestones --

4. 112200000			
	Development	Approved	Current
	Estimate (SAR	) Program (APB)	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	SEP 2002	SEP 2002
IOC (First DoD Site Activation)	APR 2000	AUG 2002	AUG 2002
RADAR (DASR)			
Contract Award	DEC 1995	AUG 1996	AUG 1996
DTGE			
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	JUN 2002	JUN 2002
Full Rate Production Contract Award	MAR 1999	SEP 2002	SEP 2002
AUTOMATION (DAAS)			
Production Award Exercise	JUL 1998	SEP 2002	SEP 2002
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. <u>Schedule (Cont'd)</u>:

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Complete	MAR 1998	AUG 1998	AUG 1998
IOTSE			
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 Awa	rd NOV 1998	NOV 1998	MAR 1999
IOC (First Delivery)	AUG 1998	AUG 1998	JAN 1999

#### ACRONYMS:

ATCALS = Air Traffic Control and Landing Systems DASR = Digital Airport Surveillance Radar DAAS = DOD Advanced Automation System VCSS = Voice Communications Switching System MAMS = Military Airspace Management System

b. Current Change Explanations -- None

#### 10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	Demon– strated <u>Perf</u>	Current <u>Estimate</u>
DOD ATCALS IN THE NAS Inter/Intrafacility Data Transfer				
Auto Transfer of Position Track Data	IAW ICD	IAW ICD / IAW ICD	Met Obj.	IAW ICD
Electronic Inter- facility Transfer of Flight Plans	IAW ICD	IAW ICD / IAW ICD	Met Obj.	IAW ICD
Aircraft Tracked Medium (LCF)	900	900 / 250	Net Thresh.	900
Radar Subclutter Visibility (dB)	55	55 / 42	Met Thresh.	43
Voice Compatibility/ Interoperability	<pre>/ Digital     Voice     Systems</pre>	Digital / Inter- Voice / face to Systems / existing / FAA / Systems	Met Thresh.	Digital Voice Systems
MAMS				
Conflict Identification	100% of flicts fied; 85% of flicts	100% of / 98% of flicts / flicts fied; / fied; 85% of / 85% of flicts / flicts	Met Thresh.	100% of con- flicts identi- fied;

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## 10a. Performance Characteristics (Cont'd):

		Approved	Demon-	
	Development <u>Estimate (SAR)</u> fied <or= 10<br="">(sec)</or=>	Program (APB) <u>Obj/Threshold</u> fied / identi- <or= 10="" fied<br="">(sec) / <or= 30<br="">/ (sec)</or=></or=>	strated <u>Perf</u>	Current <u>Estimate</u> 85% of con- flicts identi- fied <or- 10<br="">(sec)</or->
Interface with FAA	Trans- mittal for 85% of messages between Schedul- er and FAA <or= 5 (min)</or= 	Trans- / Trans- mittal / mittal for 85% / for 85% of / of messages/ messages between / between Schedul-/ Schedul- er and / er and FAA <or= <or="&lt;br" faa="">5 (min) / 10 (min)</or=>	Met Obj.	Trans- mittal Time for 85% of messages between schedul- er and FAA <or= 5<br="">(min)</or=>
Reporting	Process- ing Time of Util- ization Data <or= 1<br="">(min); Total Manual and ic Report tion <or= 10<br="">(min)</or=></or=>	Process-/ Process- ing Time/ ing Time of Util-/ of Util- ization / ization Data / Data Requests/ Requests <or- 1="" 10<br="" <or-="">Total / Total Manual / Manual and / and Automat-/ Automat- ic / ic Report / Report Genera- / Genera- tion / tion <or- 10="" 30<br="" <or-="">(min) / (min)</or-></or->	Met Obj.	Process- ing Time of Util- ization Data Requests <or- 1<br="">(min); Total Manual and Automat- ic Report Genera- tion <or= 10<br="">(min);</or=></or->

ACRONYM: ICD - Interface Control Document

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#### 10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

## 11. Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	96.6	105.4	101.3
Procurement	473.7	678.2	729.0
Flyaway	(302.8)		(556.6)
Other Wpn Systems	Cost (144.7)		(125.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.2)		(46.7)
Construction (MILCON	) 3.0	0.0	0.0
Acquisition O&M	0.0	00	0.0
Total FY 1990 Base-Y	ear \$ 573.3	783.6	830.3
Escalation	217.B	248.4	282.4
Development (RDT&E	(16.4)	(21.8)	(14.5)
Procurement	(200.0)	(226.6)	(267.9)
Construction (MILC	ON) (1.4)	(0.0)	(0.0)
Acquisition OsM	(0,0)	(0.0)	(0.0)
Total Then Year \$	791.1	1032.0	1112.7
b. Quantity			
Development (RDT&E)	0	0	0
Procurement	<u>53</u>	92	90
Total	53	92	90

The unit of measure of this program represents National Airspace System (NAS) operational sites.

The LRIP quantity approved at MS II was 8 Digital Airport Surveillance Radars (DASR) and 0 DoD Advanced Automation Systems (DAAS) for the radar and automation portions of NAS. A new ADM received SAF/AQ approval August 8, 2001 authorizing a second LRIP of 20 DASR and 13 DAAS to keep DoD DASR production and deployment efforts on track avoiding shutdown, restart, and retraining impacts.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12.	Unit Cost Summary:			
		UCR	Current	
		Baseline	Estimate	Percent
		(AUG 2001 APB) (Dec	: 2001 SAR)	<u>Change</u>
	a. Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 1990 BY\$)	783.6	830.3	
	(2) Quantity	92	90	
	(3) Unit Cost	8.517	9.226	+8.32
	b. Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1990 BY\$)	678.2	729.0	
	(2) Quantity	92	90	
	(3) Unit Cost	7.372	8.100	+9.88

Please note that because of significant variations of the many complex and varied configurations at each NAS site, Program Acquisition Unit Cost (PAUC) and Average Procurement Unit Cost (APUC) information does not provide a useful measure of unit cost. PAUC and AUPC provides only notional data.

### 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	TOTAL
Development Estimate	113.0	673.7	4.4	791.1
Previous Changes:				
Economic	-6.3	-58.1	-	-64.4
Quantity	-	+271.7	-	+271.7
Schedule	-	+105.2	-	+105.2
Engineering	-	+41.2	~	+41.2
Estimating	+9.3	-178.3	-4.4	-173.4
Other	-	-	-	
Support	-	+30.2	-	+30.2
Subtotal	+3.0	+211.9	-4.4	+210.5
Current Changes:				
Economic	-	+1.3	-	+1.3
Quantity	-	+15.5	-	+15.5
Schedule	-	+14.9	-	+14.9
Engineering	~	+0.9	-	+0.9
Estimating	-0.2	+100.9	-	+100.7
Other	-	-	-	
Support	-	-22.2	-	-22.2
Subtotal	-0.2	+111.3	-	+111.1
Total Changes	+2.8	+323.2	-4.4	+321.6
Current Estimate	115.8	996.9	-	1112.7

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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	\$73.3
Previous Changes:				
Quantity	-	+196.8	- '	+196.8
Schedule		+51.0	-	+51.0
Engineering	-	+31.7	-	+31.7
Estimating	+4.9	-110.3	-3.0	-108.4
Other	-	-	-	-
Support	-	+20.2	+	+20.2
Subtotal	+4.9	+189.4	-3.0	+191.3
Current Changes:				
Quantity	-	+11.2	-	+11.2
Schedule	- 1	+1.4	-	+1.4
Engineering	-	+0.8	-	+0.8
Estimating	-0.2	+71.2	- 1	+71.0
Other	-	-	-	-
Support	-	-18.7	-	-18.7
Subtotal	-0.2	+65.9	-	+65.7
Total Changes	+4.7	+255.3	-3.0	+257.0
Current Estimate	101.3	729.0	-	830.3

b. Current Change Explanations --

	5, Childre Change Dapranations	(Dollars in <u>Base-Year</u> T	Millions; <u>hen-Year</u>
(1)	<u>RDT&amp;E</u> Revised estimate to reflect Congressional reduction. (Estimating)	-0.2	~0.2
	RDT&E Subtotal	-0.2	-0.2
(2)	Procurement		
<b>x</b> = <b>y</b>	Revised escalation indices. (Economic)	N/A	-1.1
	Economic adjustment for negative program change. (Economic)	N/A	+2.4
	Total Quantity Variance associated with increase of 2 sites.	+6.8	+9.2
	Quantity increase of 2 sites. (Quantity)	+11.2	+15.5
	Allocation to Engineering variance resulting from Quantity Change. (QR)(Engineering)	+0.8	+0.9
	Allocation to Estimating variance resulting from Quantity Change. (QR)(Estimating)	-6.6	-9.4
	Allocation to Schedule variance resulting from Ouantity Change, (OR)(Schedule)	+1.4	+2.2
	Stretchout of annual procurement buy profile. (Schedule)	0.0	+12.7
	Adjustment for Current and Prior Inflation. (Estimating)	-0.9	-1.0

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## 13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations		
	(Dollars in	Millions)
	Base-Year Th	<u>ien-Year</u>
Refinement of Navy estimate due to buy	+39.9	+57.9
profile and site specific configuration		
changes. (Estimating)		
Refinement of Army estimate due to buy	-7.6	-10.7
profile and site specific configuration		
changes. (Estimating)		
Refinment of Air Force estimate due to buy	+46.6	+64.1
profile and site specific configuration		
changes. (Estimating)		
Change in Initial Spares. (Support)	+5.7	+8.9
Change in Other Weapon Systems Cost due to	-24.3	-30.8
site specific configuration changes. (Suppor	t)	_
Adjustment for Current and Prior Inflation.	-0.3	-0.3
(Support)		
Correction to align Support and Flyaway.		
(Support)	+0.2	0.0
(Estimating)	-0.2	0.0
Broggroupert Cubtotal	+65 0	+111 3
FIGULEMENT SUBLOCAT	TUJ.9	CTTT'S

QR = Quantity related changes.

## 14. Unit Cost and Other History (Then-Year Dollars in Millions):

## a. Program Acquisition Unit Cost (PAUC) History

Current S	AR	Baseline	to	Current	Estimate
-----------	----	----------	----	---------	----------

PAUC		Changes								
Dev Est	l l									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
14.93	-0.701	-2.94	+1.33	+0.468	-0.808		+0.089	-2.56	12.36	

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								
Dev Est	· · · · · · · · · · · · · · · · · · ·								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.71	-0.631	-2.03	+1.33	+0.468	-0.860		+0.089	-1.63	11.08

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## 14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	SEP 2002
IOC	OCT 1999	APR 2000	N/A	AUG 2002
Total Cost	122.6	791.1	N/A	1112.7
Total Quantity	N/A	53	N/A	90
Prog Acq Unit Cost	N/A	14.9	N/A	12.4

## 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E			Initial	Contract Pr	ice
DASR:			Target	<u>Ceiling</u>	Oty
Raytheon Comp	any, Marlboroug	jh, MA			_
F19628-96-D00	38, FFP		\$186.0	N/A	0
Award: August	9, 1996				
Definitized:	August 9, 1996				
Current	Contract Price	•	Estimated P	rice At Comp	letion
<u>Target</u>	Ceiling	Oty	<u>Contractor</u>	Program	Manager
\$186.0	N/A	0	\$186.0	\$1	86.0

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

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#### NAS, December 31, 2001

## 16. Program Funding Summary (Current Estimate in Millions of Dollars):

## a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY90-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-13)	Total
RDT&E	115.8	-	-	-	115.8
Procurement	229.4	80.4	90.2	596.9	996.9
MILCON	•	-	-	-	-
OGM	-	-	-	-	-
Total	345.2	80.4	90.2	596.9	1112.7

b. Annual Summary -- NAS

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 \$
1990				3.9	4.0
Subtotal				3.9	4.0

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year Ş	Total Program Then-Year \$
1990				2.9	3.0
Subtotal				2.9	3.0

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				3.9	4.0
1991				9.3	9,9
1992				3.8	4.2
1993				6.0	6.7
1994				12.5	14.2
1995				25.4	29.5
1996		1		11.2	13.3
1997				9.8	11.8
1998				9.6	11.6
1999			· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · ·  · · · · · · · · · · · _	1.5	1.8
2000		1		1.5	1.8

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NAS, December 31, 2001

#### 16b. Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Subtotal				94.5	108.8

FY00 funds realigned to ATCALS PE 35114F IAW HAC guidance.

Note: In the following procurement appropriations (1810, 2031, 3080), 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.

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998			0.7	1.8	2.2
1999	2		4.2	6.0	7.5
2000	5		21.4	27.0	34.1
2001			18.3	23.3	30.0
2002	3		13.9	16.4	21.5
2003	2		13.4	15.0	20.0
2004	4		21.2	22.7	30.7
2005	3		21.7	22.6	31.2
2006	6		23.9	25.5	35.8
2007	3		19.0	20.1	28.7
2008	5		10.4	11.3	16.5
2009	1		10.3	11.2	16.7
2010	1		4.5	5.4	8.2
2011	1		3.9	4.7	7.2
2012			3.8	3.9	6.1
2013			2.2	2.2	3.6
Subtotal	36		192.8	219.1	300.0

Appropriation: 1810 - Other Procurement, Navy

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal Year	Oty	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1997				0.6	0.7
1998				0.3	0.4

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## 16b. Program Funding Summary (Cont'd):

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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 \$
1999			0.5	1.0	1.3
2000			0.3	1.1	1.4
2001			7.8	9.4	12.1
2002			3.5	5.4	7.1
2003	1		5.1	8.1	10.7
2004	2		9.2	12.0	16.3
2005	2		6.5	8.7	12.0
2006	1		2.2	3.4	4.8
2007	1		7.0	7.7	11.0
Subtotal	7		42.1	57.7	77.8

Appropria	ation:	3080	÷	Other	Procurement,	Air	Force
-----------	--------	------	---	-------	--------------	-----	-------

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998			3.7	12.9	15.8
1999			4.7	12.1	15.1
2000	2		28.4	38.4	48.6
2001	3		36.1	46.8	60.2
2002	4		27.3	39.6	51.8
2003	1		34.2	44.8	59.5
2004	2		25.2	34.9	47.2
2005	2		22.5	32.1	44.2
2006	2		32.7	43.7	61.4
2007	6		36.8	48.3	69.1
2008	11		27.8	38.2	55.7
2009	5		28.7	38.4	57.1
2010	9		12.3	18.8	28.4
2011			1.3	3.2	5.0
Subtotal	47		321.7	452.2	619.1

Service	Oty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	36		192.8	223.0	304.0
Army	7		42.1	60.6	80.8
USAF	47		321.7	546.7	727.9
Grand Total	90		556.6	830.3	1112.7

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#### 17. Delivery/Expenditure Information:

a.	Deliveries To Date	Plan	Actual
	RDTGE	0	0
	Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 232.5

Percent Total Program Expended: 20.9%

#### 18. Operating and Support Costs:

a. Assumptions and Ground Rules --The Operating and Support (O&S) cost estimate is based on analysis performed in preparation for the July 1995 MS II decision. The estimate assumes a 20 year life from year FY00 to FY19. There is no antecedent system.

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

	NAS Avg Annual Cost Per	Avg Annual Cost Per Antecedent
Cost Element	NAS Site	
Mission Pay & Allowances	1.4	0.0
Unit Level Consumption	0.6	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	0.3	0.0
Sustaining Support	0.1	0.0
Indirect Costs	0.4	0.0
Total	2.8	0.0

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Total O&S Cost	NAS	Avg Annual Cost Per
BY\$ (In Millions)	5040.0	N/A
TY\$ (In Millions)	7562.0	N/A

Report Creation Date: 03/26/2002 10:31:48 AM

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# A-15 LONGBOW HELLFIRE

#### *** ...........

#### SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 2001

#### INDEX SUBJECT PAGE Cover Sheet Information 1 Mission and Description 2 Executive Summary 2 Threshold Breaches 4 Schedule 4 Performance Characteristics 5 Total Program Cost and Quantity 6 Unit Cost Summary 7 7 Cost Variance Analysis Unit Cost and Other History 9 Contract Information 10 Program Funding Summary 10 Delivery/Expenditure Information 12 Operating and Support Costs 12

 (U) <u>Designation and Nomenclature (Popular Name)</u>: 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: RDT4E: (U) PE 23802 (Shared) Project D785 (U) PE 64816 (Shared) Project DC13 PROCUREMENT: (U) APPN 2032 ICN C70300 (Army)

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AS AMENDED

MAR 2 2 2002

DIRECTORATE FOR FREED

Classified by: hereiner Security Classification Guide, 7 March 2000 Downgrade instructions: HELLEUP Court of March 2000 Declassify on March 2000

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LONGBOW HELLFIRE, December 31, 2001

#### 5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated December 18, 2001.

#### 6. (U) Mission and Description:

(U) HELLFIRE is an air-to-ground, point target, precision strike missile system designed to defeat individual hardpoint targets. The missile configuration has the capability for modular guidance section replacements. A version of the missile utilizing laser guidance, Laser HELLFIRE is a separate program. Longbow HELLFIRE (a version utilizing a radio frequency guidance section) is in production. Longbow HELLFIRE and Laser HELLFIRE are complementary and neither missile replaces another missile system in the air-to-ground role.

Longbow HELLFIRE and Laser HELLFIRE are employed on the AH-64D Longbow Apache helicopter. Longbow HELLFIRE provides the capability to engage targets both day and night in adverse weather and with battlefield obscurants present. Longbow also offers a fire and forget capability against a given target set which complements the semi-active Laser HELLFIRE missile. The Longbow HELLFIRE Missile contains a radio frequency guidance section which provides a lock-on before launch (LOBL) or lock-on after launch (LOAL) capability, depending on target range and movement parameters. Longbow does not change the AH-64 mission or role, but provides for increased aircraft survivability. It is envisioned that Longbow HELLFIRE will also be used on the Comanche as a pre-planned product improvement item.

#### 7. (U) Executive Summary:

(U) In 1981, the U.S. Army Aviation Applied Technology Directorate, Fort Eustis, Virginia, conducted competition and awarded parallel competitive technology demonstration contracts to Martin Marietta Corporation (MMC) and Westinghouse Electric Corporation (WEC) for a fire control radar to be integrated and tested on the AH-64 Apache. In late 1981, after a series of study efforts, a classified program was initiated for a millimeter wave radar seeker for the HELLFIRE Modular Missile System which, in conjunction with the fire control radar, yielded a total systems approach for Apache. In 1982, WEC and MMC were again awarded parallel competitive contracts for the Critical Technology Demonstration (CTD). During the three-plus years of the CTD program, both MMC and WEC demonstrated that the technology was in hand for further systems development. As a result of a Government In-Process Review in Aug 85, a contract was awarded in Nov 85 to MMC and WEC, as a joint venture (JV), for preliminary design of the tactical Longbow System. This was followed in Aug 86 by the award of a Proof of Principle demonstration contract to the JV. An Initial Design Phase contract was awarded to the JV in Sep 89. Proof of Principal of the Longbow missile was accomplished 11 Apr 90. The Defense Acquisition Board (DAB) granted approval for engineering and manufacturing development (EMD) of the Longbow Missile 5 Dec 90, and a letter contract for

### *** UNCLASSIFIED *** LONGBOW HELLFIRE, December 31, 2001

#### 7. (U) Executive Summary (Cont'd):

EMD of the Longbow missile was awarded 26 Dec 90. The letter contract was definitized 7 May 91. A Special Program Review (SPR) to assess the Longbow HELLFIRE Program and define funding strategies to support Longbow Apache, fire control radar and missile programs, was held in Aug 92. To better align the Longbow HELLFIRE program with the Longbow Apache program, initiation of production was delayed by one year and the procurement program was stretched. The Conventional Systems Committee review for Longbow long lead items and initial production facilitization was held 5 Oct 94. Approval to proceed with long lead of the HELLFIRE missile was withheld until cost reduction efforts were evaluated and approved. The Longbow HELLFIRE Cost Reduction Plan was briefed to the Defense Acquisition Executive on 1 Dec 94. The plan was approved and the contract for long lead procurement was awarded 23 Dec 94 by definitization of option one under the engineering and manufacturing development contract.

On 11 May 95, the final development flight test of the Longbow HELLFIRE Missile was conducted. This flight met a cost effective combination of system qualification and live fire test objectives and successfully concluded the development flight test program. Live fire tests were successfully completed 27 Jul 95.

On 13 Oct 95, the Defense Acquisition Executive granted approval for Longbow HELLFIRE to enter low-rate initial production (LRIP) and delegated authority to the Army to make the full-rate production (FRP) decision. The Longbow HELLFIRE LRIP I option was definitized with available Continuing Resolution Authority funding 14 Dec 95. The remaining portion of this option was exercised 31 Jan 96. The LRIP II contract was awarded to the Longbow Limited Liability Company 7 Feb 97. Savings from Cost Reduction Program hardware initiatives early cut-in for FY 97 were used to procure an additional 51 missiles. The first Longbow HELLFIRE tactical missile was delivered 31 Jul 97. On 28 Oct 97, the Army Acquisition Executive granted approval for Longbow HELLFIRE to proceed into full rate production. The FY 98 full rate production contract option was exercised by letter contract 24 Nov 97 and definitized 1 Jul 98. The final milestone for the program, first unit equipped, was accomplished Jul 98. Congressional authorization for the FY 99 - FY 03 multiyear contract was received Oct 98 and the contract was awarded 30 Apr 99 for 10,397 missiles. The missile firings associated with the Longbow Apache System first article tests were successfully completed on 29 Oct 98.

A contract for pre-planned product improvement of the Longbow HELLFIRE missile was awarded 5 Feb 01 to Longbow Limited Liability Company. This will improve Home-on-Jam(HOJ)/Anti-Jam(AJ) and add Counter-Active Protection System (CAPS) capabilities for the missile. The HOJ/AJ and CAPS objectives are to maintain the Longbow HELLFIRE Missile System's low vulnerability, and susceptibility to any "hard kill" Active Protection System and battlefield jammer threats.

During HELLFIRE live fire training in Oct 00, Apache aircraft were damaged by missile motor debris. This resulted in a Safety of Use message restricting HELLFIREs with the affected motors to War Time Use Only. On 13 Nov 01, a Letter Contract was awarded to Longbow Limited Liability Company to modify
LONGBOW HELLFIRE, December 31, 2001

# 7. (U) Executive Summary (Cont'd):

1,935 missiles with a new missile motor rod grain support assembly.

Currently the Army has 4,328 missiles in inventory.

# 8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

	Breach	
Schedule		No
Performance		No
Cost RDT	&E	No
Pro	curement	No
MIL	CON	No
O&M		No
Pro C	gram Acquisition Unit ost (PAUC)	No
Ave C	rage Procurement Unit ost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

9. (U) <u>Schedule</u>:

a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	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	DEC 1995	DEC 1995	DEC 1995
Award			
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 Contrac	t OCT 1998	OCT 1998	OCT 1998
First Unit Equipped (FUE)	JUL 1998	JUL 1998	JUL 1998
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9a. (U) Schedule (Cont'd):

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(U) Acronym List:

ASARC (Army Systems Acquisition Review Council) DAB (Defense Acquisition Board) FUE (First Unit Equipped) LRIP (Low Rate Initial Production)

b. Current Change Explanations -- None

# 10. (U) Performance Characteristics:

a. Performance ---



(U) Demonstrated data source is the 42 missile inertially guided, radar aided development test firing program.

b. Current Change Explanations -- None

# 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Production	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	Estimate
	Development (RDT&E)	411.0	458.2	452.7
	Procurement	1941.0	2032.3	2030.5
	Flyaway	(1932.9)		(2019.6)
	Other Wpn Sys Cost	(2.8)		(4.1)
	Peculiar Support	(5.3)		(6.8)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1996 Base-Year \$	2352.0	2490.5	2483.2
	Escalation	283.6	147.0	140.6
	Development (RDT&E)	(-24.4)	(-9.6)	(-13.7)
	Procurement	(308.0)	(156.6)	(154.3)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2635.6	2637.5	2623.8
b.	(U) Quantity			
i	Development (RDT&E)	0	0	0
i	Procurement	<u>13311</u>	<u>12905</u>	<u>12905</u>
	Total	13311	12905	12905

Note: Excludes 70 RDT4E prototypes from the SAR Baseline and 70 from the Current Estimate that are not considered fully configured.

(U) (1) Unit of measure is one missile.

(U) (2) The Milestone II DAB established LRIP quantities of 1118 missiles. A Special Program Review was held in Aug 92 and the LRIP quantities were changed from 1118 missiles to 1414 missiles. The Milestone III ASARC changed the LRIP quantities from 1414 missiles to 1408 missiles. The LRIP quantities were established over the 10% limit to align the missile deliveries with the aircraft fielding schedule.

c. (U) Foreign Military Sales --A direct commercial sale (co-production) with the United Kingdom was implemented Apr 96 for a quantity of 987 missiles at a cost of \$195M. The following foreign military sales have been signed: Singapore signed Mar 99, for a quantity of 10 missiles at a cost of \$2.4M, Israel signed Feb 00, for a quantity of 120 missiles at a cost of \$29M.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR	Current	
	Baseline	Estimate	Percent
	(DEC 2001 APB) (De	2001 SAR)	Change
(U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1996 BY\$)	2490.5	2483.2	
(2) Quantity	12905	12905	
(3) Unit Cost	0.193	0.192	-0.52
(U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1996 BY\$)	2032.3	2030.5	
(2) Quantity	12905	12905	
(3) Unit Cost	0.157	0.157	0.00
	<ul> <li>(U) Prog. Acq. Unit Cost (PAUC)</li> <li>(1) Cost (FY 1996 BY\$)</li> <li>(2) Quantity</li> <li>(3) Unit Cost</li> <li>(U) Avg. Proc. Unit Cost (APUC)</li> <li>(1) Cost (FY 1996 BY\$)</li> <li>(2) Quantity</li> <li>(3) Unit Cost</li> </ul>	UCR Baseline (DEC 2001 APB) (Dec (U) Prog. Acq. Unit Cost (PAUC) (1) Cost (FY 1996 BY\$) 2490.5 (2) Quantity 12905 (3) Unit Cost 0.193 (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1996 BY\$) 2032.3 (2) Quantity 12905 (3) Unit Cost 0.157	UCR         Current Baseline           Baseline         Estimate           (U) Prog. Acq. Unit Cost (PAUC)         (DEC 2001 APB) (Dec 2001 SAR)           (1) Cost (FY 1996 BY\$)         2490.5         2483.2           (2) Quantity         12905         12905           (3) Unit Cost         0.193         0.192           (U) Avg. Proc. Unit Cost (APUC)         2032.3         2030.5           (2) Quantity         12905         12905           (3) Unit Cost         2032.3         2030.5           (2) Quantity         12905         12905           (3) Unit Cost         0.157         0.157

# 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	+2.9	-177.2	-	-174.3
Quantity	-	-54.7	-	-54.7
Schedule	+2.5	+4.7	-	+7.2
Engineering	+30.1	+17.4	-	+47.5
Estimating	-5.4	+69.2	-	+63.8
Other	-	-	-	-
Support	-	-1.4		-1.4
Subtotal	+30.1	-142.0	-	-111.9
Current Changes:				
Economic	+0.2	+10.3	-	+10.5
Quantity	-	-	-	-
Schedule	-	-	-	- 1
Engineering	+18.1	+77.1	-	+95.2
Estimating	+4.0	-12.8	-	-8.8
Other		-	-	-
Support	~	+3.2	-	+3.2
Subtotal	+22.3	+77.8	-	+100.1
Total Changes	+52.4	-64.2	-	-11.8
Current Estimate	439.0	2184.8	-	2623.8

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# 13a. (U) Cost Variance Analysis (Cont'd):

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(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	+28.0	+13.7	-	+41.7
Estimating	-4.8	+59.6	-	+54.8
Other	-	-	-	-
Support	-	-		
Subtotal	+22.1	+31.5		+53.6
Current Changes:				
Quantity	-	_	-	-
Schedule		-	-	-
Engineering	+16.1	+65.4	-	+81.5
Estimating	+3.5	-10.2	-	-6.7
Other	-		-	~
Support	-	+2.8		+2.8
Subtotal	+19.6	+58.0		+77.6
Total Changes	+41.7	+89.5	-	+131.2
Current Estimate	452.7	2030.5	-	2483.2

b. (U) Current Change Explanations --

(Dollars in Millions) <u>Base-Year</u> <u>Then-Year</u>

- -

(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+0.2
	Adjustment for Current and Prior Inflation. (Estimating)	-0.2	-0.2
	Increased System Qualification effort for Counter-Active Protection System (CAPS) and Home-on-Jam/Anti-Jam (HOJ/AJ) capabilities. (Engineering)	+16.1	+18.1
	Revised estimate for in-house test and support costs. (Estimating)	+3.7	+4.2
	RDT&E Subtotal	+19.6	+22.3
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+8.9
	Economic adjustment for negative program change, (Economic)	N/A	+1.4
	Adjustment for Current and Prior Inflation (Estimating)	-7.6	-9.2
	Procurement of 6,050 Counter-Active Protection Kits and modification of 1,935	+65.4	+77.1

Hercules missile motors. (Engineering)

## 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations --(Dollars in Millions) Base-Year Thon-Year Increased quantity of environmental covers by +2.8+3.2 1,100 from 4,508 to 5,608. (Support) Revised estimates for in-house support and -2.6 -3.6 test costs. (Estimating) +58.0 +77.8Procurement Subtotal

# 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						Cur Est			
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.198	-0.013	+0.002	+0.001	+0.011	+0.004			+0.005	0.203

b. (U) Procurement Unit Cost (PUC) History

# Current SAR Baseline to Current Estimate

Current_	SAR Base	line to	Current	Estimate					
PUC	Changes								PUC
Prod Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.169	-0.013	+0.002		+0.007	+0.004				0.169

#### c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	AUG 1985	AUG 1985	AUG 1985
Milestone II	N/A	DEC 1990	DEC 1990	DEC 1990
Milestone III	N/A	OCT 1995	OCT 1995	OCT 1995
TOC	N/A	APR 1997	JUL 1998	JUL 1998
Total Cost	N/A	2190.3	2635.6	2623.8
Total Quantity	N/A	10896	13311	12905
Prog Acq Unit Cost	N/A	0.2	0.2	0.2

# LONGBOW HELLFIRE, December 31, 2001

# 15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --

Target	Contract Ceiling	Oty
\$1244.2	N/A	10397
	S1244.2	Target     Ceiling       \$1244.2     N/A

Current	CONCIACE FILL		Estimated Price	AC COMPLETION
<u>Target</u>	<u>Ceiling</u>	Oty	Contractor	Program Manager
\$1106.8	N/A	8600	\$1106.8	\$1106.8

### Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: Current Contract Price and Estimated Price at Completion represents four years of procurement costs on a 5-year multiyear contract.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY91-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-07)	<u>Total</u>
RDT&E Procurement	397.9 1625.3	18.1 233.3	13.0 184.4	10.0 141.8	439.0 2184.8
MILCON	-	-	-	-	-
Total	2023.2	251.4	197.4	151.8	2623.8

# 16b. (U) Program Funding Summary (Cont'd):

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b. Annual Summary -- LONGBOW HELLFIRE

Appropriation: 2040 - Research, Development, Test + Eval, Army

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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		1		10.8	11.7
2002				16.5	18.1
2003				11.7	13.0
2004				8.8	10.0
Subtotal				452.7	439.0

Appropriation: 2032 - Missile Procurement, Army

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995		25.1		40.7	41.2
1996	352	45.4	147.4	178.4	182.1
1997	1056	17.9	222.4	241.5	249.2
1998	1100	14.8	204.8	222.0	231.9
1999	2000		324.2	324.5	344.6
2000	2200		272.1	272.4	293.6
2001	2200		257.9	258.2	282.7
2002	2200		209.6	209.8	233.3
2003	1797		278.0	162.9	184.4
2004				33.6	38.7
2005				31.7	37.2
2006				39.7	47.5
2007				15.1	18.4
Subtotal	12905	103.2	1916.4	2030.5	2184.8

#### 16b. (U) Program Funding Summary (Cont'd):

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		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	12905	103.2	1916.4	2483.2	2623.8

### 17. (U) Delivery/Expenditure Information:

a. (U)

Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDTEE	0	0
Procurement	4335	4372

(U) Percent Total Program Quantities Delivered: 33.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1607.6

(U) Percent Total Program Expended: 61.3%

### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --Operating and support costs for Longbow HELLFIRE are costed under the philosophy of a "certified round" concept. The sustainment phase costs are for FY 97 through FY 25. The following efforts are considered applicable:

o Replenishment spares for support equipment.

o Annual overhaul of Longbow HELLFIRE equipment ~ ten percent of missiles in storage will be checked annually. Of the items checked, those that fail will be shipped to the depot for overhaul and return. Costs are based on predicted failure rate and average cost to repair.

o Transportation costs associated with annual overhaul.

- o System Project Management
- o Surveillance Program.

There is no antecedent system.

Total operations and maintenance cost is \$78.5M from the approved Army Cost Position dated, Oct 97.

# 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

	LONGBOW HELLFIRE	Avg Annual Cost Per
Cost Element	Missile	Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	0.1	N/A
Indirect Costs	N/A	N/A
Total	0.1	0.0

Total O&S Cost	LONGBOW HELLFIRE	Avg Annual Cost Per
BY\$ (In Millions)	78.5	0.0
TY\$ (In Millions)	124.0	0.0

Report Creation Date: 03/20/2002 1:23:39 PM



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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: LPD 17 Class

AS OF DATE: December 31, 2001

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- 1. (U) <u>Designation and Nomenclature (Popular Name)</u>: LPD 17 Class Amphibious Transport Dock Ship
- 2. (U) DoD Component: Navy
- 3. (U) Responsible Office and Telephone Number:

LPD 17 AMPHIBIOUS TRANSPORT DOCK<br/>SHIP PROGRAM OFFICE (PMS317)CAPT SEAN J. STACKLEY<br/>Assigned: June 22, 2001<br/>DSN 326-0723; COMM (703)781-0723<br/>STACKLEYSJ@NAVSEA.NAVY.MILWNY, DC 20376-2101STACKLEYSJ@NAVSEA.NAVY.MIL

4. (U) <u>Program Elements/Procurement Ling Items</u>: RDT&E: (U) PE 0603564N (Shared) Project S0408 (Shared) (U) PE 0604311N Project S2283, 22283, 22425 (U) PE 0604567N Project S2198 (Shared), S1803 (Shared) PROCUREMENT: (U) APPN 1611 ICN 303600 (Navy)



02-0-0644

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### 5. (U) References:

### <u>SAR Baseline (Development Estimate):</u>

(U) DAE Approved Acquisition Program Baseline (APB) dated May 5, 1997

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated May 26, 2000.

### 6. (U) Mission and Description:

(U) The LPD 17 Class Amphibious Transport Dock Ship will be the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 Classes of Amphibious Ships in embarking, transporting and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct the primary amphibious warfare mission. The LPD 17 Class is required to fill the projected lift shortfall created by the retirement of the above ships, as necessary to meet a 2.5 Marine Expeditionary Brigade (MEB) lift.

### 7. (U) Executive Summary:

(U) The lead ship contract for LPD 17 Detail Design and Construction, with options for up to two follow ships and Life Cycle Planning, was awarded to the Avondale Alliance in December 1996. The option for Life Cycle Planning was exercised in October 1998. The follow ship options for LPD 18 and LPD 19 were exercised in December 1998 and February 2000, respectively. A sole source modification to the contract was subsequently awarded for LPD 20 in May 2000. A sole source contract for Advanced Procurement (AP) materials for LPD 21 and LPD 22 was awarded July 2001.

Lead ship detail design is nearing completion (95%) with engineering resources now focusing on extraction of production design products. Lead ship production commenced in August 2000 and is currently approximately 16% complete, with approximately 50% of lead ship construction units in fabrication. Fabrication commenced on LPD 19 (at Bath Iron Works) in July 2001.

The 31 December 1999 LPD 17 Class Selected Acquisition Report reported the challenges associated with the LPD 17 Lead Ship detail design schedule, which resulted in a 10 month delay to the delivery of the LPD 17 (to September 2003), and a 3 month delay to delivery of LPD 18 (to May 2004). A Program Deviation Report was submitted and the Acquisition Program Baseline (APB) was revised in May 2000 reflecting the schedule adjustment.

The 30 September 2001 LPD 17 Class Selected Acquisition Report reported that subsequent to revision of the Lead Ship schedule, cost and schedule performance necessitated further reassessment of the program. In February 2001, both the Navy and Industry completed independent schedule assessments and concluded an additional 14-month extension to the lead ship was necessary. The schedule delay was primarily due to the contractor's difficulty in managing the increasing design complexity and integration as well as a shortfall in design resources and design/lofting expertise. The PM's cost estimate was revised in

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### 7. (U) Executive Summary (Cont'd):

conjunction with the 14 month extension and associated impact on follow ships. The adjusted delivery date and funding resulted in APB schedule and cost breaches. A Program Deviation Report was subsequently submitted.

A negotiated settlement with the contractor was signed on 7 September 2001. The settlement incorporated the adjusted delivery date and established a revised performance measurement baseline for LPD 17 and 18. The contracts for LPD 17 and 18 were also converted to CPIF(AF). The contractor is currently executing to the revised schedule.

SECNAV notified Congress on 14 November 2001 that the Program Acquisition Unit Cost and Average Procurement Unit Cost for the LPD 17 Program exceeded the Acquisition Program Baseline values by more than 25 percent. Details of that breach are included in this SAR. PB03 tully funds the program and is based on revised Program Estimates which are in line with the current OSD Independent Cost Estimate. The (draft) APB schedule milestones and cost objectives have been revised in line with PB03. The revised APB is currently in process of being approved.

### 8. (U) Threshold Breaches:

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

a. (U) Acquisition Program Baseline (APB):

#### b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	Yes
Average	Procurement	Unit	Cost	Yes

## c. (U) Explanation of Breach:

The schedule, procurement and unit cost breaches are attributed to many factors. The contractor could not achieve the aggressive design schedule originally established due to a number of issues: increasing design complexity; a shortfall of contractor design resources and design/lofting expertise; and performance less than expected. This significantly increased non-recurring engineering costs on the lead ship. The poor design performance resulted in a cumulative 2-year delay to the lead ship delivery. In addition to the

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# 8c. (U) Threshold Breaches (Cont'd):

complexity of integration efforts, the contractor underestimated labor hours in his aggressive bid assumptions. As a result of the schedule delay, program cost increases, and SCN budget constraints, the program procurement profile was reduced from two ships per year to one ship per year in the FYDP which added further cost impact due to inflation, loss of material cost increases and workload impacts.

9. (U) <u>Schedule</u>:

•

a. Milestones --

<b>a</b> . http://doi/103			-		_	
	Development		Approved		Curr	rent
	Estimat	<u>e (SAR)</u>	Progra	am (APB)	Esti	mate
Milestone I	JAN	1993	JAN	1993	JAN	1993
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
OTSE (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	2001	MAR	2003(Ch-2)
DT&E (DT-IIB)						
Start	SEP	1998	MAR	1999	SEP	2002
Complete	JUN	2002	SEP	2003	NOV	2004
OTEE (OT-IC)						
Start	SEP	1998	MAY	1999	MAY	1999
Complete	MAR	1999	MAY	2000	SEP	2000(Ch-1)
Lead Ship Delivery	JUN	2002	SEP	2003	NOV	2004
DT&E (DT-IIC)						
Start	JUL	2002	SEP	2003	NOV	2004
Complete	JAN	2004	MAY	2005	NOV	2006
OT&E (OT-IIA)						
Start	JUN	2003	OCT	2004	JAN	2006 (Ch-2)
Complete	SEP	2003	IAN	2006	TUN	2007(Ch-2)
LEAD SHIP IOC	) C	1)	-			
Milestone III	AUG	2007	JUL	2008	SEP	2009

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LPD 17 Class, December 31, 2001

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## 9b. (U) Schedule (Cont'd):

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b. Current Change Explanations --(U) (Ch-1) OT&E (OT-IC) Complete adjusted to reflect actual date testing was completed from APR 2001 to SEP 2000.

(Ch-2) DT-11A and OT-IIA dates adjusted to comply with most current testing plan.

			E	COTT	1	<u>'o</u>
DT&E	(DT-IIA)	Complete	JAN	2002	MAR	2003
OT & E	(OT-IIA)	Start	FEB	2006	JAN	2006
OTSE	(OT-IIA)	Complete	MAR	2007	JUN	2007

# 10. (U) Performance Characteristics:

a. Performance --

a. Periormance	Dovelopment	Aj	proved	Demon-	Current
	Estimate (SAR)	<u>Ob1/</u>	Threshold	Peril	Estimate
Mobility Sustained Speed (Kts)	(b)(1)			тво (b)	(1)
( Endurance ((NM)(K) @ Kts)				тво	
Amphibious Warfare		<u>·`</u>			
Embarkation (NET)					
Troops	750	750	/ 650	TBD	720
Vehicles (Sq Ft)(k)	25	25	/ 22	TBD	25
Cargo (Cubic	25	25	/ 22	TBD	36
Feet)(k)					
Bulk Fuel (Gals)(k)	325	325	/ 250	TBD	325
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 o MV-22)	3/1/1 r	3/1/1	/ 2/1/1	TBD	2/1/1
Ship To Shore					
Capability (LCAC)	000	220	/ 295	TRD	285
Sustained	220	220	/ 200	100	200
Operations (reload	1				
6 LCACs) (mins)	0.0	90	/ 80	TBD	80
Operational Availability (Ao)	.90	. 90	7.00	100	

*** -----

# 10b. (U) <u>Performance Characteristics (Cont'd)</u>:

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. (U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Development (RDT&E)	78.7	92.7	97.1
Procurement	8939.4	8925.9	12842.4
Sailaway	(8939.4)		(12842.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	9018.1	9018.6	12939.5
Escalation	1743.7	1745.2	2441.2
Development (RDT&E)	(-0.9)	(1.5)	(-0.1)
Procurement	(1744.6)	(1743.7)	(2441.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	10761.8	10763.8	15380.7
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	12	12	12
Total	12	12	12

(U) All ships are considered LRIP as they will all be awarded prior to MS III.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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### *** UNCLASSIFIED ***

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LPD 17 Class, December 31, 2001

12.	(U)	Unit (	Cost Summa	IY:								
								UCR		Cur	rent	
							Base]	ine		Esti	nate	Percent
						(MAY	2000	APB)	(Dec	2001	SAR)	Change
	a.	(U) Pro (1) (2)	Og. Acq. U Cost (FY Quantity	1996 BY\$)	(PAUC)		901 751	12		129	39.5	
		(37	01111 0000				, 91,	550		1070	. 2 72	T43.40
	b.	(U) Ave (1) (2) (3)	g. Proc. U Cost (FY Quantity Unit Cost	nit Cost 1996 BY\$)	(APUC)		892 743.	25.9 12 825		128- 1070	42.4 12 .200	+43.88
										-		
								UCR		Cur	rent	
							Basel	ADD1		LSTI	CAD	Percent
	c	(11) Pro		nit Cost	(PAUC)	1041	2000	MPB1	TDec	2001	SAR	Change
	0.	(1)	Cost (TYS	)	(1100)		1076	53.8		153	80.7	
		(2)	Unit Cost	,			896.	983		1281	.725	+42.89
	d.	(U) Ave	g. Proc. U	nit Cost	(APUC)							
		(1)	Cost (TY\$	)			1066	59.6		152	83.7	
		(2)	Unit Cost				889.	133		1273	. 642	+43.25
e.	(U)	Changes	from Pre	vious SAR	(SEP 2	2001)		Dol	lars/	Qty	Per	cent
	(	1) PAUC	C (BY\$)						103.	742	+]	10.65
	(	2) APUC	C (BY\$)						107.	789	+]	L1.20
	(	3) PAUC	C Quantity	,						4	+ 5	50.00
	(	4) PAUC	C (TY\$)						0.	000		0.00
	(	5) APUC	C (TY\$)						0.	.000		0.00
f.	(U) I	Initial nitial	SAR Info SAR Date	rmation (SEP 1996)	):	2 1			901	19.1		
	1	2) Proc	iram Acqui	sition Co	st (TYS	5)			893	39.4		
	· ·	2, 1109	JI GH NOQUI						000			

g. (U) Unit Cost PAUC Changes --Both the PAUC increases and the APUC increases are attributed to many factors. The contractor could not achieve the aggressive design schedule originally established due to a number of issues: increasing design complexity; a shortfall of contractor design resources and design/lofting expertise; and performance less than expected. This significantly increased non-recurring engineering costs on the lead ship. The poor design performance resulted in a cumulative 2-year delay to the lead ship delivery. In addition to the complexity of integration efforts, the contractor underestimated labor hours in his aggressive bid assumptions. As a result of the schedule delay, program cost increases, and SCN budget constraints, the program procurement profile was reduced from two ships per year to one ship per year in the FYDP which added further cost impact due to inflation, loss of material cost increases and workload impacts.

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12. (U) Unit Cost Summary (Cont'd):

(U) Unit Cost APUC Changes --PAUC explanation pertains. Additionally, the increase in the Average Procurement Unit cost (TY\$) can be broken down in to the following categories: Escalation 5.8% Schedule 12.2% Materials/Subcontracts 11.0% Labor/Overhead 12.5% Outfitting/Post Delivery 1.7% Total APUC 43.2%

- h. (U) Impact of Perf or Sched Changes --The two year delay in lead ship delivery (with associated delays for the follow ships) and subsequent profile adjustments (which extended completion of the 12 ship procurement from FY04 to FY09) resulted in an increase of approximately \$1.3B in program costs or a 12.2% increase in unit costs. Rates impact associated with the extended procurement profile are contained within the 12.5% labor/overhead increase.
- (U) Program Management & Control --The Program Executive Officer, Expeditionary Warfare is RADM Dennis G. Morral. The LPD 17 Program Manager is CAPT Sean J. Stackley.
- j. (U) Cost Control Actions --While the lead ship contract was originally awarded as a Cost Plus Award Fee (CPAF) contract, all four ships currently under contract were either converted to (LPD 17-19) or awarded with (LPD 20) a Cost Plus Incentive Fee with Award Fee (CPIF/AF) structure; wherein cost performance directly affects profit.

The effective use of CPARS as a measure of past performance is expected to contribute towards motivating the Alliance's focus on cost control going forward.

An award fee structure was established with criteria focused on technical, program management, and production objectives which directly relate to cost performance on the program. Recognizing the direct relationship between cost and schedule, an event based fee structure was also incorporated to motivate the contractor to maintain the revised delivery schedule.

The current contract incorporates FAR provision 52.248~1 on Value Engineering. An Affordability Program is being implemented and will Larget cost reduction/cost avoidance through producibility initiatives and engineering/production best practices.

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#### 12k. (U) Unit Cost Summary (Cont'd):

k. (U) Contract Information (In Millions of Then-Year Dollars) ---

- (U) (1) Contractor(s): Northrop Grumman Ship Sys
  - (2) Contract Title: LPD 17
  - (3) Contract Number: N002497C2202/17
  - (4) Actual Cost of Work Performed (ACWP) to date: 759062.0
  - (5) Percent contract completed (BCWP/target cost): 65.80
  - (6) Variances:

	Cost Variance	Schedule Variance
	(\$/%)	(\$/%)
Baseline Report	\$-109.5/ -39.77	\$-9.7/ -3.41
Previous SAR	\$-162.5/ -47.89	\$-22.6/ -6.24
Current Values	\$-19.1/ -2.58	\$0.2/ +0.03
Change from the Baseline Report	\$90.4/ +37.19	\$9.9/ +3.44
Change from the Previous SAR	\$143.4/ +45.31	\$22.8/ +6.27

(U) Explanation of Variances --

The unfavorable cumulative cost variance from the baseline report to the previous SAR was primarily attributed to material, and inefficiencies in engineering labor and associated overhead.

The favorable cumulative cost and schedules variances from the previous SAR to current values were due to formal reprogramming of the contract in Sep 01, which essentially eliminated the variances.

(U) Impact of Variances on Contract -variances significantly contributed to the contract cost increase negotiated in Sep 01.

Impact of Variances on Unit Costs -- None.

(U) (1) Contractor(s): Northrop Gruman Ship Sys.

- (2) Contract Title: LPD 18
- (3) Contract Number: N002497C2202/18
- (4) Actual Cost of Work Performed (ACWP) to date: 106250.0
- (5) Percent contract completed (BCWP/target cost): 20.00
- (6) Variances:

	Cost Variance (\$/%)		Schedule Variance (\$/%)	
Baseline Report	\$-0.2/	-0.85	\$0.0/	0.00
Previous SAR	\$-1.5/	-3.27	\$0.7/	+1.39
Current Values	\$0.0/	+0.04	\$0.0/	0.00
Change from the Baseline Report	\$0.2/	+0.89	\$0.0/	0.00
Change from the Previous SAR	\$1.5/	+3.31	\$-0.7/	-1.39

(U) Explanation of Variances --

The unfavorable cumulative cost variance and favorable cumulative schedule variances from Baseline Report to previous SAR were primarily attributed to material.

LPD 17 Class, December 31, 2001

12. (U) Unit Cost Summary (Cont'd):

The favorable cumulative cost and unfavorable cumulative schedule variances from the previous SAR to current values were due to formal reprogramming of the contract in Sep 01, which essentially eliminated the variances.

(U) Impact of Variances on Contract -variances significantly contributed to the contract cost increase negotiated in Sep 01.

Impact of Variances on Unit Costs -- None.

(U) (1) Contractor(s): Northrop Grumman Ship Sys

- (2) Contract Title: LPD 19
- (3) Contract Number: N002497C2202/19
- (4) Actual Cost of Work Performed (ACWP) to date: 78009.0
- (5) Percent contract completed (BCWP/target cost): N/A
- (6) Variances:

	Cost Variance		Schedule Variance	
	(\$/%	)	(\$/%)	
Baseline Report	\$-0.1/	-8.00	\$0.0/	0.00
Previous SAR	Ş-1.9/	-14.45	\$-1.2/	-8.39
Current Values	\$-0.1/	-0.13	\$0.0/	0.00
Change from the Baseline Report	\$0.0/	+7.87	\$0.0/	0.00
Change from the Previous SAR	\$1.8/	+14.32	\$1.2/	+8.39

(U) Explanation of Variances --The unfavorable cost and schedule variances from the Baseline Report to the previous SAR are primarily attributed to overhead increases.

The favorable cost and schedule variances from the previous SAR to the current values are primarily attributed to improved performance in engineering material.

(U) Impact of Variances on Contract --Impact on contract variances is insignificant.

Impact of Variances on Unit Costs -- None.

- (U) (1) Contractor(s): Northrop Grumman Ship Sys
  - (2) Contract Title: LPD 20
  - (3) Contract Number: NOO2497C2202/20
  - (4) Actual Cost of Work Performed (ACWP) to date: 35525.0
  - (5) Percent contract completed (BCWP/target cost): N/A

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## 12. (U) Unit Cost Summary (Cont'd):

(6) Variances:

• • •

	Cost Va	iriance	Schedule Va	riance
	(\$/%	.)	(\$/%	}
Baseline Report	\$0.0/	0.00	\$0.0/	0.00
Previous SAR	\$-0.3/	-7.28	\$1.7/	+63.93
Current Values	\$1.9/	+4.97	\$0.8/	+2.09
Change from the Baseline Repo	rt \$1.9/	+4.97	\$0.B/	+2.09
Change from the Previous SAR	\$2.2/	+12.25	\$-0.9/	-61.84

(U) Explanation of Variances --Cost and schedule variances are insignificant as production had not begun.

(U) Impact of Variances on Contract --Impact on contract variances is insignificant.

Impact of Variances on Unit Costs --- None.

1. General Comments -- None.

## 13. (U) Cost Variance Analysia:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	77.8	10684.0	-	10761.8
Previous Changes:				
Economic	-0.3	-361.5	-	-361.8
Quantity	-	-3541.1	-	-3541.1
Schedule	~	+438.8	-	+438.8
Engineering	-	- 1	-	-
Estimating	+19.7	+1460.2	-	+1479.9
Other		-	-	-
Support	~	_		
Subtotal	+19.4	-2003.6	-	-1984.2
Current Changes:				
Economic	-0.2	-31.7	-	-31.9
Quantity	-	+3606.0	-	+3606.0
Schedule		+256.7	-	+256.7
Engineering		-		-
Estimating	0.0	+2772.3	-	+2772.3
Other		-		-
Support	-	-		-
Subtotal	-0.2	+6603.3		+6603.1
Total Changes	+19.2	+4599.7	-	+4618.9
Current Estimate	97.0	15283.7	-	15380.7

# 13a. (U) Cost Variance Analysis (Cont'd):

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(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	78.7	8939.4	-	9018.1
Previous Changes:				
Quantity	-	-2816.9	-	-2816.9
Schedule	-	+231.5	-	+231.5
Engineering	-	-	-	_
Estimating	+18.4	+1345.3	-	+1363.7
Other	-	-	-	_
Support	-	-	-	-
Subtotal	+18.4	-1240.1	-	-1221.7
Current Changes:				
Quantity	-	+2816.9	-	+2816.9
Schedule	-	+84.2	-	+84.2
Engineering	-	-	-	-
Estimating	0.0	+2242.0	-	+2242.0
Other	-	-	-	-
Support	-	-		
Subtotal	0.0	+5143.1	-	+5143.1
Total Changes	+18.4	+3903.0	-	+3921.4
Current Estimate	97.1	12842.4	-	12939.5

b. (U) Current Change Explanations --

(Dollars in Millions) <u>Base-Year</u> <u>Then-Year</u> NI / 7 -0.2

(1)	DUTCE	Dase lear	THCH TCOT
(1)	Revised escalation indices. (Economic) Reflect FY00 actual obligated cost (Estimating) FY03 revised estimate (Estimating)	N/A -0.1 +0.1	-0.2 -0.1 +0.1
	RDT&E Subtotal	0.0	-0.2
(2)	Procurement		
(-)	Revised escalation indices. (Economic)	N/A	-31.7
	Total Quantity Variance associated with increase of 4 ships (Non add)	+3390.4	+4339.9
	Quantity increase from 8 to 12 ships ((1) in FY07, (2) in FY08 and (1) in FY09) (Quantity	+2816.9	+3606.0
	Allocation to Schedule variance resulting from Ouantity Change, (OR) (Schedule)	+84.2	+169.6
	Rescheduling FY03 and FY04 ships to FY05 and FY06 (QR) (Schedule)	0.0	+87.1
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+489.3	+564.3
	FY03-09 ships outfitting and post delivery Cost associated with quantity and rescheduling FY03-09 ships (QR) (Estimating)	+247.4	+352.5

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# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations		
	(Dollars i	n Millions)
	<u>Base-Year</u>	Then-Year
RAM MYP advanced procurement funding in FY03 and 04 for LPD 24-28 (OB) (Estimating)	+14.5	+17.0
Adjustment for Current and Prior Inflation. (Estimating)	+12.8	+14.0
Miscellaneous adjustments to prior year	-1.2	-1.6
accounts including FY 00 & 01 supplemental (Estimating)		
FY01 Undistributed Reduction (Estimating)	-0.5	-0.5
FY02 Congressional reduction of premature advanced procurement (Estimating)	-235.7	-266.3
Increase to prior year cost to complete account to reflect revised cost estimates for LPD 17-20 (Estimating)	+794.3	+945.5
FY02 Congressional reduction against prior year cost to complete (Estimating)	-68.1	-77.0
FY02-09 revised outfitting and post delivery estimates for LPD 17-24 (Estimating)	-181.5	-227.2
Increase to LPD 21-28 to reflect revised cost estimates (increased labor hours, labor rates, material costs,etc.) (Estimating)	+1170.7	+1451.6
Procurement Subtotal	+5143.1	+6603.3

QR = Quantity related changes.

# 14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

PAUC				Chan	ges				PAUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
896.82	-32.81	+5.41	+57.96		+354.35			+384.91	1281.73

## Current SAR Baseline to Current Estimate

# b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

Cur Est
Dur Hor
Spt Total
+383.31 1273.64

# - 13 -

## 14c. (U) Unit Cost and Other History (Cont'd):

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er (of bonduie) cose, and guantity history								
SAR	SAR	SAR						
Planning	Development	Production	Current					
Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate					
JAN 1993	JAN 1993	N/A	JAN 1993					
JUL 1995	JUN 1996	N/A	JUN 1996					
OCT 2003	AUG 2007	N/A	SEP 2009					
16		N/A						
59.1	10761.8	N/A	15380.7					
0	12	N/A	12					
0.0	896.8	N/A	1281.7					
	SAR Planning Estimate (PE) JAN 1993 JUL 1995 OCT 2003 59.1 0 0.0	SAR         SAR           Planning         Development           Estimate(PE)         Estimate(DE)           JAN 1993         JAN 1993           JUL 1995         JUN 1996           OCT 2003         AUG 2007           59.1         10761.8           0         12           0.0         896.8	SARSARSARPlanningDevelopmentProductionEstimate(PE)Estimate(DE)Estimate(PdE)JAN 1993JAN 1993N/AJUL 1995JUN 1996N/AOCT 2003AUG 2007N/A59.110761.8N/A012N/A0.0896.8N/A					

c. (U) Schedule, Cost, and Quantity History

#### 15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procure	ement		Initial	Contract Pr	ice
(U) <u>LPD 17</u> :	_		<u>Target</u>	Ceiling	Oty
Northrop Grumm	an Ship Sys, Ne	ew Orleans LA			
N002497C2202/J	7, CPIF/AF		\$641.4	N/A	1
Award: Decembe	er 17, 1996				
Definitized: [	December 17, 199	96			
Current	Contract Price		Estimated P	rice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	Program	<u>Manager</u>
\$1190.8	N/A	1	\$1206.9	\$13	71.7
			Cost Varianc	e Schedule V	ariance
Browiewe Curvi	stive Verinees	-	<u> </u>	<u>e penedate v</u>	C Lance

Previous Cumulative Variances Cumulative Variances To Date (12/30/01) Net Change

ost Variance	Schedule Variance
\$-162.5	\$-22.6
\$-19.1	\$0.2
\$143.4	\$22.8

#### Explanation of Change:

(U) The favorable change to cost variance is a result of establishing a revised performance measurement baseline which was negotiated and incorporated into the contract.

The revised performance measurement baseline resulted in the elimination of the schedule variance.

(U) Contract Comments: NGSSAO submitted a Request for Equitable Adjustment, which was negotiated and incorporated into the contract. The result was an increase in the target price by \$549.4M, to \$1,190.8M.

The PM's estimated price at completion is consistent with the Department's approved program estimates contained in this SAR. This estimate does not include an allowance for future change orders.

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## 15. (U) Contract Information (Cont'd):

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(U) <u>LPD 18</u>		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Qty</u>	
N002497C2202	18, CPIF/AF	NEW OFTGAMS LA	\$390.8	N/A	1
Award: Decembe	er 18, 1998				
Definitized: 1	December 18, 1	998			
Current	Contract Pric	e	Estimated P	rice At Comp	letion
Target	Ceiling	Oty	<u>Contractor</u>	Program	Manager
\$577.8	N/A	1	\$577.0	\$6	95.5
			<u>Cost Varianc</u>	<u>e Schedule V</u>	<u>ariance</u>
Previous Cumu!	lative Varianc	es	\$-1.5	\$0.	7
Cumulative Variances To Date (12/31/01)			\$0.0	\$0.	0
Net Change	•		\$1.5	\$-0.	7

## Explanation of Change:

(U) A revised performance measurement baseline was negotiated and incorporated into the contract. The revised performance measurement baseline eliminated the cost and schedule variances.

(U) Contract Comments: NGSSAO submitted a Request for Equitable Adjustment, which was negotiated and incorporated into the contract. The result was an increase in the target price by \$187.0M, to \$577.8M.

The PM's estimated price at completion is consistent with the Department's approved program estimates contained in this SAR. This estimate does not include an allowance for future change orders.

<pre>(U) LPD 19: Northrop Grumman Ship Sys, New Orleans LA N002497C2202/19, CPIF/AF Award: February 29, 2000 Definitized: February 29, 2000</pre>	Initial <u>Target</u> \$491.9	. Contract P: <u>Ceiling</u> N/A	rice <u>Qty</u> 1
Current Contract Price	Estimated F	Price At Comp	pletion
<u>Target Ceiling Otv</u>	<u>Contractor</u>	Program	<u>m Manager</u>
S491.1 N/A 1	\$609.5	Ş	767.5

### 15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$-1.9	\$-1.2
Cumulative Variances To Date (12/30/01)	\$-0.1	\$0.0
Net Change	\$1.8	\$1.2

### Explanation of Change:

(U) N/A - Discussions with the Alliance on a comprehensive settlement for LPD 19 and 20 are in process. After a settlement is negotiated, a revised performance measurement baseline will be incorporated into the contract. Cost and schedule variances will be updated in the next SAR.

The PM's estimated price at completion is consistent with the Department's approved program estimates contained in this SAR. This estimate does not include an allowance for future change orders.

(U) <u>LPD 20</u>	L Chip Sup 1	Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice Qty	
NOO2497C2202/ Award: May 30 Definitized: 1	Man Ship Sys, 20, CPIF/IF , 2000 May 30, 2000	\$477.7	N/A	1	
Current <u>Target</u> \$468.4	Contract Pric <u>Ceiling</u> N/A	e <u>Otv</u> 1	Estimated Pr <u>Contractor</u> \$498.7	ice At Comp <u>Program</u> \$6	letion <u>Manager</u> 38.1
Previous Cumu Cumulative Va Net Chang	lative Varianc riances To Dat e	es e (12/30/01)	<u>Cost Variance</u> \$-0.3 \$1.9 \$2.2	<u>Schedule V</u> \$-1. \$0. \$2.	<u>ariance</u> 7 <u>8</u> 5

### Explanation of Change:

(U) N/A - Discussions with the Alliance on a comprehensive settlement for LPD 19 and 20 are in process. After a settlement is negotiated, a revised performance measurement baseline will be incorporated into the contract. Cost and schedule variances will be updated in the next SAR.

The PM's estimated price at completion is consistent with the Department's approved program estimates contained in this SAR. This estimate does not include an allowance for future change orders.

LPD 17 Class, December 31, 2001

# 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY90-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-15)	<u>Total</u>
RDT&E	85.9	1.0	10.1	_	97.0
Procurement	3843.9	334.4	878.7	10226.7	15283.7
MILCON		-	-	-	
0&M	-	-	-	-	-
Total	3929.8	335.4	888.8	10226.7	15380.7

b. Annual Summary -- LPD 17 CLASS

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Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Sailaway	Sailaway		
1		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1990				0.6	0.5
1991				5.4	4.9
1992				1.3	1.2
1993				10.8	10.3
1994				28.7	28.0
1995				10.9	10.8
1996				9.1	9.2
1997				4.2	4.3
1998				12.5	12.9
1999				1.2	1.3
2000				2.2	2.3
2001				0.2	0.2
2002				0.9	1.0
2003				9.1	10.1
Subtotal				97.1	97.0

(U) Program funding shown in 16b does not include \$21.3 million of life of type non-acquisition development funds for in-service ship product improvements that is included in the LPD 17 program element budget.

Appropriation:	1611	-	Shipbuilding	and	Conversion,	Navy
			. 2			-

[		Sailaway	Sailaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1996	1		1672.6	968.8	994.2
1997					
1998				90.7	96.0

# 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1999	1		949.5	591.3	632.9
2000	2		1859.3	1402.8	1527.2
2001				535.5	593.6
2002				295.8	334.4
2003	1		1036.7	761.6	878.7
2004	1		1002.1	1270.8	1497.0
2005	1		961.2	1317.2	1584.2
2006	1		1269.5	1359.5	1669.5
2007	1		944.6	919.1	1152.4
2008	2		1875.3	1803.6	2308.8
2009	1		1271.6	1274.8	1666.2
2010				42.2	56.3
2011				63.6	86.7
2012				51.8	72.0
2013				59.6	84.7
2014				31.7	46.0
2015				2.0	2.9
Subtotal	12		12842.4	12842.4	15283.7

(U) FY 2010-2015 funding is associated with outfitting and post delivery costs.

		Sailaway	Sailaway	Total	Total
1		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	12		12842.4	12939.5	15380.7

## 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	0	0
	Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1457.2

(U) Percent Total Program Expended: 9.5%

LPD 17 Class, December 31, 2001

# 18. (U) Operating and Support Costs:

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a. (U) Assumptions and Ground Rules --The costs include all personnel, equipment, supplies, software and services including support associated with operating, modifying, maintaining, supplying, training and supporting the LPD 17 Program. The primary source of data was the Visibility and Management of Operating and Support Costs (VAMOSC) data base. LSD 41 VAMOSC data was adjusted for differences in: ship size, crew size, propulsion & fuel consumption, and weapons systems to develop LPD 17 estimates. (Cost estimate dated December 2001) There is no antecedent system.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

	LPD 17 CLASS AVG ANNUAL COST	Antecedent System
Cost Element	PER LPD CLASS HULL	
Mission Pay & Allowances	24.9	N/A
Unit Level Consumption	9.7	N/A
Intermediate Maintenance	0.6	N/A
Depot Maintenance	17.2	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)	26126.3	N/A
TY\$ (In Millions)	56517.9	N/A

Report Creation Date: 03/25/2002 10:39:04 AM

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### SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: ATACMS/BAT

INDEX

A-2 ATACMS - BAT

AS OF DATE: December 31, 2001



02-C-0613

ATACMS/BAT, December 31, 2001

5. (U) References:

BAT/BAT P3I

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum (ADM), dated May 15, 1991, approval to enter Engineering and Manufacturing Development (EMD).

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 14, 2000.

ATACMS BLK II/IIA

SAR Baseline (Development Estimate): (U) AAE Acquisition Decision Memorandum (ADM) dated May 15, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 14, 2000.

### 6. (U) Mission and Description:

(U) The ATACMS Block II/BAT system provides deep fires to Army Objective Force and Joint Forces Commanders to delay and disrupt threat armored forces at ranges in excess of 100 kilometers. The BAT is a top attack submunition with acoustic and infrared (IR) seekers working in tandem for autonomous attack of moving armor. The Preplanned Product Improvement (P3I) BAT adds cold, stationary armor, heavy multiple rocket launchers, and surface-to-surface missile transporter erector launchers to the target set through seeker and warhead improvements. BAT and P3I BAT submunitions are carried deep into enemy territory by the ATACMS Block II missile, then dispensed to attack and destroy targets. The missile and submunition have a low sustainment cost as they are certified rounds (a predictable and acceptable level of reliability over a specified certification period). The ATACMS Block II missile, a version of the currently fielded and combat-proven ATACMS Block I missile, will carry BAT or P3I BAT submunitions. The ATACMS Block II and BAT Programs do not replace another system.

### 7. (U) Executive Summary:

(U) The BAT program was established in 1984 as a special access program and progressed through proof of principle to a successful Milestone II decision in May 1991. The ATACMS Block II was designated as the BAT carrier in December 1993 when the Army terminated participation in the Tri-Service Standoff Attack Missile (TSSAM) program. The P3I BAT received approval to continue Program Definition and Risk Reduction (PDRR) with ATACMS Block IIA (an extended range version of the Block II missile) as the carrier in February 1993. The ATACMS Block II Continued Development Program was approved in May 1995. The ATACMS Block II/BAT program received approval for system-level entry into Low Rate Initial Production (LRIP) in February 1999. The P3I BAT Continued Development Program was approved in July 1999. The ATACMS Block IIA program was terminated

### 7. (U) Executive Summary (Cont'd):

in February 2000.

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The ATACMS Block II/BAT program has been suspended indefinitely. A revised Acquisition Program Baseline (APB), reflecting the ATACMS Block II/P3I BAT restructured program has been provided higher headquarters for approval.

The P3I BAT program is progressing on its development path. Significant progress has been made in all technical areas and the program is rapidly progressing to its initial flight (recoverable BAT-2 drop test) scheduled for the second quarter of fiscal year (FY) 02. The program is being restructured to support additional developmental and operational testing as a result of the suspension of the Base BAT program operational testing. A revised APB which reflects the ATACMS Block II/P3I program has been provided higher headquarters for approval.

### 8. (U) Threshold Breaches:

BAT/BAT P31

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	No
0&M	No
Program Acquisition Unit Cost (PAUC)	Yes
Average Procurement Unit Cost (APUC)	Yes

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	NO

### c. (U) Explanation of Breach:

The ATACMS Block II/BAT operational testing suspension resulted in program restructuring generating both PAUC and APUC breaches. ATACMS Block II/BAT procurement funds were moved to the P3I BAT RDTE line to fund additional developmental and operational testing efforts from the Block II/BAT operational testing suspension (PAUC breach). The reduced FY 03-07 ATACMS Block II/BAT annual procurement buy caused a production gap requiring non-hardware costs to restart the production line (APUC breach).

## 8c. (U) Threshold Breaches (Cont'd):

ATACMS BLK II/IIA

a. (U) Acquisition Program Baseline (APB):

	Item	Breach
Schedule		Уев
Performanc	e	No
Cost RD	T&E	No
Pr	ocurement	No
MI	LCON	No
0&	M	No
Pr	ogram Acquisition Unit Cost (PAUC)	No
Av	erage 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:

An ATACMS Block II schedule breach has occurred. ATACMS Block II/BAT operational testing was scheduled to begin in August 2000; however, due to delay in delivery of base BAT hardware, operational testing began in August 2001. A Program Deviation Report (PDR) was submitted in October 2000 and a proposed APB was submitted in January 2001. Since this time, operational testing was suspended and the program again deviated from the approved APB. A PDR was forwarded in October 2001. A revised APB was forwarded in December 2001 for approval.

9. (U) Schedule:

BAT/BAT P3I

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
BAT			
Milestone 0	JUN 1984	JUN 1984	JUN 1984
Milestone I	FEB 1985	FEB 1985	FEB 1985
Milestone II	MAY 1991	MAY 1991	MAY 1991
Preliminary Design Review	MAY 1991	MAY 1991	MAY 1991
EMD/FSD Contract Award	JUN 1991	JUN 1991	JUN 1991
Critical Design Review Complete	MAR 1992	MAY 1992	MAY 1992
Prototype Production			
Start	DEC 1992	N/A	APR 1993
Complete	SEP 1994	N/A	SEP 1995

9a. (U) <u>Schedule (Cont'd)</u>: BAT/BAT P3I

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	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Design Verification Test			
Start	JAN 1993	MAY 1993	JUN 1993
Complete	NOV 1993	OCT 1995	APR 1996
First Prototype Unit Delivery	OCT 1993	OCT 1994	OCT 1994
Contractor Development Test			
Start	NOV 1993	FEB 1996	JUL 1996
Complete	SEP 1994	DEC 1997	JAN 1998
Long Lead Program Review	DEC 1993	N/A	N/A
Long Lead Contract Award for LRIP	JAN 1994	N/A	N/A
BAT/ATACMS BL II LRIP ASARC	N/A	JAN 1999	JAN 1999
BAT/ATACMS BL II LRIP DAB	N/A	FEB 1999	FEB 1999
LRIP Program Review (DAB)	NOV 1994	N/A	N/A
EMD/LRIP I Contract Award	NOV 1994	N/A	N/A
Milestone III	DEC 1996	N/A	N/A
Production Contract Award	JAN 1997	N/A	N/A
Submunition Readiness Date (IOC)	DEC 1995	N/A	N/A
First Production Unit Delivery	JAN 1998	N/A	N/A
BAT P3I			
P3I Phase I Study Award	N/A	OCT 1993	OCT 1993
P31 Continued Development Contract	N/A	MAY 1999	JUL 1999
Award			
Block II/P3I Production Cut-In	N/A	JUN 2002	N/A (Ch-1)
Decision (less MRL/TEL capability)	)		
Block II/P3I Production Cut-In	N/A	NOV 2002	N/A (Ch-1)
Block II/P3I BAT Continued	N/A	NOV 2004	N/A (Ch-1)
Production Decision			

b. Current Change Explanations --

 (U) (Ch-1) - The following milestones are no longer applicable. The program is being restructured. System milestones are reflected in the ATACMS Block II end item.

MILESTONE	FROM	TO
Block II/P3I Production Cut-In Decision (less MRL/TEL capability)	Jun 02	N/A
Block II/P3I Production Cut-In	Nov 02	N/A
Block II/P3I BAT Continued Production Decision	Nov 04	N/A

Acronym List: ASARC - Army Systems Acquisition Review Council DAB - Defense Acquisition Board EMD - Engineering and Manufacturing Development

ATACMS/BAT, December 31, 2001

9b. (U) <u>Schedule (Cont'd)</u>: BAT/BAT P3I FSD - Full Scale Development

IOC - Initial Operational Capability LRIP - Low Rate Initial Production MRL - Multiple Rocket Launchers P3I - Preplanned Product Improvement TEL - Transporter Erector Launchers

#### ATACMS BLK II/IIA

a. Milestones --Development Approved Current Estimate (SAR) Program (APB) Estimate BLOCK II ATACMS DA IPR MAY 1995 MAR 1995 MAY 1995 Continued Development Contract Award MAY 1995 JUN 1995 JUL 1995 Preliminary Design Review MAY 1996 OCT 1996 OCT 1996 Hardware Critical Design Review FEB 1997 MAR 1997 APR 1997 MAY 1997 Software Critical Design Review JUN 1997 APR 1997 Pre-production (PPT) Start MAY 1997 NOV 1997 NOV 1997 NOV 1997 MAR 1998 Complete APR 1998 EMD OT Option Award JAN 1998 MAR 1998 MAR 1998 Production Qualification Tests (PQT) Start DEC 1997 JUN 1998 AUG 1998 Complete JUL 1998 JAN 1999 DEC 1998 PEO LRIP Decision DEC 1998 N/A N/A Block II/BAT LRIP ASARC N/A JAN 1999 JAN 1999 Block II/BAT LRIP DAB N/A FEB 1999 FEB 1999 FEB 1999 LRIP Contract Award JAN 1999 JUN 1999 Developmental Testing (DT) JUL 1998 APR 1999 MAR 1999 Start DEC 1998 Complete JUN 2000 JUL 2001 Operational Tests (OT) DEC 1999 AUG 2000 AUG 2001 Start MAR 2000 DEC 2000 N/A (Ch-1) Complete NOV 2000 Long Lead Contract Award for N/A N/A Production JUN 2000 MAR 2001 OCT 2001 LRIP First Delivery Organic Support Capability SEP 2000 MAR 2001 N/A (Ch-1) SEP 2000 MAR 2001 (Ch-1) Service Depot Support N/A SEP 2000 MAY 2001 (Ch-1) MS III N/A JAN 2001 MAY 2001 N/A (Ch-1) First Full Rate Production Contract Award OCT 2001 N/A (Ch-1) TOC SEP 2000 First Full Rate System Delivery N/A SEP 2002 (Ch-1) N/A BLOCK IIA ATACMS N/A N/A MAR 1998 Milestone IV P3I Review

9a. (U) Schedule (Cont'd): ATACMS BLK II/IIA

	Development	Approved	Current
	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
EMD Contract Award	APR 1998	N/A	N/A
LRIP Contract Award	JAN 2002	N/A	N/A
MS III	FEB 2002	N/A	N/A
Service Depot Support	DEC 2003	N/A	N/A
Organic Support Capability	DEC 2003	N/A	N/A
10Č	MAY 2003	N/A	N/A
BLOCK II/P3I BAT			
DT (Armor Only)			
Start	N/A	N/A	JUL 2003(Ch-2)
Complete	N/A	N/A	SEP 2003(Ch-2)
LRIP (Armor Only) DAB	N/A	N/A	DEC 2003(Ch-2)
LRIP Contract Award	N/A	N/A	JAN 2004 (Ch-2)
DT with MRLs/TELs			(Ch-2)
Start	N/A	N/A	MAR 2004 (Ch-2)
Complete	N/A	N/A	MAY 2004 (Ch-2)
OT			(Ch 2)
Start	N/A	N/A	JUN 2004 (Ch-2)
Complete	N/A	N/A	DEC 2004 (Ch-2)
FRP (MRLs/TELS) ASARC	N/A	N/A	JUN 2005 (Ch-2)
Organic Support Capability	N/A	N/A	JUL 2005 (Ch-2)
First LRIP Delivery	N/A	N/A	AUG 2005 (Ch-2)
First FRP Contract Award	N/A	N/A	NOV 2005 (Ch-2)
FUE	N/A	N/A	SEP 2006 (Ch-2)
First FRP Delivery	N/A	N/A	AUG 2007 (Ch-2)

 b. Current Change Explanations - (U) (Ch-1) - On September 14, 2001, the ATACMS Block II/BAT operational test program was stopped. The program was restructured as the ATACMS Block II/P3I program and the following milestones are no longer applicable:

MILESTONE	FROM	TO
Operational Tests (OT)		
Complete	TBD	N/A
Organic Support Capability	TBD	N/A
Service Depot Support	TBD	N/A
MS III	TBD	N/A
First Full Rate Production		
Contract Award	TBD	N/A
IOC	TBD	N/A
First Full Rate System		
Delivery	TBD	N/A

(Ch-2) - The following milestones have been added which reflect the restructured ATACMS Block II/P3I BAT program:

MILESTONE	FROM	TO
Demon-

Perf

40.64

36

5.5

.80

TBD

strated Current

•

44

36

5.5

.86

20

N/A

Estimate

9b. (U) <u>Schedule (Cont'd)</u>: ATACMS BLK II/IIA

DT (Armor Only)		
Start	N/A	Jul 03
Complete	N/A	Sep 03
LRIP (Armor Only) DAB	N/A	Dec 03
LRIP Contract Award	N/A	Jan 04
DT with MRLs/TELs		
Start	N/A	Mar 04
Complete	N/A	May 04
OT		
Start	N/A	Jun 04
Complete	N/A	Dec 04
FRP (MRLs/TELS) ASARC	N/A	Jun 05
Organic Support Capability	N/A	Jul 05
First LRIP Delivery	N/A	Aug 05
First FRP Contract Award	N/A	Nov 05
FUE	N/A	Sep 06
First FRP Delivery	N/A	Aug 07

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Acronym List:

FRP - Full Rate Production

IPR - In-Process Review

PPT - Pre-Production Testing
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10. The Performance Characteristics:
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# BAT/BAT P31

a. Performance --

Development Estimate (SAR) BAT 44 Weight (1bs) 36 Length (stowed) (ins) Diameter (stowed) 5.5 (ins) . 90 Reliability (Operational) Useful Life (yrs) 20 Lethality Rolled Homogene-N/A ous Armor (mm RHA) Rolled Homogene-N/A ous Armor (RHA) Penetration (Incl residual)



Approved Program (APB)

/ 44

/ 36

/ 5.5

/ .86

/ 10

Obi/Threshold

IS HIM



44

36

5.5

.90

20



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ATACMS/BAT, December 31, 2001

	Development Estimate (SAR	Pr <u>Ob</u>	Appr ogram j/Thr	oved (APB) eshold	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
(mm) Range Targets	(b)(1)					
Residual Penetra-	N/A	N/A	/	N/A	N/A	N/A
tion (mm) Residual Penetra- tion Behind	N/A	(b)(1)				
Range Targets (mm) Additional Pene- tration (mm)	(b)(1)	N/A	1	N/A	N/A	N/A
Kills/Launcher Load Large Cruise ATACMS Block II	(b)(1)	N/A	1	N/A	N/A	N/A
(Moving) AT PRE-PLANNED PRODUCT IMPROVEMENT						
Weight (lbs) Length (stowed)	N/A N/A	44 36	1	44 36	TBD TBD	44 36
Diameter (stowed) (ins)	N/A	5.5	1	5.5	TBD	5.5
Reliability (Oper- ational)	N/A	. 90	1	.86	TBD	.86
Useful Life (yrs) Kills	N/A	$\frac{20}{(b)(1)}$	/	10	TBD	20
ATACMS Block II Armor (Launcher Load)	N/A	(c)(c)	-14	121		7)
Kills/Missile Load	N/A	N/A	1	N/A	TBD -	
ATACMS Block IIA (Armor)	N/A	N/A	/	N/A	TBD	N/A
(TEL/MRL)	N/A	IN/A	/	W/ C	100	

(U) TBDs in Demonstrated Performance signify test data is not available. Information provided in Demonstrated Performance column reflects test articles to date.

Reliability (Operational) - Threshold value is based on a fully matured system. Demonstrated Performance value meets expected operating reliability based on the reliability growth curve.

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10b. (D Performance Characteristics (Cont'd): BAT/BAT P3I

b. Current Change Explanations -- None

ATACMS BLK II/IIA

a. Performance --

a. reriormanco	Approved Development Program (APB) Estimate (SAR) Obj/Threshold		Demon- strated <u>Perf</u>	Current <u>Estimate</u>		
BLOCK II ATACMS Kills/Launcher	(b)(1)					S
Maximum Range (km)	200	200	/ >145	145.8 @ WSMR	145.30 Sea Level	
Minimum Range (km)	25	25	/ 35	41	35	
Payload (No. BAT/BAT P3I Submunitions)	13	13	/ 12	13	13	
Accuracy w/ GPS (meters	(b)(1)					
at all ranges) Meters from min range to 107 km	(b)(1)	N/A	/ N/A	N/A	N/A	1
w/o GPS (meters from min range to 107 km) Mils at ranges beyond 107 km	(0)(1)					HIN
Off-Axis Launch (+/-deg)	-		1	0.0	01	
Reliability (Missile inflight including dispense)	. 91	.91	/ .91	.90	. 91	
System Availability (prelaunch)	.75	.75	/ .75	TBD	.75	
BLOCK IIA ATACMS Maximum Range	500	N/A	/ N/A	N/A	N/A	
Minimum Range	70	N/A	/ N/A	N/A	N/A	
Payload (No. BAT P31 Submunitions)	6	N/A	/ N/A	N/A	N/A	
Accuracy w/GPS (meters at	(b)(1)	N/A	/ N/A	N/A	N/A JA	i.
Meters from min range to 107 km		N/A	/ N/A	N/A	N/A	A

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# 10a. (n. <u>Performance Characteristics (Cont'd)</u>: ATACMS BLK II/IIA

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	Development	App Progra	m (APB)	Demon- strated	Current	
w/o CPS (meters	b)(1)	N/A	/ N/A	N/A	N/A	24
min range to 107 km)		147 21	/ 11/1	67 A	NZA	The second
Mils at ranges beyond 107 km		N/A	/ N/A	N/A	N/A	
Off-Axis Launch (+/- deg)		N/A	/ N/A	N/A	N/A	
Reliability (Missile Inflight)	.91	N/A	/ N/A	N/A	N/A	
System Availability (prelaunch)	. 75	N/A	/ N/A	N/A	N/A	

(U) TBDs in Demonstrated Performance signify test data is not available.

ATACMS Block II numerical requirements for Accuracy were reinstated during the JROC process as CEPs, even though as defined, they are not appropriate for a Block II system. The project's technical interpretation of Block II dispense of submunitions over the target area, though reflecting CEP in the ORD, is measured as SEP.

Demonstrated performance reflects test flights to date.

b. Current Change Explanations -- None

- 11 -

11. (U) Total Program Cost and Quantity (Dollars in Millions): BAT/BAT P31

_		Development	Approved	Current
<b>a</b> .	(U) COST	Estimate (SAR)	<u>Program (APB)</u>	<u>Estimate</u>
	Development (RDT&E)	702.1	1416.2	1678.1
	Procurement	1569.9	1656.6	1901.1
	Non-Recurring	(0.0)		(64.5)
	Recurring Flyaway	(1553.6)		(1832.9)
	Total Flyaway	(1553.6)		(1897.4)
	Other Weapon Systems	(16.3)		(3.7)
	Peculiar Support	(0.0)		(0,0)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1991 Base-Year \$	2272.0	3072.8	3579.2
	Escalation	714.6	679.7	926.6
	Development (RDT&E)	(29.5)	(134.8)	(207.3)
	Procurement	(685.1)	(544.9)	(719.3)
	Construction (MILCON)	(0.0)	(0.0)	(0,0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2986.6	3752.5	4505.8

(U) Procurement funding reflects a break-out of dollars placed in the ATACMS Block II system line (CA6105) between the BAT and Block II subelements to correctly align funding.

b. (U) Quantity --

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Development (	(RDT&E)	0	98	98
Procurement		<u>30993</u>	15707	16089
Total		30993	15805	16187

(U) BAT/BAT P3I unit of measure is a submunition.

The BAT Milestone II decision (Acquisition Decision Memo, 15 May 91) provided for an LRIP quantity of 3650 submunitions which exceeded the 10% guideline established in 10 U.S.C. 2400 (FASTA). However, the current LRIP quantity has changed from 1418 to 1501 which does not exceed the 10% guideline.

c. (U) Foreign Military Sales -- None.

d. (U) Nuclear Costs --None.

#### 11a. (U) Total Program Cost and Quantity (Cont'd):

#### ATACMS BLK II/IIA

		Development	Approved	Current
a.	(U) Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	385.4	278.9	269.0
	Procurement	1210.3	1244.2	1233.3
		(1092.3)		(1226.1)
	Nonrecurring Flyaway	(89.6)		(3.1)
	Total Flyaway	(1181.9)		(1229.2)
		(22.0)		(1.6)
	Peculiar Support	(3.6)		(0.2)
	Initial Spares	(2.8)		(2.3)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1991 Base-Year \$	1595.7	1523.1	1502.3
	Escalation	705.4	468.5	507.2
	Development (RDT&E)	(103.1)	(43.5)	(42.6)
	Procurement	(602.3)	(425.0)	(464.6)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2301.1	1991.6	2009.5

(U) Procurement funding reflects a break-out of dollars placed in the ATACMS Block II system line (CA6105) between the BAT and Block II subelements to correctly align funding.

b. (U) Quantity --

Development (RDT&E)	0	6	6
Procurement	1806	1206	1235
Total	1806	1212	1241

(U) ATACMS Block II unit of measure is a missile.

The ATACMS Block II Continued Development decision (Acquisition Decision Memo, May 15, 1995) provided for an LRIP I and LRIP II quantity of 150 which exceeded the 10% guideline established in 10 U.S.C. 2400 (FASTA). In addition, the Under Secretary of Defense, Acquisition, Technology, and Logistics, approved two additional LRIP buys on May 16, 2001 for a total buy of 163 missiles. The current LRIP quantity has changed from 106 to 112 which does not exceed the 10% guideline.

c. (U) Foreign Military Sales -- None.

d. (U) Nuclear Costs --

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11d. (U) Total Program Cost and Quantity (Cont'd): ATACMS BLK II/IIA

None.

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## 12. (U) Unit Cost Summary:

BAT/BAT P31

		(MAR	Base) 2000	UCR line APB)	(Dec	Curi Estin 2001	rent nate SAR)	Percent Change
а.	(U) Prog. Acq. Unit Cost (PAUC)							
	(1) COST (FY 1991 BYŞ)		30.	72.8		351	79.2	
	(2) Quantity		19	5805		16	5187	
	(3) Unit Cost		0	. 194		0.	221	+13.92
Ъ.	(U) Avg. Proc. Unit Cost (APUC)							
	(1) Cost (FY 1991 BY\$)		169	56.6		190	)1.1	
	(2) Quantity		15	5707		16	5089	
	(3) Unit Cost		0	.105		0.	118	+12.38

(U) Procurement funding reflects a break-out of dollars placed in the ATACMS Block II system line (CA6105) between the BAT and Block II subelements to correctly align funding.

ATACMS BLK II/IIA

01.10						
				UCR	Curren	it
			Base	line	Estimat	e Percent
		(MAR	2000	APE) (Dec	2001 SA	R) Change
а.	(U) Prog. Acq. Unit Cost (PAUC)					
	(1) Cost (FY 1991 BY\$)		152	23.1	1502.	3
	(2) Quantity			1212	124	1
	(3) Unit Cost		1	.257	1.21	.1 -3.66
ь.	(U) Avg. Proc. Unit Cost (APUC)					
	(1) Cost (FY 1991 BY\$)		124	14.2	1233.	3
	(2) Quantity		:	L206	123	5
	(3) Unit Cost		1	. 032	0.99	9 -3.20

(U) Procurement funding reflects a break-out of dollars placed in the ATACMS Block II system line (CA6105) between the BAT and Block II subelements to correctly align funding.

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# 13. (U) Cost Variance Analysis: BAT/BAT P3I

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	731.6	2255.0	-	2986.6
Previous Changes:				
Economic	-44.3	-192.6	-	-236.9
Quantity	-0.8	-1107.3	-	-1108.1
Schedule	+45.7	+291.5	-	+337.2
Engineering	+319.3	+44.9	-	+364.2
Estimating	+473.4	+1090.3	-	+1563.7
Other	-	-	-	-
Support	-	-11.7	-	-11.7
Subtotal	+793.3	+115.1	-	+908.4
Current Changes:				
Economic	+0.3	-27.9	-	-27.6
Quantity	-	+89.6	-	+89.6
Schedule	-	+79.7	-	+79.7
Engineering	-	+3.4	-	+3.4
Estimating	+360.2	+108.7	-	+468.9
Other		-	-	-
Support	-	-3.2	-	-3.2
Subtotal	+360.5	+250.3	-	+610.8
Total Changes	+1153.8	+365.4	-	+1519.2
Current Estimate	1885.4	2620.4	-	4505.8

(U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	702.1	1569.9	-	2272.0
Previous Changes:				
Quantity	-0.7	-628.4	-	-629.1
Schedule	+33.5	-8.3	-	+25.2
Engineering	+269.0	+27.6		+296.6
Estimating	+390.5	+795.3	-	+1185.8
Other	-	-	-	-
Support	-	-10.6	-	-10.6
Subtotal	+692.3	+175.6	-	+867.9
Current Changes:				
Quantity	-	+58.7	-	+58.7
Schedule	-	-0.7		-0.7
Engineering	-	+2.4	-	+2.4
Estimating	+283.7	+97.2	-	+380.9
Other	-	-	-	-
Support	-	-2.0	-	-2.0
Subtotal	+283.7	+155.6	-	+439.3
Total Changes	+976.0	+331.2	-	+1307.2
Current Estimate	1678.1	1901.1	-	3579.2

# 13b. (U) <u>Cost Variance Analysis (Cont'd)</u>: BAT/BAT P3I

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	b. (U) Current Change Explanations		
		(Dollars :	in Millions)
(1)	סחתנים	Base-Year	Then-Year
141	Revised escalation indices (Economic)	N/A	+0.3
	Adjustment for Current and Prior Inflation.	-0.3	-0.3
	(Estimating)		
	Revised program estimate to reflect budget adjustments. (Estimating)	-1.4	-1.8
	Revised estimate as a result of the suspension of ATACMS Block II/BAT operational testing. (Estimating)	+285.4	+362.3
	RDT&E Subtotal	+283.7	+360.5
(2)	Procurement		
(47)	Revised escalation indices. (Economic)	N/A	-28.2
	Economic adjustment for negative program	N/A	+0.3
	Total Quantity Variance associated with increase of 1406 units.	+129.3	+197.4
	Quantity increase of 1406 units from 14683	+58,7	+89.6
	Allocation to Schedule variance resulting from	-0.7	+22.0
	Allocation to Engineering variance resulting	+2.4	+3.4
	Allocation to Estimating variance resulting from Quantity Change (OR) (Estimating)	+68.9	+82.4
	Stretchout of annual procurement buy profile by one year (FY 13). (Schedule)	0.0	+57.7
	Adjustment for Current and Prior Inflation.	-0.2	-0.3
	Revised program estimate to reflect restructured BAT/P3I BAT program. (Estimating	+19.7	+16.1
	Revised estimate due to late BAT Test Hardware Contract delivery impacting the	+8.8	+10.5
	production program. (Estimating) Refinement of estimate for Other Weapon System cost (data and training). (Support)	-2.0	-3.2
	Procurement Subtotal	+155.6	+250.3

QR = Quantity related changes.

# 13. (D) Cost Variance Analysis (Cont'd):

ATACMS BLK II/IIA

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	488.5	1812.6	-	2301.1
Previous Changes:				
Economic	-18.5	-122.4		-140.9
Quantity		-667.1	-	-667.1
Schedule	+17.1	+130.0	-	+147.1
Engineering	+15.7		- 1	+15.7
Estimating	-189.7	+457.5	-	+267.8
Other	-	-	-	
Support	-	-23.6		-23.6
Subtotal	-175.4	-225.6	-	-401.0
Current Changes:				
Economic	+0.6	-9.5	-	-8.9
Quantity	-	+98.0	-	+98.0
Schedule	-	+50.1	- 1	+50.1
Engineering		- 1	- 1	-
Estimating	-2.1	-16.6		-18.7
Other				-
Support		-11.1	- 1	-11.1
Subtotal	-1.5	+110.9	-	+109.4
Total Changes	-176.9	-114.7	-	-291.6
Current Estimate	311.6	1697.9	-	2009.5

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# 13a. (U) Cost Variance Analysis (Cont'd): ATACMS BLK II/IIA

(U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	385.4	1210.3	-	1595.7
Previous Changes:				
Quantity		-387.4	- 1	-387.4
Schedule	+10.3	+4.9		+15.2
Engineering	+13.1	-	-	+13.1
Estimating	-138.3	+352.5	-	+214.2
Other		• =	-	-
Support		-15.9	-	-15.9
Subtotal	-114.9	-45.9	-	-160.8
Current Changes:				
Quantity	-	+64.2	-	+64.2
Schedule	-	+0.4	~	+0.4
Engineering	-	-		-
Estimating	-1.5	+12.7	-	+11.2
Other	-	-	-	-
Support		-8.4		-8.4
Subtotal	-1.5	+68.9	-	+67.4
Total Changes	-116.4	+23.0	-	-93.4
Current Estimate	269.0	1233.3	-	1502.3

b. (U) Current Change Explanations --

	(Dollars in	Millions)
	Base-Year T	hen-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	+0.4
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.4
Revised program estimate to reflect budget adjustments. (Estimating)	-1.1	-1.7
RDT&E Subtotal	-1.5	-1.5
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-19.3
Economic adjustment for negative program change. (Economic)	N/A	+9.8
Total Quantity Variance associated with increase of 111 units.	+91.6	+139.9
Quantity increase of 111 units from 1124 to 1235. (Quantity)	+64.2	+98.0
Allocation to Schedule variance resulting fro Quantity Change. (QR) (Schedule)	om +0.4	+9.3

13b. (U) Cost Variance Analysis (Cont'd): ATACMS BLK II/IIA

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b. (U) Current Change Explanations --

	(Dollars in	Millions)
Allocation to Estimating variance resulting	+27.0	+32.6
from Quantity Change. (QR) (Estimating)		
Stretchout of annual procurement buy profile by one year (FY 13). (Schedule)	0.0	+40.8
Adjustment for Current and Prior Inflation. (Estimating)	-0.3	-0.4
Revised program estimate to reflect budget adjustments. (Estimating)	+1.8	+2.9
Revised program estimate to reflect the suspension of ATACMS Block II/BAT operational testing. (Estimating)	-15.8	-51.7
Refinement of estimate for Peculiar Support. (Support)	-1.2	-1.5
Refinement of estimate for Other Weapon System costs (training, data, and new equipment training). (Support)	-7.2	-9.6
Procurement Subtotal	+68.9	+110.9

QR = Quantity related changes.

## 14. (U) Unit Cost and Other History (Then-Year Dollars in Millions): BAT/BAT P3I

a. (U) Program Acquisition Unit Cost (PAUC) History

Current	SAR Base	line to	Current	Estimate					
PAUC	[			Chan	ges				PAUC
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.096	-0.016	+0.024	+0.026	+0.023	+0.126		-0.001	+0.182	0.278

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC				Chan	ges				PUC
Dev Est									
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.073	-0.014	+0.004	+0.023	+0.003	+0.075		-0.001	+0.090	0.163

#### 14c. (U) Unit Cost and Other History (Cont'd): BAT/BAT P3I

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate (DE)	Estimate(PdE)	Estimate
Milestone I	N/A	FEB 1985	N/A	FEB 1985
Milestone II	N/A	MAY 1991	N/A	MAY 1991
Milestone III	N/A	DEC 1996	N/A	N/A
IOC	N/A	DEC 1995	N/A	N/A
Total Cost	N/A	2986.6	N/A	4505.8
Total Quantity	N/A	30993	N/A	16187
Prog Acq Unit Cost	N/A	0.1	N/A	0.3

(U) The BAT program began SAR reporting in Sep 91 after a successful Milestone II decision in May 91. Milestone III and FUE/IOC are no longer applicable as they will be tracked by the ATACMS Block II program.

ATACMS BLK II/IIA

a. (U) Program Acquisition Unit Cost (PAUC) History

PAUC		···.		Chan	ges				PAUC
Dev Est				_					Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.27	-0.121	+0.121	+0.159	+0.013	+0.201		-0.028	+0.345	1.62

Current SAR Baseline to Current Estimate

## b. (U) Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate

PUC		Changes								
Dev Est		(								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
1.00	-0.107	+0.003	+0.146		+0.357		-0.028	+0.371	1.37	

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#### 14c. (U) Unit Cost and Other History (Cont'd): ATACMS BLK II/IIA

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate (PE)	Estimate(DE)	Estimate (PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAR 1995	N/A	MAY 1995
Milestone III	N/A	SEP 2000	N/A	DEC 2003
TOC	N/A	SEP 2000	N/A	SEP 2006
Total Cost	N/A	2301.1	N/A	2009.5
Total Quantity	N/A	1806	N/A	1241
Prog Acq Unit Cost	N/A	1.3	N/A	1.6

(U) The ATACMS Block II Program began SAR reporting in Dec 94.

Milestone III reflects LRIP (Armor Only) DAB for ATACMS Block II/P3I BAT. IOC reflects FUE for ATACMS Block II/P3I BAT.

15. (D) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

1. j. e

(11) 537 53				Initial	Contract P:	rice
(U) <u>P31 BA</u>	T Continued De	<u>v:</u>		Target	Celling	QEY
Northrop Grum	man Corp., Lin	thicum Heights	MD			
DAAH01-99-C 0	154, CPIF			\$139.7	N/A	0
Award: July 2	8, 1999					
Definitized:	July 28, 1999					
Current	Contract Pric	e		Estimated P	rice At Com	pletion
Target	Ceiling	Qty	C	ontractor	Program	m Manager
\$142.4	N/A	0		\$152.2	\$	157.7
			C	ost Varianc	e Schedule '	Variance
Previous Cumu	lative Varianc	es		\$-16.0	\$-0	. 4
Cumulative Va	riances To Dat	e (11/18/01)		\$-17.3	\$-2	. 4
Net Chang	e	-	-	\$-1.3	\$-2	. 0

#### Explanation of Change:

(U) The unfavorable change in cost variance is due to indirect costs and unplanned material for the safe and arm fire mechanism and power regulator which were left out of the Aug 01 replan. The unfavorable schedule variance is due to late material impacting manufacturing activities and delays in seeker development activities.

ATACMS/BAT, December 31, 2001

\$5.3

#### 15b. (U) Contract Information (Cont'd):

-----

b. Procurement	Initial	Contract P	rice
(U) ATACMS Blk II/BAT LRIP I:	Target	Ceiling	Otv
Lockheed Martin Missiles, Dallas TX			
DAAH01-99-C-0121, FPIF	\$134.2	\$147.7	24
Award: June 4, 1999			
Definitized: June 4, 1999			
Current Contract Price	Estimated Pr	rice At Com	pletion
Target Ceiling Qty	Contractor	Progra	m Manager
\$136.4 \$147.7 24	\$147.7	\$	147.7
	Cost Variance	Schedule	Variance
Previous Cumulative Variances	\$-9.3	\$-17	.0
Cumulative Variances To Date (11/25/01)	\$-12.2	\$-11	.7

\$-12.2 \$-2.9 Cumulative Variances To Date (11/25/01)

## Explanation of Change:

Net Change

(U) The unfavorable change in cost variance is due to increased costs associated with the submunition acoustic sensors assembly. Subcontractor administrative error resulted in previously incurred costs not being reported. Correction of that error resulted in an increase in the cumulative cost variance. The favorable change in schedule variance is due to the recovery of material delivery schedule by submunition subcontractors from previous delays in the completion of the BAT Test Hardware Contract.

(U) Contract Comments: Contract Target Price does not include FFP portion of the contract (\$4.3M).

	Initial C	ontract Price	
(U) Block II/BAT LRIP II:	<u>Target</u> C	eiling Qty	
Lockheed Martin Missiles, Dallas TX			
DAAH01-99-C-0121, FFP	\$204.9	N/A 48	
Award: December 23, 1999			
Definitized: February 29, 2000			
Current Contract Price	Estimated Pri	ce At Completion	
Target Ceiling Qty	Contractor	Program Manag	er
\$204.9 N/A 48	\$204.9	\$204.9	

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

#### 15. (U) Contract Information (Cont'd):

(U) <u>Block II/BAT LRIP IIIA:</u> Lockheed Martin Missiles, Dallas TX DAAH01-01-C-0133, FFP Award: July 30, 2001 Definitized: N/A	Initial <u>Target</u> \$164.8	Contract Pr Ceiling N/A	cice Oty 22
Current Contract Price	Estimated Pr	ice At Com <u>p</u>	pletion
Target Ceiling Oty	Contractor	Program	<u>Manager</u>
\$164.8 N/A 22	\$164.8	\$1	164.8

Explanation of Change:

None.

-

Cost and Schedule variance reporting is not required on this FFP contract.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

#### Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY84-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-14)	Total
RDT&E	1693.0	122.9	190.3	190.8	2197.0
Procurement	598.3	61.9	49.7	3608.4	4318.3
MILCON	-	-	-	-	-
O&M	-	-		-	~
Total	2291.3	184.8	240.0	3799.2	6515.3

#### BAT/BAT P31

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY84-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-14)	Total
RDT&E	1381.4	122.9	190.3	190.8	1885.4
Procurement	365.0	29.7	24.9	2200.8	2620.4
MILCON	-	-	~	-	-
0&M	-	-	-	-	-
Total	1746.4	152.6	215.2	2391.6	4505.8

# 16a. (U) Program Funding Summary (Cont'd):

ATACMS BLK II/IIA

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY95-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To Complete (FY04-14)	Total
RDT&E	311.6	-	-	-	311.6
Procurement	233.3	32.2	24.8	1407.6	1697.9
MILCON	-	-	-	-	
O&M	-	-	-	-	
Total	544.9	32.2	24.8	1407.6	2009.5

b. Annual Summary -- BAT/BAT P3I

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				5.2	4.2
1985				18.4	15.2
1986				37.8	32.2
1987				34.2	30.0
1988				46.0	42.0
1989				46.3	44.0
1990				40.7	40.1
1991				70.2	71.9
1992				115.6	121.1
1993				106.8	114.5
1994				111.6	121.9
1995				94.6	105.3
1996				120.8	136.9
1997				82.7	94.8
1998				121.2	140.1
1999				80.6	94.2
2000				88.7	105.4
2001				56.0	67.6
2002				100.2	122.9
2003				152.6	190.3
2004	PL			87.1	110.6
2005				26.8	34.7
2006				7.5	9.9
2007				26.5	35.6
ibtotal	98			1678.1	1885.4

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#### 16b. (U) Program Funding Summary (Cont'd): BAT/BAT P31

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	304	11.6	76.5	88.8	105.5
2000	609	12.6	103.0	115.8	139.6
2001	505	5.7	92.0	97.9	119.9
2002	83		23.8	23.9	29.7
2003			19.6	19.7	24.9
2004	302	11.6	92.8	104.7	134.9
2005	469	23.0	90.5	113.8	149.5
2006	945		131.7	131.9	176.5
2007	1052		131.6	131.9	179.9
2008	1848		190.2	190.4	264.6
2009	2054		198.9	199.1	282.0
2010	2055		187.8	188.0	271.3
2011	1963		172.9	173.2	254.7
2012	1950		160.2	160.4	240.4
2013	1950		161.4	155.9	238.1
2014				5.7	8.9
Subtotal	16089	64.5	1832.9	1901.1	2620.4

(U) Procurement funding reflects a break-out of dollars placed in the ATACMS Block II system line (CA6105) between the BAT and Block II subelements to correctly align funding.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	16187	64.5	1832.9	3579.2	4505.8

b. Annual Summary -- ATACMS BLK II/IIA

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				8.8	9.8
1996				47.2	53.5
1997	ATTENDED OF THE ATTENDED			58.3	66.8
1998	and the second s			71.6	82.8
1999				32.2	37.7
2000				25.8	30.7
2001				25.1	30.3

#### 16b. (U) Program Funding Summary (Cont'd): ATACMS BLK II/IIA

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Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Oty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
Subtotal		6		269.0	311.6

Appropriation: 2032 - Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY 1991 Dollars Nonrec	Flyaway FY 1991 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	24	1.9	43.2	46.0	54.6
2000	48	1.2	66.6	68.0	81.9
2001	34		77.9	79.1	96.8
2002	6		24.8	25.9	32.2
2003			19.6	19.6	24.8
2004	19		66.9	67.0	86.4
2005	38		78.7	78.7	103.4
2006	75		89.2	89.3	119.5
2007	82		90.8	90.8	123.9
2008	142		110.6	110.7	153.9
2009	158		119.7	119.8	169.6
2010	158		117.3	117.4	169.4
2011	151		111.2	111.3	163.7
2012	150		99.8	99.8	149.6
2013	150		109.8	98.3	150.1
2014				11.6	18.1
Subtotal	1235	3.1	1226.1	1233.3	1697.9

(U) Procurement funding reflects a break-out of dollars placed in the ATACMS Block II system line (CA6105) between the BAT and Block II subelements to correctly align funding.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1241	3.1	1226.1	1502.3	2009.5

Actual

## 17. (U) Delivery/Expenditure Information:

BAT/BAT P31

a. (U) Deliveries To Date

RDT&E	98	98
Procurement	104	104

Plan

(U) Percent Total Program Quantities Delivered: 1.2%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1569.1

(U) Percent Total Program Expended: 34.8%

#### ATACMS BLK II/IIA

a.	(U)	Deliveries	To Date	Plan	Actual

RDT&E	6	6
Procurement	8	8

- (U) Percent Total Program Quantities Delivered: 1.1%
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 323.3
  - (U) Percent Total Program Expended: 16.1%

#### 18. (U) Operating and Support Costs: BAT/BAT P31

a. (U) Assumptions and Ground Rules --The submunition is considered a certified round requiring minimal O&S cost. It will consist of stockpile reliability tests for recertification and minimal depot maintenance. Based on the Level of Repair Analysis (LORA) and the associated Economic Analysis, contractor logistic support (CLS) is planned for the BAT. There is no antecedent system.

Average Annual Cost reflects average annual cost for total BAT quantity (16089).

Cost estimate dated February 2002.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

	BAT/BAT P31	N/A
	Submunition	
Cost Element		
Mission Pay & Allowances	0.3	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0

18b. (U) Operating and Support Costs (Cont'd): BAT/BAT P3I

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	BAT/BAT P31 Submunition	N/A
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	2.0	0.0
Indirect Costs	0.0	0.0
Total	2.3	0.0

Total O&S Cost	BAT/BAT P3I	N/A
BY\$ (In Millions)	23.0	N/A
TY\$ (In Millions)	36.5	N/A

ATACMS BLK II/IIA

a. (U) Assumptions and Ground Rules --ATACMS Block II will be fired from the Multiple Launch Rocket System (MLRS) M270A1 launcher within the MLRS organizational units. Manning/crew support is provided by the MLRS organizational unit. ATACMS Block II will be a certified round. Maintenance will be determined on the basis of a Stockpile Reliability

Average Annual Cost reflects average annual cost for total ATACMS Block II quantity (1235).

Cost estimate dated February 2002.

Program (SRP). There is no antecedent system.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	ATACMS BLK II/IIA Missile	N/A
Mission Pay & Allowances	0.1	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.8	0.0
Contractor Support	1.6	0.0
Sustaining Support	2.9	0.0
Indirect Costs	0.7	0.0
Total	6.1	0.0

# 18b. (U) Operating and Support Costs (Cont'd): ATACMS BLK II/IIA

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Total O&S Cost	ATACMS BLK II/IIA	N/A
BY\$ (In Millions)	114.1	N/A
TY\$ (In Millions)	182.4	N/A

Report Creation Date: 03/27/2002 3:08:51 PM

# N-11 F/A-18 E/F

#### *** UNCLASSIFIED ***

#### SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: F/A-18E/F

#### AS OF DATE: December 31, 2001

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Threshold Breaches	3
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Performance Characteristics	5
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1. Designation and Nomenclature (Popular Name): F/A-18E/F Naval Strike Fighter (SUPER HORNET)

2. DoD Component: Navy

.

## 3. Responsible Office and Telephone Number:

PEO FOR TACTICAL AIRCRAFT (PMA265) BLDG 2272 STE 445 NAVAIRSYSCOMHQ 47123 BUSE ROAD, UNIT #IPT PATUXENT RIVER, MD 20670-1547 CAPT JEFFREY A. WIERINGA, USN Assigned: April 7, 2000 DSN 757-7669; COMM (301) 757-7669 wieringaja@navair.navy.mil

#### 4. Program Elements/Procurement Line Items: RDT&E:

PE 0204136N PROCUREMENT: APPN 1506 ICN 014500 (Navy) APPN 1506 ICN 060510 (Navy)



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#### 5. References:

SAR Baseline (Production Estimate): NAE Approved Acquisition Program Baseline dated September 18, 2000.

#### Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated September 17, 2000.

#### 6. Mission and Description:

The F/A-18E/F is the second major model upgrade since F/A-18 aircraft program inception. The F/A-18E (single seat) and the F/A-18F (two seat) are high performance, twin engine, mid-wing, multi-mission tactical aircraft designed to replace F/A-18C (single seat), F/A-18D (two seat), and F-14 aircraft as they reach the end of service life and retire. The F/A-18E/F is designed to meet current Navy fighter escort and interdiction mission requirements, and to maintain F/A-18 fleet air defense and close air support roles. Enhancements include the increased range and improved carrier suitability required for the F/A-18 to continue its key strike fighter role against the advanced threat of the twenty-first century.

#### 7. Executive Summary:

The F/A-18E/F has completed Engineering and Manufacturing Development (EMD) flight test and Operational Test and Evaluation (OPEVAL). As of January 1, 2002, Super Hornet aircraft have flown over 30 thousand flight hours. The program continues on cost and on schedule, meeting or exceeding program performance parameters.

The Airframe LRIP 2/3 ILS contract is 73% complete and is performing under cost and slightly behind schedule. The Airframe FY00 ILS contract is 11% complete, running under cost and slightly behind schedule, the airframe Multi-Year Procurement (MYP) contract is 15.8% complete and is also running under cost and slightly behind schedule. The Engine is a Firm Fixed Price contract; there is no cost performance reporting. All Earned Value Management (EVM) data are based on the November 2001 reporting period.

This report is based on the rebaselined F/A-18E/F program as of the MS III (production) decision reflecting the purchase of 548 F/A-18E/F Aircraft. The. Milestone III Acquisition Decision Memorandum (ADM) was signed by the Assistant Secretary of the Navy, Research, Development, and Acquisition on June 14, 2000. The full rate production (FRP) multi-year procurement (MYP) contract was signed on June 15, 2000. The MYP covers the procurement of F/A-18E/F for FY2000 through FY2004 under a single, 5-year fixed price incentive fee type contract, supporting the first five (5) years of FRP. The MYP is structured to achieve significant savings (7.4%) over a single-year procurement, while providing unprecedented quantity flexibility for emergent requirements.

F/A-18E/F, December 31, 2001

#### 7. Executive Summary (Cont'd):

The Navy has taken delivery of all 12 Low Rate Initial Production (LRIP) 1 aircraft, all 20 LRIP 2 aircraft, all 30 LRIP 3 aircraft and 14 FRP aircraft as of December 31, 2001.

OPEVAL (OT-IIC) was successfully completed in November 1999. The F/A-18E/F was found to be operationally suitable and operationally effective. The final report was submitted by Commander, Operational Test and Evaluation Force (COMOPTEVFOR) on February 14, 2000. FOT&E commenced September 2001 and is due to be complete in April 2002.

An FY01 New Start reprogramming action for F/A-18E/F Correction of Discrepancies was approved September 20, 2001. The FY02 National Defense Authorization Act provided authorization for an Engine Multi-Year Procurement.

An OSD executive committee approved the F/A-18E/F for foreign military sales.

#### 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 Uni Cost (PAUC)	t No
Average Procurement Uni Cost (APUC)	t No

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9.	Schedule:

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a. Milestones ---

1	Produ	uction	Appi	roved	Curr	rent
Es	<u>timat</u>	te (SAR)	Progra	um (APB)	Esti	mate
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	MAR	1997	MAR	1997	APR	1997
(Engine)						
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
IOTEE						
OT-IIA	NOV	1997	NOV	1997	NOV	1997
OT-IIB	DEC	1997	DEC	1997	JUN	1998
OT-IIC	MAR	1999	MAR	1999	MAY	1999
O-Level Maintenance Capability (OPEVAL)	MAR	1999	MAR	1999	MAY	1999
IOC	JUN	2001	JUN	2001	SEP	2001
I-Level Maintenance Capability						
WRA TPS and Modified TPSs (IOC)	SEP	2000	SEP	2000	SEP	2000
New SRA TPS (IOC + one year)	SEP	2001	SEP	2001	SEP	2001
Material Support Date	OCT	2002	OCT	2002	APR	2003
Navy Support Date	OCT	2003	OCT	2003	MAR	2004
D-Level Maintenance Capability	OCT	2003	OCT	2003	MAR	2004

Note: The approved program (APB) dates are objectives.

Section 9 ACRONYM LIST (in order of appearance)

LRIP-Low Rate Initial Production DT&E-Developmental Test and Evaluation DT-Developmental Testing IOT&E-Initial Operational Test and Evaluation OT-Operational Testing FOT&E-Follow-on Operational Test and Evaluation OPEVAL-Operational Evaluation

F/A-18E/F, December 31, 2001

9a. Schedule (Cont'd):

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IOC-Initial Operational Capability WRA-Weapon Replaceable Assembly TPS-Test Program Set SRA-Shop Replaceable Assembly ADM-Acquisition Decision Memorandum MS-Milestone APB-Acquisition Program Baseline

b. Current Change Explanations -- None

# 10. Performance Characteristics:

a. Performance --

a. rertormance		2	hever	Demon-		
	Production Estimate (SAR)	Progra Obj/Th	m (APB) preshold	strated <u>Perf</u>	Current Estimat	8
KEY PERFORMANCE PARAMETERS (KPPs) (Specified in F/A-18E/F ORD and validated by JROC)						-
Deck Spot Factor (F/A-18A/B/C/D =1.2)	<= 1,4	<= 1.4	/ <1.5 / /	1.46	1.46	
Fighter Escort Radius (F/A-18B) (internal fuel) (Nm) Interdiction Mission Radius (Nm)	>=425	>=425	/ >=410	462	459	(Ch-1)
2 external tanks (retained)	>=400	>=400	/ >=390 /	444	442	(Ch-1)
3 external tanks (retained)	>=450	>=450	/ >=430 / /	489	486	(Ch-1)
Combat Ceiling (max thrust) (ft) Carrier Suitability (Tropical Day Conditions)	>50000	>50000	/ >=50000	52,300	52,250	(Ch-1)
Launch: Catapult WOD (C-13-1 Catapult MAX TOGW (kts))	<=25	<=25	/ <=30 /	19	19	
Recovery: WOD (MK-7 MOD 3) (kts)	<=10	<=10	/ <=15 /	8	8	

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# 10a. Performance Characteristics (Cont'd):

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Approach Speed (kts)	Production Estimate (SAR) <=140	App Progra <u>Obj/Th</u> <=140	roved m (APB) reshold / <=150	Demon- strated <u>Perf</u> 142	Current <u>Bstimate</u> 142	<u>!</u>
Recovery Payload (1bs)	>9000	>9000	/ / >=9000 /	10195	9960	(Ch-2)
Usable Load Factor (Subsonic; Nz) (G's)	>= +7.5	>= +7.5	/ >= +7.5	+7.5	+7.4	(Ch-1)
Specific Excess Power (Max Thrust, .9M, 1G, 10kft) (fps)	>=650	>=650	/ >600 /	648	645	(Ch-1)
Acceleration (.8M to 1.2M at 35kft) (sec)	<=60	<=60	/ <70	65	66	(Ch-1)
Additional Internal Fuel Capacity (lbs) (greater than C/D) SUITABILITY PARAMETERS (Specified in F/A-18E/F ORD)	> <b>≃3000</b>	>=3000	/ >=3000	4090	4090	
Direct Maintenance Manhours per Flight Hour (DMMH/FH) (Replaces MH/FH) OTHER PARAMETERS (desired to achieve maximum performance) Built-In Test (All	<=5.0	<=5.0	/ <=9.0	.59	4.7	{Ch-3)
Avionics) Fault Detection (%)	75	75	/ 65	99	98.5	(Ch-4)
Fault Isolation (%) False Alarm Rate (%	90 ) 30	90 30	/ 85 / 45 /	99.5 16	99.0 44.7	(Ch-4) (Ch-5)
Speed (Mach) Fighter Escort Mission Configura- tion @10,000 ft with Intermediate Rated Thrust	.98	.98	/ .96 /	.96	.96	
Empty Weight (lbs) Interoperability of the F/A-18E/F Communications & Data Link Suite	29950 Achieve all IERs	29950 Achieve all IERs	/ 31950 / Achieve / all / Critical / IERs	30123 Achieve all Critical IERs	30333 Achieve all Critical IERs	(Ch-2)

Note: Interdiction Mission Radius, Recovery Payload, Specific Excess Power, Additional Internal Fuel Capacity, Launch Wind Over Deck and Acceleration Time are estimates based on the F/A-18E aircraft.

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F/A-18E/F, December 31, 2001

#### 10a. Performance Characteristics (Cont'd):

Note: Interdiction Mission Radius (NM) payload with:

a. 2 external tanks = 2 AIM-9 + FLIR/NAVFLIR + 4 MARK 83 LD on Low Drag Pylons

b. 3 external tanks = 2 AIM-9 + FLIR/NAVFLIR + 4 MARK 83 LD on Low Drag Pylons

Note: Demonstrated performance (except Empty Weight and Recovery Payload) is based on latest configuration changes and current flight-derived aero performance database as of MSIII. This database was verified during OPEVAL (OT-IIC) by accurately predicting the demonstrated F/A-18E/F aircraft performance. Empty Weight and Recovery Payload are based on the weight status for FRP 1 as of 15 January 2002.

Note: The interoperability KPP was added during the Milestone III ORD revalidation in accordance with the 10 August 1999 CJCSI 3170.01A.2. The specific avionics subsystems related to the Interoperability KPP are delineated in paragraph 4.b of the ORD.

Note: Recovery Payload: F/A-18F: 44,000 CLDGW. The F/A-18 E/F at IOC should provide for a threshold/objective of 9,000 pounds of recovery payload.

Note: Specific Excess Power: F/A-18E: (2) AIM-9 + (2) AIM-120 + Gun and Ammo 0 60% internal fuel; and the equivalent design gross weight for the F/A-18F.

Note: All Reliability and Maintainability performance numbers are based on an LRIP 3 configuration. The baseline Built In Test (BIT) false alarm percentage is 16%, as measured in TECHEVAL on an LRIP 1 Aircraft. The current composite LRIP 3 BIT false alarm percentage is 44.7% (based on configuration changes between LRIP 1 and LRIP 3 and their associated ORD BFA thresholds). The current composite LRIP 3 MFHBFA is 6.0 hours. The LRIP 3 configuration has several new or modified systems from the TECHEVAL configuration. The existing ECS is the major contributor of false alarms and accounts for 77% of BIT false alarms. Of the new/modified systems, the Multi Purpose Color Display/Upfront Color Display (MPCD/UFCD) is the major contributor to new BIT false alarms. The MPCD/UFCD accounts for roughly 15% of the BIT false alarms. These BIT false alarms are expected to be corrected in early FY02 with a software update.

Section 10 ACRONYM LIST (in order of appearance)

SAR-Selected Acquisition Report KPP-Key Performance Parameter ORD-Operational Requirements Document JROC-Joint Requirements Oversight Council -Nm-Nautical Mile/s Ft-Feet WOD-Wind Over Deck

#### 10a. Performance Characteristics (Cont'd): -

MAX TOGW-Maximum Take Off Gross Weight kts-knots Nz-Normal Load Factor, Normal Acceleration G-Gravitational Acceleration M-Mach Number kft-Thousand Feet fps-feet per second lbs-pounds MTBOMF-Mean Time Between Operational Mission Failure MFHBF-Mean Flight Hours Between Failure O&I-Organizational and Intermediate DMMH / FH-Direct Maintenance Manhours per Flight Hour MH / FH-Maintenance Hours per Flight Hour IER-Information Exchange Requirement FLIR-Forward Looking Infrared NAVFLIR-Navigation Forward Looking Infrared TECHEVAL-Technical Evaluation ECS-Environmental Control system MPCD-Multipurpose Color Display UFCD-Up Front Control Display PIDS-Positive Identification System BIT-Built in Test MSP-Maintenance Status Panel CJCSI-Chairman, Joint Chiefs of Staff Instruction

b. Current Change Explanations --

(Ch-1): Current estimates are based on latest (January 2002) configuration changes and current flight-derived aero performance database. Fighter Escort Radius changed from 462 to 459, Interdiction Mission Radius with 2 external tanks changed from 444 to 442, with 3 external tanks from 489 to 486, Combat Ceiling changed from 52,300 to 52,250, Usable Load Factor changed from +7.5 to +7.4, Specific Excess Power changed from 648 to 645, and Acceleration changed from 65 to 66. The +7.5g load factor was met at IOC. The current +7.4g estimate is a result of expected in-service weight growth.

(Ch-2): The current estimate reflects weight status as of January 2002 (FRP 1 configuration). Recovery Payload, based on the actual weight empty and not the specification weight empty, changed from 10152 to 9960 and Empty Weight changed from 30149 to 30333.

(Ch-3): Direct Maintenance changed from 0.59 to 4.7 because the 0.59 was from the F/A-18E/F EMD TECHEVAL period during which Boeing was responsible for maintenance. The 4.7 is based on USN Organizational-level actuals. (Ch-4): Fault Detection changed from 99.0 to 98.5 and Fault Isolation changed from 99.5 to 99.0 due to updated test data.

(CH-5): The current composite LRIP 3 BIT false alarm percentage changed from 34.5 to 44.7 (based on configuration changes between LRIP 1 and LRIP 3 and their associated ORD BFA thresholds).

## F/A-18E/F, December 31, 2001

# 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	5894.8
	Procurement	37600.2	37600.2	39394.9
	Recurring Flyaway	(28406.3)		(29309.8)
	Nonrecurring	(889.5)		(1016.4)
	Ancillary	(2980.2)		(3270.6)
	Total Flyaway	(32276.0)		(33596.8)
	Total Other Won Sys			(0.0)
	Peculiar Support	(4384.9)		(4865.7)
	Initial Spares	(939.3)		(932.4)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 2000 Base-Year \$	43489.6	43489.6	45289.7
	Escalation	3336.1	3336.1	3501.4
	Development (RDT&E)	(-315.4)	(-315.4)	(-337.2)
	Procurement	(3651.5)	(3651.5)	(3838.6)
	Construction (MILCON)	(0.0)	(0.0)	. (0.0)
	Acquisition OGM	(0.0)	(0.0)	(0.0)
	Total Then Year \$	46825.7	46825.7	48791.1

Costs for the AESA (AN/APG-79 Radar) procurement are included.

b. Quantity ---

Development	(RDT&E)	0	0	0
Procurement		548	548	548
Total		548	548	548

Note: Excludes seven RDT&E prototypes from the Current Estimate that are not considered fully configured.

LRIP quantities approved at the 1992 MS II DAB were 12 aircraft in FY97, 12 in FY98, and 18 in FY99. The current LRIP quantities are 12 aircraft in FY97, 20 in FY98, and 30 in FY99. This quantity was approved during the LRIP DAB in March 1997 and was below the 10% guideline for LRIP quantities. The Quadrennial Defense Review (QDR) subsequently reduced the total procurement to a range of 548 to 785 aircraft. Due to the overall aircraft quantity reduction caused by the QDR, the LRIP quantities are above the current 10% guideline. The LRIP quantities remain as approved during the March 1997 DAB.

c. Foreign Military Sales --Potential sales include Malaysia, Singapore and Australia.

d. Nuclear Costs --

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# 11d. Total Program Cost and Quantity (Cont'd):

N/A

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## 12. Unit Cost Summary:

		UCR	Current	
		Baseline	Estimate	Percent
	(SEP	2000 APB) (Dec	2001 SAR)	Change
a. Prog. Acq. Unit Cost (	(PAUC)			
(1) Cost (FY 2000 B	BY\$)	43489.6	45289.7	
(2) Quantity		548	548	
(3) Unit Cost		79.361	82.645	+4.14
b. Avg. Proc. Unit Cost (	(APUC)			
(1) Cost (FY 2000 B	SY\$)	37600.2	39394.9	
(2) Quantity		548	548	
(3) Unit Cost		68.614	71.889	+4.77

Costs for the AESA (AN/APG-79 Radar) procurement are included.

# 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5574.0	41251.7	-	46825.7
Previous Changes:				
Economic	-	-	-	-
Quantity	·	~	-	_
Schedule		-	-	_
Engineering	-	·	-	-
Estimating	-	_	-	-
Other	-	-	-	-
Support	-	. <b>.</b>	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-23.3	-60.4	-	-83.7
Quantity	-	+55.7	-	+55.7
Schedule	-	+998.0	-	+998.0
Engineering	-	-	-	- 1
Estimating	+6.9	+501.0	-	+507.9
Other	-	-	-	_
Support		+487.5	-	+487.5
Subtotal	-16.4	+1981.8	-	+1965.4
Total Changes	-16.4	+1981.8		+1965.4
Current Estimate	5557.6	43233.5	-	48791.1

# 13a. Cost Variance Analysis (Cont'd):

Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5889.4	37600.2	-	43489.6
Previous Changes:				
Quantity	-	- 1	-	-
Schedule	-	- 1	-	-
Engineering	-	-	-	-
Estimating			_	-
Other	-	-	-	-
Support	-	-	-	_
Subtotal	-	-	-	-
Current Changes:	1			
Quantity	-	+54.9	-	+54.9
Schedule	-	+805.5	-	+805.5
Engineering	-		_	_
Estimating	+5.4	+460.4	_	+465.8
Other	-	_	_	-
Support	-	+473.9	-	+473.9
Subtotal	+5.4	+1794.7	-	+1800.1
Total Changes	+5.4	+1794.7	-	+1800.1
Current Estimate	5894.8	39394.9	-	45289.7

b. Current Change Explanations --

		(Dollars i Base-Year	in Millions) Then-Year
(1)	RDTAE		·····
	Revised escalation indices. (Economic)	N/A	-23.3
	Revised estimate to reflect actual costs. (Estimating)	+5.4	+6.9
	RDT&E Subtotal	+5.4	-16.4
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-60.4
	Reduction of 29 AESA radars in FY11. (Quantity)	-27.7	-34.7
	Increase of 15 Shared Reconnaissance Pode (SHARPs). (Quantity)	+82.6	+90.4
	Procurement profile from previous SAR included steady state production rate of 48 aircraft per year starting in FY02. Current SAR Procurement profile includes a low of 42 to a maximum of 55 aircraft per year. (Schedule)	+805.5	+998.0
	The total quantity of 548 F/A-18E/F aircraft has not changed since the last SAR, however the number of F/A-18E aircraft have been reduced from 301 to 244 and the number	+75.1	+85.5

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# 13b. Cost Variance Analysis (Cont'd):

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b. Current Change Explanations		
	(Dollars in Base-Year 2	h Millions) Then-Year
of F/A-18F aircraft have increased from 247 to 304. The two seat F/A-18F has a higher unit cost than the single seat F/A-18E. (Estimating)		•
Economic Price Adjustment (EPA) costs. (Estimating)	+374.4	+402.7
Advanced Tactical Forward Looking Infrared (ATFLIR) cost growth. (Estimating)	+120.6	+142.2
revised estimate to reflect line shutdown costs. (Estimating)	+35.8	+44.0
Revised estimate to reflect actual costs. (Estimating)	+22.6	+25.7
AESA Reprogrammed from Contractor Furnished Equipment (CFE). (Estimating)	-168.1	-199.1
Reduction of support requirements for AESA radars in FY11. (Support)	-26.4	-33.1
Increase of support for 15 SHARP pods. (Support)	+21.6	+23.6
ATFLIR cost growth. (Support)	+37.0	+43.7
AESA Reprogrammed from CFE. (Support)	+188.1	+199.1
Support cost for an F/A-18F squadron is greater than the support cost for an F/A-18E squadron and there is an increase in the former and a decrease in the ladder (total number of F/A-18 aircraft unchanged at 548). (Support)	+223.4	+234.1
Revised estimate to reflect actual cost. (Support)	+30.2	+20.1
Procurement Subtotal	+1794.7	+1981.8

# 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			
Prod Est						Cur Est			
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
85.45	-0.153	+0.102	+1.82		+0.927		+0.890	+3.59	89.03

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#### 14b. Unit Cost and Other History (Cont'd):

b: Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes					PUC			
Prod Est						Cur Est			
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
75.28	-0.110	+0.102	+1.82		+0.914		+0.890	+3.62	78.89

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR		
Item/Event	Planning	Development	<b>Production</b>	Current	
	Estimate(PE)	Estimate (DE)	Estimate(PdE)	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	48791.1	
Total Quantity	0	1000	548	548	
Prog Acg Unit Cost	0.0	94.6	85.5	89.0	

# 15. Contract Information (Then-Year Dollars in Millions):

a. Procurement		Initial	Contract Pr:	ice
Airframe MYP:		Target	<u>Ceiling</u>	Qty
MCDONNELL DOUGLAS, ST. LOUIS,	MO			
N00019-99-C-1226, FPIF		\$8966.3	\$9746.6	219
Award: June 17, 2000				
Definitized: June 17, 2000				
Current Contract Price		Estimated P	rice At Comp	letion
Target Ceiling	Qty	Contractor	Program	Manager
\$9020.6 \$9775.4	222	\$3650.9	\$36	50.9
		Cost Variance	e Schedule V	ariance
Previous Cumulative Variances		N/A	N/2	Ā
Cumilative Variances To Date		\$11.3	\$-29.1	1
Net Change		\$11.3	\$-29.	1

# Explanation of Change:

The MYP00 portion of the contract is the primary driver of the overall favorable cumulative cost variance and cumulative CPI of 1.01.

Boeing has been delivering airplanes nearly 2 months early. The 0.98 SPI is measured against Boeing's internal schedules, not contract schedules, which is why they are delivering well ahead but still have a schedule variance.

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#### 15. Contract Information (Cont'd):

#### 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 first two production lots (FY00 and FY01), as well as the CRI/EOQ effort): It does not reflect the performance or estimated price at completion for the last three lots of the MYP contract since formal CPR is not being received for those parts of the contract. Once formal CPR is received for the MYP FY02-04, it will be included in subsequent SARs. The current contract price data reflect contract values for the entire MYP contract including FYs for which CPRs are not yet being received.

Based on the commercial downturn and loss of JSF, Boeing has partially abrogated the August 2001 Forward Pricing Rate Agreement (FPRA). The August 2001 FRFA will remain in effect for some of the CY 2002 rates, however, the FPRA has been abrogated for all rates for CYS 2003 and 2004. The potential impacts of the new rates being proposed continue to be assessed as additional information becomes available.

Airframe LRIP 2/3 ILS: McDonnell Douglass St Louis MC	Initial Contract Price Target <u>Ceiling</u> Qty
NCOO19-00-C-0367, FPIF Award: June 2, 2000 Definitized: June 2, 2000	\$279.3 \$306.9 0
Current Contract Price Target <u>Ceiling</u> <u>Qty</u> \$318.1 \$348.8	Estimated Price At Completion <u>Contractor</u> \$318.1 Program Manager \$318.1
Previous Cumulative Variances Cumulative Variances To Date Net Change	Cost Variance         Schedule Variance           \$3.0         \$-4.8           \$8.3         \$-6.2           \$5.3         \$-1.4

Explanation of Change:

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The LRIP-2 ILS portion of the effort (particularly Boeing Technical Publication Support and the Northrop-Grumman Corp. subcontract) is the primary driver of the overall favorable cumulative cost variance.

The slight deterioration in the unfavorable cumulative SV is primarily attributable to the LRIP-3 ILS portion of the contract.

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#### 15. Contract Information (Cont'd):

Contract Comments:

The previous SAR had combined the performance of the LRIP-2/3 ILS contract with the LRIP-2/3 Production contract performance. Since SAR reporting for the LRIP-2/3 Production contract has concluded, the LRIP-2/3 ILS contract is now being addressed separately. The previous cumulative variances shown are those for the LRIP-2/3 ILS effort as of the time of the previous report.

initial	Contract Price	
Target	Ceiling Q	ty
¢149_1	¢0_0	•
\$140.1	ŞU.U	0
Estimated Pr	ice At Completi	on
Contractor	Program Man	ager
\$147.1	\$149.4	
Cost Variance	Schedule Varia	nce
N/A	N/A	
\$0.7	\$-0.8	
\$0.7	\$-0.8	
	Stimated Pr Contractor \$147.1 Cost Variance N/A \$0.7 \$0.7	Initial Contract Price         Target       Ceiling       Q         \$148.1       \$0.0         Estimated Price At Completin         Contractor       Program Manual         \$147.1       \$149.4         Cost Variance       Schedule Varian         N/A       N/A        \$0.7      \$-0.8         \$0.7       \$-0.8

Explanation of Change:

The current FY00 ILS contract will be executed over five years (FY00 FY04). This is the first time the contract is being reported.

Net cumulative variances are insignificant relative to the current Target Price. Additionally, a large portion of the contract remains undefinitized and trends have not yet stabilized.

#### Contract Comments:

Based on the commercial down turn and loss of JSF, Boeing has partially abrogated the August 2001 Forward Pricing Rate Agreement (FPRA). The August 2001 FRPA will remain in effect for some of the CY 2002 rates, however, the FPRA has been abrogated for all rates for CYs 2003 and 2004. The potential impacts of the new rates being proposed continues to be assessed as additional information becomes available.

April 19, 2002 is the projected contract definitization date.

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## 15. Contract Information (Cont'd):

F414-GE-404 General Electr N00019-99-C-11 Award: June 22 Definitized: So	Engine IV/V: ic Company, Lyr 75, FFP , 1999 eptember 13, 20	ып, MA	Initial Target \$824.8	Contract Pr Ceiling N/A	rice <u>Qty</u> 165
Current ( <u>Target</u> \$845.5	Contract Price Ceiling N/A	<u>Qty</u> 165	Estimated P Contractor \$845.5	rice At Comp Program \$8	eletion <u>Manager</u> 145.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments: Note: Option for Lot V was exercised in May 2001 and is included in the current contract target price.

<u>Concluded reporting</u>: The following contracts, which are over 90% complete are no longer being reported: Airframe E&MD (N00019-92-C-0059); F414 Engine E&MD (N00019-92-C-0149); Airframe LRIP-2/3 Production (N00019-97-0136); F414 Engine LRIP-1 (N00019-96-C-0080); F414 Engine LRIP-2/3 (N00019-97-C-0114).

## 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY92-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-10)	<u>Total</u>
RDTLE	5556.5	1.1	-	-	5557.6
Procurement	13265.4	3266.5	3173.5	23528.1	43233.5
MILCON	. –	-	-	-	-
OGM	-	-	-	_	-
Total	10021.9	3267.6	3173.5	23528.1	48791.1

# 16b. Program Funding Summary (Cont'd):

b. Annual Summary -- F/A-18E/F

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal	0514	Flyaway FY 2000 Dollars	Flyaway FY 2000 Dollars	Total Program	Total Program
Iear	QCY	NOULEC	Rec	Base-Iear \$	Then-Year 5
1992		<u> </u>			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				238.4	234.6
1999		1		196.4	195.6
2000		<u>.</u>		130.7	132.1
2001		·		13.5	13.9
2002				1.1	1.1
Subtotal				5894.8	5557.6

Cocts for the AESA (AN/APG-79 Radar) procurement are included.

Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		
		FY 2000	FY 2000	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1996				239.4	233.6
1997	12	203.2	1490.9	2139.3	2108.3
1998	20	164.0	1834.9	2177.1	2172.2
1999	30	193.6	2196.1	2856.4	2885.5
2000	36	83.1	2105.5	2824.3	2898.8
2001	39	51.8	2321.1	2845.4	2967.0
2002	48	59.8	2569.9	3084.6	3266.5
2003	44	48.1	2524.7	2946.8	3173.5
2004	42	48.9	2409.8	2838.1	3112.4
2005	43	50.5	2330.7	2679.0	2993.0
2006	50	16.2	2706.5	3140.7	3575.2
2007	55	15.4	2971.1	3429.2	3977.7
2008	42	15.4	2371.4	2785.8	3293.1
2009	42	15.3	2361.8	2730.4	3289.0
2010	45	51.2	2385.9	2678.4	3287.7
Subtotal	548	1016.5	32580.3	39394.9	43233.5

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#### 16b. Program Funding Summary (Cont'd):

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty .	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	548	1016.5	32580.3	45289.7	48791.1

## 17. Delivery/Expenditure Information:

a.	Deliveries To Date	Plan	Actual
	RDT&E	0	0
	Procurement	71	76

Percent Total Program Quantities Delivered: 13.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 9716.9

Percent Total Program Expended: 19.9%

## 18. Operating and Support Costs:

a. Assumptions and Ground Rules --Current Program: F/A-18E Flight hours per aircraft per month: 35 Number of aircraft per squadron: 12 Consumption rate, gallons per hour: 1154.0 POL cost, JP-5 per gallon FY00\$: \$0.62

Antecedent Program: F/A-18C Flight hours per aircraft per month: 31.1 Number of aircraft per squadron: 12 Consumption rate, gallons per hour: 976.49 POL cost, JP-5, per gallon, FY00\$: \$0.62 Date of estimate: March 2000 Source: AIR-4.2 Operating & Support Cost Estimate

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

	F/A-18E/F	Avg Annual Cost Per
	F/A-18E Squadron	F/A-18C Squadron
Cost Element	12 A/C Squadron	12 A/C Squadron
Mission Pay & Allowances	9.9	7.8
Unit Level Consumption	16.4	15.2
Intermediate Maintenance	0.4	0.5
Depot Maintenance	2.9	2.7
Contractor Support	0.0	0.0
Sustaining Support	3.2	3.2
Indirect Costs	1.2	1.2
Total	34.0	30.6

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## F/A-18E/F, December 31, 2001

# 18b. Operating and Support Costs (Cont'd):

,

Total O&S Cost	F/A-18E/F	Avg Annual Cost Per
BY\$ (In Millions)	34.0	
TY\$ (In Millions)	34.6	31.2

Report Creation Date: 03/26/2002 10:53:57 AM

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SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 2001

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N-18 NESP

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operating and support costs	1,
1. (U) <u>Designation and Nomenclatus</u> (NESP) AN/USC-38(V)	<u>re (Popular Name)</u> : Navy EHF SATCOM Program
2. (0) DOD COmpositeric: Navy	
4301 Pacific Highway San Diego, CA 92110-3217	DSN (619) 524-7930; COMM (619) 524-7930 baileym@spawar.navy.mil
4. (U) Program Alementa/Procurement	<u>IIC HING TOGHD</u> .
KUIGE:	729 (Shared)
(U) PE USUSIUSK PIOJOCLAN	(726 (Shared)
(1) 1010 1010 1010 22221500	(Namu) (Shared)
(0) APPN 1810 ICN 33902000	(Navy) (Shared)
(0) APPN 1610 ICN 55502000 (0) APPN 1611 ICN MULTIPLE	(Navy)
MILCON-	(114-3)
/(T) DE 0303109N	
(U) FE 0303103N	
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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:

The Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program (NESP) AN/USC-38(V) is an anti-jam, low probability of intercept communications terminal designed to accommodate a wide variety of command and control communication (C3) applications such as secure voice, teletype, data and fleet broadcast systems. As the Navy's portion of Milstar I (Low Data Rate) and II (Medium Data Rate), NESP terminals are an essential part of the number one command and control communications system within DOD. The terminal operates within the EHF uplink and Super High Frequency (SHF) downlink radio frequency (RF) spectrums. The terminals are interoperable with Army and Air Force terminals and operate with Milstar satellites as well as EHF packages on board Ultra High Frequency (UHF) Follow-On (UFO) Satellites and with the Fleet Satellite (FLTSAT) EHF Packages (FEP) installed on FLTSATs 7 and 8. A Medium Data Rate (MDR) capability has been developed to allow MDR communications with Milstar II satellites while also providing backward compatibility with Milstar I satellites. NESP terminals provide vital survivable wartime command and control communications for the National Command Authority, Unified CINCs 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); ASN (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 ORD. NESP operational performance will meet the threat defined in the March 1997 Milstar System Threat Assessment Report (STAR) update. Three companies began system definition and concept demonstration in 1979 after a full and open competition. Two companies were selected for Full Scale Development (FSD) in 1982 with one company awarded a Firm Fixed Price contract in 1986 for FSD completion and initial production. Low Rate Initial Production (LRIP) beginning in FY90 was approved at a Milestone IIIA decision in May 1989. Operational Evaluation (OPEVAL) Phase I and OPEVAL II were successfully completed in September 1990 and August 1992, respectively. The Milestone III decision in April 1993 approved Full Rate Production beginning that year.

(U) The first Milstar satellite was launched on February 7, 1994. A 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

## 7. (U) Executive Summary (Cont'd):

System Test (MST)-8000. NESP Initial Operational Capability (IOC) was achieved in April 1994.

(U) Operational test event OT-IIIB (Signal Susceptibility and Vulnerability Assessment) which tested the anti-jam (AJ) and low probability of intercept (LPI) performance of the NESP terminal was successfully completed in November 1996. During this test, EHF shore, sub and ship terminals met their respective AJ and LPI requirements. Completion of this test was a major accomplishment for NESP.

(U) The NESP Acquisition Strategy was updated in December 1996 and provided for the development and deployment of an MDR upgrade to satisfy interoperability and compatibility with Milstar II satellites. The strategy also included a plan to competitively procure an LDR/MDR Follow-On NESP terminal to allow the Navy to capitalize on the most current technology to satisfy the remaining fleet requirements. The resultant "Follow-On Terminal" (FOT) procurement was based on full and open competition and integrates the LDR and MDR capabilities into a streamlined terminal configuration.

(U) The MDR upgrade contract was awarded on January 20, 1998. This system provides an MDR capability via a spare drawer in the initial LDR terminal.

(U) The FOT contract was awarded on March 20, 1998. This terminal provides LDR/MDR capability to satisfy remaining Fleet requirements.

(U) MST-6000 was successfully completed in August 1998. This test verified Navy unique MDR data communications as well as interoperability between the Navy EHF terminal and Army SMART-T terminals over the ground based Milstar II MDR payload.

(U) The EHF Program completed the first two installations of the AN/USC-38(V) MDR upgrade. The installations were completed at Commander-in-Chief, US Pacific Fleet (CINCPACFLT) and on the USS CORONADO.

(U) The 1st option for the LDR/MDR FOT contract was exercised on January 28, 2000 for 89 LDR/MDR capable terminals. The LDR/MDR FOT provides significantly increased data rates to the fleet.

(U) Milstar II Flight 4 was launched February 27, 2001 and was turned over to the operational community in August 2001. Flight 4 is completely operational.

(U) The first LDR/MDR FOT was successfully installed on the USS OSCAR AUSTIN June 11, 2001.

(U) Milstar II Flight 5 was successfully launched January 15, 2002 and MST-8000-5 testing is ongoing. DT-IIIJ, MDR Technical Evaluation commenced in January 2002.

(U) The last NESP SAR discussed Advanced EHF (AEHF) terminal funding and activities assuming that the Navy's AEHF terminal capability would be

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#### 7. (U) Executive Summary (Cont'd):

acquired as part of NESP. Currently, it is recommended that, due to dollar thresholds, the Navy's AEHF terminal capability will be procured as a new separate and distinct ACAT II program. The ACAT II designation paperwork is still in process as of March 2002, however, based on the aforementioned recommendation, no other information regarding the AEHF effort will be included in the NESP SAR.

#### 8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
—— O&M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Breach			
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

- 9. (U) <u>Schedule</u>:
  - a. Milestones --

	Estimat	e (SAR)	Progra	IM (APB)	Esti	mate
FSD Approval (Milestone II)	JAN	1982	JAN	1982	JAN	1982
(2 Contractors)						
PDR Complete	NOV	1982	NOV	1982	NOV	1982
CDR Complete	JUN	1984	JUN	1984	JUN	1984
System Definition/Concept Demo (CEB)	OCT	1979	OCT	1979	OCT	1979
(3 Contractors)						
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 Proc	i) MAY	1989	MAY	1989	MAY	1989
Operational Evaluation (OTIIB)	JUN	1990	JUN	1990	JUN	1990
Low Rate Initial Production First	JUL	1992	AUG	1992	AUG	1992
Delivery						
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

Production

Approved

Current

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9a. (U) Schedule (Cont'd):

	Produ	uction	Appi	roved	Curi	cent
	Estimat	te (SAR)	Progra	am (APB)	Esti	imate
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	

b. Current Change Explanations -- None

# 10. (U) Performance Characteristics: a. Performance --

	Production Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	strated <u>Perf</u>	Current <u>Estimate</u>
Survivability	(b)(1)	and the second sec		and the second s
Transient Overpressure	e (~//~/			
(psi)				
Neutron Fluence				
(neutrons/cm^2)	3			
Gamma Dose Rate (rads)				
(si)/(sec)				
Notal Gamma Dose				
(rads) (si)				
Gamma Dose Initial				
(rads) (si)				
Thermal Fluences				
1 MT yield				
(cal/cm^2)				
EMP (peak at antenna)				
轮 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)	35			
Sub (G/T)				
(Wet Radome) (dB1)				
Low Probability of				
Intercept (CEVR)				
(/5bps/minimum power				
Ship (nmi)				
	12			

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#### 10a. (U) Performance Characteristics (Cont'd):

Sub (nmi) 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):

(U) The results of the OT-IIIB are documented in COMOPTEVFOR report Ser. 611/5049 of December 19, 1996. OT-IIIB test results verified that the performance of the NESP terminal meets or exceeds APB Thresholds.



(U) Entries shown for Performance Characteristics under "Demonstrated Performance" have been tested at values equal to or better than the Approved Program Objective/Threshold.

(U) Acronyms:
 bps - bits per second
 cal - calories
 cm - centimeters
 CEVR - Circular Equivalent Vulnerability Radius
 dBi - logarithmic ratio of directional power relative to a spherical
 (isotropic) radio frequency radiator

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#### 10a. (U) Performance Characteristics (Cont'd):

dBW - logarithmic ratio relative to one watt EIRP - effective isotropic radiated power G/T - antenna receive gain/temperature of receive system (figure of merit) nmi - nautical miles sec - seconds rads(si)/sec - radiation dose (square inches)/second sv - secure voice TTY - Teletype hrs - hours FLTBCST - Fleet Broadcast

b. Current Change Explanations -- None

#### 11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Production	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	457.4	457.4	434.2
Procurement	1395.2	1395.2	1305.4
Terminals	(991.7)		(995.4)
Other Weapon Sys	(127.9)		(118.6)
Peculiar Support	(40.7)		(40.6)
Initial Spares	(234.9)		(150.8)
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	1747.3
Escalation	497.1	497.1	246.0
Development (RDT&E)	(6.0)	(6.0)	(-5.0)
Procurement	(486.3)	(486.3)	(250.1)
Construction (MILCON)	(4.8)	(4.8)	(0,9)
Acquisition O&M	(0,0)	(0.0)	(0.0)
Total Then Year \$	2373.7	2373.7	1993.3
b. (U) Quantity			
Development (RDT&E)	7	7	7
Procurement	<u>386</u>	386	489
Total	393	393	496

(U) Note: RDT&E units are fully configured

[U] A total of 116 ENF 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 489 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 222 LDR/MDR Follow-On Terminals.

#### 11b. (U) Total Program Cost and Quantity (Cont'd):

This 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 2006 to meet Fleet requirements is 329.

c. (U) Foreign Military Sales -- None.

d. (U) Nuclear Costs -- None.

12. (U) Unit Cost Summary:

		UCR Baseline (AUG 2001 APR) (Dec	Current Estimate	Percent
_	(11) Prog Acc Unit Cost (DAUC)	TANG 2001 APDI (Dec	COVE SHALL	<u> </u>
a.	(1) Cost (FY 1990 BY\$)	1876.6	1747.3	
	(2) Quantity	393	496	
	(3) Unit Cost	4.775	3.523	-26.22
ь.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1990 BY\$)	1395.2	1305.4	
	(2) Quantity	386	489	
	(3) Unit Cost	3.615	2.670	-26.14

(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	-7.8	-189.3	-0.6	-197.7
Quantity	-	+89.1	-	+89.1
Schedule	+23.9	+9.9	-	+33.8
Engineering	+35.5	+33.7	-	+69.2
Estimating	-6.7	-222.0	+0.8	-227.9
Other	-	-	-	-
Support	-	-139.8	-20.4	-160.2
Subtotal	+44.9	-418.4	-20.2	-393.7
Current Changes:	_			
Economic	+10.7	-1.9	-	+8.8
Quantity	-	+84.8	-	+84.8
Schedule	-	+4.9	-	+4.9
Engineering	-	-		-
Estimating	-89.8	+10.1	-	-79.7
Other	-		-	
Support	-	-5.5		-5.5
Subtotal	-79.1	+92.4	-	+13.3
Total Changes	-34.2	-326.0	-20.2	-380.4
Current Estimate	429.2	1555.5	8.6	1993.3

(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	-	+84.4	-	+84.4
Schedule	+12.1	+0.1	-	+12.2
Engineering	+24.3	+23.8	-	+48.1
Estimating	-0.9	-180.5	+0.5	-180.9
Other	-	-	-	-
Support	-	-86.9	-16.8	-103.7
Subtotal	+35.5	-159.1	-16.3	-139.9
Current Changes:				
Quantity	-	+64.2	-	+64.2
Schedule	-	+3.0	-	+3.0
Engineering	-		-	-
Estimating	-58.7	+8.7	-	-50.0
Other	-		-	
Support	-	-6.6	-	-6.6
Subtotal	-58.7	+69.3	-	+10.6
Total Changes	-23.2	-89.8	-16.3	-129.3
Current Estimate	434.2	1305.4	7.7	1747.3

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# 13b. (U) Cost Variance Analysis (Cont'd):

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	b. (U) Current Change Explanations	(Dollars in <u>Base-Year</u> <u>T</u> }	Millions) Men-Year
(1)	<u>RDT&amp;E</u> Revised escalation indices. (Economic) Economic adjustment for negative program change. (Economic)	N/A N/A	-0.7 +11.4
	AEHF funding previously included in this report now separated. (Estimating)	-58.7	-89.8
	RDT&E Subtotal	-58.7	-79.1
(2)	<u>Procurement</u> Revised escalation indices. (Economic) Adjustment for Current and Prior Inflation. (Estimating)	N/A +0.7	-1.9 +0.7
	Procurement increase of 45 Follow-On Terminals (FOT) from 444 to 489 (See 13b note). (Quantity)	+64.2	+84.8
	Delayed procurement and installation of Low Data Rate (LDR)/Medium Data Rate (MDR) FOT and other equipment. (Schedule)	+3.0	+4.9
	Revised estimates for terminal upgrades, installations. (Estimating)	+8.0	+9.4
	Estimating change for Other Weapons Systems based on actuals. (Support)	-16.0	-17.7
	Increase in Initial Spares and Peculiar Support Costs due to increased LDR/MDR FOT procurements. (QR) (Support)	+9.4	+12.2
	Procurement Subtotal	+69.3	+92.4

(U) The September 2001 SAR reflected the FY2001 President's Budget (December 1999 SAR) for FY2003 and beyond costs, and the FY2002 President's Budget for FY2002 and prior costs. Consequently, the total costs and quantities did not necessarily reflect current requirements. As a result, the cost variance analysis reported here reflects changes from the previous September 2001 SAR submission to the current program requirements as submitted in the FY2003 President's Budget.

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	Changes							PAUC	
Prod Est							Cur Est		
	Econ	Qty	Sch_	Eng	Est	Oth	Spt	Total	
6.04	-0.381	-0.904	+0.078	+0.140	-0.620		-0.334	-2.02	4.02

## b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Prod Est	C						Cur Est		
	Econ	Qty	Sch	Eng	Est	Óth	Spt	Total	
4.87	-0.391	-0.671	+0.030	+0.069	-0.433		-0.297	-1.69	3.18

# c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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
TOC	N/A	N/A	JAN 1994	APR 1994
Total Cost	N/A	N/A	2373.7	1993.3
Total Quantity	N/A	N/A	393	496
Prog Acg Unit Cost	N/A	N/A	6.0	4.0

# 15. (U) Contract Information (Then-Year Dollars in Millions):

<pre>a. Procurement (U) EHF Terminals:</pre>	Initial <u>Target</u>	Contract Price <u>Ceiling Oty</u>
RAYTHEON COMPANY, MARLBOROUGH, M N00039-82-C-0146, FFP Award: February 14, 1990 Definitized: February 14, 1990	1A \$B3.7	N/A 24
Current Contract Price Target <u>Ceiling Ot</u> \$470.8 N/A 26	Estimated F <u>Contractor</u> 59 \$470.8	rice At Completion <u>Program Manager</u> \$470.8

Explanation of Change:

None.

## 15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

	Initial	Contract	Price
(U) EHF Follow-On Terminals:	Target	<u>Ceilina</u>	<u>Otv</u>
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 P.	rice At Co	mpletion

Currenc	CONCLACE ILICE		Gartugred LTTC	e ve combrectou
Target	Ceiling	<u>Otv</u>	Contractor	Program Manager
\$115.7	N/A	134	\$253.6	\$253.6

## Explanation of Change:

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(U) The Current Contract Price increased to reflect the Production Year 1, 2 and 3 procurements and obligations to date. The EHF Follow-on Terminal contract will be used to procure the remaining Fleet requirements.

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)

Appropriation	Prior <u>Years</u> (FY82-01)	Budget <u>Xear</u> (FYO2)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-06)	<u>Total</u>
RDT&E	422.1	3.3	1.5	2.3	429.2
Procurement	1249.7	73.7	75.0	157.1	1555.5
MILCON	8.6	-	-	-	8.6
O&M	-	-	-	-	-
Total	1680.4	77.0	76.5	159.4	1993.3

## 16b. (U) Program Funding Summary (Cont'd):

## b. Annual Summary -- NAVY EHF SATCOM PROGRAM

Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Sailaway	Sailaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
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			<u> </u>	19.8	20.3
1991				16.2	17.2
1992				30.3	33.1
1993			1	23.2	25.9
1994				12.7	14.5
1995				17.1	19.8
1996				11.4	13.4
1997				11.4	13.6
1998				12.3	14.8
1999				12.6	15.4
2000				5.1	6.3
2001				4.3	5.4
2002				2.6	3.3
2003				1.2	1.5
2004				0.8	1.0
2005				0.6	0.8
2006				0.4	0.5
Subtotal	7			434.2	429.2

(U) The FY03 President's Budget submission for project X0728 includes funding for NESP, AEHF, and other SATCOM programs. Project funds not reported in Section 16 RDT&E,N tables are (TY\$) \$167M AEHF and \$5.2M other SATCOM; broken out as follows: FY01 \$3.4M, FY02 \$8.7M, FY03 \$47.2M, FY04 \$50.6M, FY05 \$34.7M, FY06 \$17.1M, FY07 \$10.5M.

Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1990	3		6.6	4.0	4.3
1991	1		2.0	1.2	1.3

## 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Sailaway	Sailaway		
	ļ	FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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		26.8	19.5	24.3
1999				4.7	5.9
2000	15		19.3	19.6	25.1
2001			0.3	9.5	12.4
2002	2		3.3	5.6	7.4
2003	4		7.0	5.3	7.1
2004	7		11.1	8.4	11.6
2005	5		8.4	10.1	14.2
2006			0.2	3.6	5.2
Subtotal	72		140.4	143.7	180.9

(U) "Flyaway" costs include installation amounts in the year in which the equipment is procured. "Total Base Year" and "Total Then Year" costs reflect installation in the year in which funds are budgeted.

Appropriation: 1810 - Other Procurement, Navy

		Sailaway	Sailaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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	39.6	48.0
1999	13	1.8	38.3	53.0	65.0
2000	74		100.1	90.0	112.0
2001	21		32.6	57.7	73.1
2002	23		35.8	51.6	66.3
2003	18		25.3	52.0	67.9
2004	37		49.3	64.9	86.3
2005			3.1	16.1	21.8

### 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 \$
2006			0.4	13.0	18.0
Subtotal	417	44.5	810.5	1161.7	1374.6

(U) "Flyaway" costs include installation in the year in which equipment is procured. "Total Base Year" and "Program" costs reflect installation in the year in which funds are budgeted. Also, "Flyaway Rec" numbers include production of upgrades such as MDR upgrades for retrofit into NESP terminals in the year in which the funds are budgeted.

Appropriation: 1205 - Military Construction, Navy

Fiscal		Sailaway FY 1990 Dollars	Sailaway FY 1990 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year Ş
1992				7.7	8.6
Subtotal				7.7	8.6

		Sailaway	Sailaway	Total	Total
1		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	496	44.5	950.9	1747.3	1993.3

#### 17. (U) Delivery/Expenditure Information:

a

. (	U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	7	7
	Procurement	327	327

(U) Percent Total Program Quantities Delivered: 67.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1486.1

(U) Percent Total Program Expended: 74.6%

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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 2006 will consist of 193 Ship, 74 Submarine, 52 Shore, and 10 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.

	NAVY EHF SATCOM PROGRAM	N/A
	Average Annual Cost	
Cost Element	per Terminal	
Mission Pay & Allowances	N/A	Ň/Ă
Unit Level Consumption	18.0	0.0
Intermediate Maintenance	39.0	0.0
Depot Maintenance	41.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	98.0	0.0

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Total O&S Cost	NAVY EHF SATCOM PROGRAM	N/A
BY\$ (In Millions)	472.0	N/A
TY\$ (In Millions)	592.0	N/A

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18b. (U) Operating and Support Costs (Contid):

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# N-17 MIDS-LVT

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SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: MIDS-LVT

## AS OF DATE: December 31, 2001

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1. (U) Designation and Nomenclature (Popular Name): Multifunctional Information Distribution System - Low Volume Terminal (MIDS-LVT)

2. (U) DoD Component: Navy

Joint Participants: Army/Air Force

(U)

# 3. (U) Responsible Office and Telephone Number:

MIDS Program (PMW 101) 4201 Pacific Highway San Diego, CA 92110-3215

PEO for Tactical Aircraft Programs CAPT John N. Kohut Assigned: November 1, 2000 DSN 524-7776; COMM 619-524-7776 kohutj@spawar.navy.mil

#### 4. (U) Program Elements/Procurement Line Items: RDT&E: PE 0205604N (Shared) LINK-16 Project X2126 (U) PE 0207130F (Shared) F-15C/D Project AS AMENDED (U) PE 0207133F (Shared) F-16 Project (U) here it PE 0207134F (Shared) F-15E Project ([])

PE 0603713A (Shared) Project , D370 Diff 1 March PE 0603883C (Shared) ABL (U) PE 0604240F (Shared) B-2 (U) (U) PE 0604270N (Shared) EA-6B Integration Project E0556, E2781 PE 0604771D (Shared) MIDS Project P773 (U) **PROCUREMENT:** 

Security Classification Guide Derived from: dated June 10, 1994 marked OADR, dated June 10, 1994 Downgrade instructions: Some ace document marked OADR, Declassify. ua- 10, 1994

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02-0-041

## MIDS-LVT, December 31, 2001

## 4a. (U) Program Elements/Procurement Line Items (Cont'd):

(	(U)	APPN	3080	ICN	0207130F (#	Air Forc	e) (Shared)
(	(U)	APPN	3010	ICN	0207133F (#	Air Forc	e) (Shared)
ł	(U)	APPN	3080	ICN	0207134F (A	Air Forc	e) (Shared)
	(U)	APPN	0300	ICN	0208861C (I	DCA/DNA)	(Shared)
1	(U)	APPN	0300	ICN	0208865C (I	DCA/DNA)	(Shared)
(	(U)	APPN	3010	ICN	0603319F (2	Air Forc	e) (Shared)
(	(U)	APPN	1506	ICN	3101450000	(Navy)	(Shared)
į	(U)	APPN	1506	ICN	3105110000	(Navy)	(Shared)
(	(U)	APPN	1506	ICN	3105250000	(Navy)	(Shared)
(	(U)	APPN	1611	ICN	3320860000	(Navy)	(Shared)
1	(0)	APPN	1611	ICN	3321220000	(Navy)	(Shared)
1	(0)	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)

#### 5. (U) References:

· * · · ·

SAR Baseline (Development Estimate): (U) DAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program: (U) DAE Approved Acquisition Program Baseline (APB) dated September 19, 2001.

#### 6. (U) Mission and Description:

(U) The MIDS-LVT terminal does not replace an existing DOD system in that it provides Link-16 capability to platforms that were unable to employ Joint Tactical Information Distribution System (JTIDS) due to space and weight constraints. The MIDS-LVT Program is a multinational (U.S., France, Germany, Italy, Spain) cooperative development program with joint service participation (Navy, Army, Air Force). The program was established to design, develop and deliver low volume, lightweight tactical information system terminals for U.S. and Allied fighter aircraft, bombers, helicopters, ships, and ground sites. MIDS-LVT will provide interoperability with NATO users significantly increasing force effectiveness and minimizing hostile actions and friend-on-friend engagements. The terminal is designed to be smaller, lighter, highly reliable, interoperable with JTIDS Class 2 terminal, compatible with all the participants' designated platforms, affordable, and re-configurable to individual user needs and budgets. Three principal configurations of the terminal are in production and use an open system, modular architecture. MIDS-LVT(1) includes voice, Tactical Air Navigation (TACAN) and variable power transmission with maximum power of 200 watts and will provide Link-16 capability to F/A-18 aircraft previously unable to use JTIDS due to space and weight limitations. MIDS-LVT(2) is an Army variant of MIDS tailored to be a functional replacement for the JTIDS Class 2M terminal. MIDS-LVT(3), also referred to as MIDS Fighter Data Link (FDL), is a reduced function terminal for the Air Force (no voice, no TACAN, and a maximum power of 40 watts). Currently, over 2,000 terminals (total for all three variants) are planned for

### 6. (U) Mission and Description (Cont'd):

procurement through FY12.

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#### 7. (U) Executive Summary:

(U) Delivery of MIDS-LVT Low Rate Initial Production (LRIP) terminals commenced November 2001 and integration and evaluation of LRIP terminals commenced December in Navy F/A-13 and Air Force F-16 fighter aircraft. The Navy's test and evaluation of MIDS integrated on the F/A-18 supports the program's Milestone III decision planned July 2003 and extensive developmental flight testing with periodic operational flight testing of engineering and manufacturing development terminals has been ongoing to grow system maturity. Developmental and operational flight testing with LRIP terminals commences January 2002 and the F/A-18 Technical Evaluation is planned to commence April 2002 with a July completion; Operational Evaluation is planned to commence October 2002 with a January 2003 completion. From September 2001 through January 2003, the MIDS Program Manager (PM) has planned the coordination of virtually continuous involvement by the Navy's Commander, Operational Test and Evaluation Force to provide early identification and timely resolution of potential operational issues with the MIDS-LVT. Since May 1998 when the joint service program acquisition costs were established in the Acquisition Program Baseline (APB), the estimated number of development and production terminals has increased by ten percent and the PM is coordinating an APB revision to account for the increased funding reflected in the President's fiscal year 2003 budget. The funding increase is primarily attributed to the addition of the EA-6B aircraft, which requires both development funding for platform integration and procurement funding, and increased production quantities for the F-15.

#### 8. (U) Threshold Breaches:

a.	(U)	Acquisition	Program	Baseline	(APB):
		-	-		

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	Yes
Procurement	Yes
MILCON	No
0&M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

## 8. (U) Threshold Breaches (Contid):

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 estimate has been revised to address funding increases that are primarily attributed to the addition of the EA-6B aircraft, which requires developmental platform integration and procurement funding, and increased procurement quantities for the F-15. EA-6B platform integration funding is \$61M and procurement funding is \$38M for 122 terminals. The MIDS PM has initiated a Program Deviation Report and a revised APB.

9. (U) <u>Schedule</u>:

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a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
Milestone II (DAB)	DEC 1993	DEC 1993	DEC 1993
Development Contract Award			
LVT Contract Award	DEC 1993	MAR 1994	MAR 1994
LVT(2) Modifcation	N/A	AUG 1995	AUG 1995
LVT(3) Qual Contract Award	N/A	SEP 1996	SEP 1996
F/A-18 Integration Contract Award (NAVAIR)	MAR 1994	N/A	N/A
Critical Design Review (MIDS Termina)	1) 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
I.VT (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
IOTAE Complete			
I.VT	N/A	JAN 2003	JAN 2003
LVT (2)	N/A	FEB 2002	JUN 2002(Ch-1)
I.VT (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

MIDS-LVT, December 31, 2001

## 9a. (U) <u>Schedule (Cont'd)</u>:

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	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Milestone III (Navy)			
LVT	N/A	JUL 2003	JUL 2003
LVT (3)	N/A	DEC 1999	OCT 1999
Full Rate Production Contract Award	JUN 2001	N/A	N/A
Initial Operational Capability			
LVT	DEC 2000	MAY 2003	MAY 2003
LVT (2)	N/A	JUN 2002	OCT 2002(Ch-1)
LVT (3)	N/A	JAN 2001	FEB 2001
Organic Support Capability Date	JUN 2003	N/A	N/A
Service Depot Support Date	JAN 2004	MAR 2005	MAR 2005
Full Rate Production - LVT(2)	N/A	MAY 2002	OCT 2002(Ch-1)

b. Current Change Explanations --

(U) (Ch-1) ViaSat did not commence shipment of the Army unique MIDS-LVT(2) LRIP terminals as contractually required because of the later than planned completion of contractor testing, which has delayed the completion of Initial Operational Test and Evaluation (IOT&E) and two related schedule milestones.

Milestone	FIOR	To
IOT&E Complete		
LVT(2)	Mar 02	Jun 02
Initial Operational Capability	* 1 00	0
	Jul UZ	UCE UZ
Full Rate Production - LVT(2)	Jul 02	Oct 02

## 10. (U) Performance Characteristics:

a. Performance --

		Approved		Demon-		
	Development <u>Estimate (SAR)</u>	Progr <u>Obi/T</u>	am hre	(APB) <u>schold</u>	strated <u>Perf</u>	Current <u>Estimate</u>
Link 16 Waveform	N/A	STANAG 4175	1	STANAG 4175	STANAG 4175	STANAG 4175
Message Standard	N/A	STANAG 5516	1	STANAG 5516	STANAG 5516	STANAG 5516
Maximum Power						
Transmission (w)						
LVT	N/A	200	1	200	200	200
LVT (2)	N/A	200	1	200	200	200
LVT (3)	N/A	50	1	40	40 - 80	50
Coded Data Rate (Kbps)	ł					
Standard Packing	28.8	28.8	1	28.8	28.8	28.8
Packed 2 DP	57.6	57.6	1	57.6	57.6	57.6
Packed 4 DP	115.2	115.2	1	115.2	115.2	115.2
Relay Range (nm)	1200	1200	1	500	TBD	1200
Communication Range (NM)	300	300	/	300	300	300

#### *** CONFEDENCES ***

## 10a. (U) Performance Characteristics (Cont'd):

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		P	pproved	Demon-	
	Development	Prog	(APB)	strated	Current
	Estimate (SAR)	Obj/	Threshold	Perf	Estimate
Voice Channels	2	2	/ 1	2	2
Coded Message Error	1	1	/ 2	1	1
Probability (%)	Contraction of the second second	(h)(1)	्रिके के सम्बद्ध ने स्टब्स ने	T 1	(1)
Jam Resistance (db)				TBD	
Ao	.9	. 9	7.9	твр	.9
MTBF (hr)(lab)					
LVT	1000	1000	/ 1000	1662	1000
LVT(2)	N/A	1000	/ 1000	TBD	1000
LVT (3)	N/A	1500	/ 1000	1048	1500
MFHBMCF (hr) (field)	300	N/A	/ N/A	N/A	N/A
MTTR (0-level) (min)	30	30	/ 30	TBD	30
Volume (dm3)	16.4	16.4	/ 16.4	16.4	16.4
Weight (kg)					
LVT	29.5	29.5	/ 29.5	26.8	29.5
LVT(2)	N/A	40.0	/ 40.0	40.0	40
LVT (3)	N/A	23.6	/ 29.5	23.6	23.6

(U) Communication range requirements are platform dependent as specified by Joint Requirements Oversight Council Memorandum, dated April 6, 2000.

```
Acronyms:

Ao - Operational Availability

db - decibels

dm3 - Cubic Decimeters

DP - Double Pulse

hr - Hour

Kbps - Kilobytes per second

kg - Kilograms

MFHBMCF - Mean Flight Hours Between Mission Critical Failures

min - Minute

MTBF - Mean Time Between Failures

MTTR - Mean Time to Repair

nm - Nautical miles

w - Watts
```

b. Current Change Explanations -- None

## 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	(U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	481.1	593.5	673.7
	Procurement	443.8	615.9	697.7
	Prime Mission Eqmt	(PME (313.7)		(523.4)
	Production Support	(10.5)		(33.7)
	Non Recurring			(60.6)
	Total Flyaway	(324.2)		(617.7)
	Other Wpn Sys	(55.7)		(25.3)
	Peculiar Support	(6.6)		(1.3)
	Initial Spares	(57.3)		(53.4)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1992 Base-Year	\$ 924.9	1209.4	1371.4
	Escalation	194.6	225.9	250.3
	Development (RDT&E)	(51.9)	(69.2)	(77.9)
	Procurement	(142.7)	(156.7)	(172.4)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition OLM	(0.0)	(0.0)	(0.0)
	Total Then Year \$	1119.5	1435.3	1621.7

(U) Note: Appropriation data for the MIDS-LVT excludes \$28.1M Defense Emergency Response Funds for terminal procurement and associated nonrecurring engineering in support of Homeland Defense and Operation Enduring Freedom that will be reported in the next SAR.

b. (U) Quantity --

Development (RDT&E)	42	63	89
Procurement	<u>630</u>	<u>2358</u>	<u>2573</u>
Total	672	2421	2662

(U) Note: Development and procurement costs have been revised to include the addition of the Navy EA-6B Prowler aircraft as a MIDS platform, increased procurement quantities for the Air Force F-15, and reflect changes in other Navy and Army procurements. Procurement quantities include MIDS terminals for Navy ships, F/A-18s and EA-6Bs; Air Force F-15s and F-16s; and other Navy, Air Force and Army platforms. Procurement Acquisition Unit Costs reflect the costs for 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 test included in the respective budgets and baseline agreements of the various platforms, which are implementing MIDS.

Two LRIP decisions have been approved to date and a third decision is planned June 2002, the total planned LRIP quantity of 377 terminals was authorized in the update to the MIDS-LVT Acquisition Strategy Report approved September 19, 2001 by the Under Secretary of Defense for Acquisition, Logistics and Technology. The approved LRIP quantity exceeds 10 percent and is justified to

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## 11b. (U) Total Program Cost and Ouantity (Cont'd):

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 --International Cooperative Programs -- The European participants in the MIDS cooperative development program will expend \$329.0M in RDT&E then-year funding. Contributions were determined in accordance with the Program Memorandum of Understanding and accompanying Supplements. RDT&E contributions from the participating nations and/or organizations were France, \$131.5M; Italy, \$102.2M; Germany, \$36.6M; Spain, \$33.3M; and NATO EF2000 and Tornado Management Agency (NETMA), \$25.5M.

The estimated European production quantities are 1,157 MIDS-LVTs including spares at a cost of \$436M (then year). The European production strategy planned for a sole source contract to be awarded to a European Manufacturer in FY00 by SPAWAR, the U.S. contracting agency and managed through the MIDS IPO. However, the delay in obtaining all Supplement 3 signatures prevented contract award until December 29, 2000.

Foreign Military Sales Quantities/cost (TY \$M)

<u>Prior CY02 CY03 CY04 CY05 CY06 CY07 To Complete</u> 0/\$0 6/\$2.0

Direct Commercial Sales Quantities only, cost information is not available.

Prior CY02 CY03 CY04 CY05 CY06 CY07 To Complete 104

Prior: UK (76) and NETMA (28) procurement with DLS.

Other Foreign Sales Quantities/cost (TY \$M).

Prior CY01 CY02 CY03 CY04 CY05 CY06 To Complete 3/51.1

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

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		UCR	Current	
		Baseline	Estimate	Percent
		(SEP 2001 APB) (1	Dec 2001 SAR)	Change
a.	(U) Prog. Acg. Unit Cost (PAUC)			
	(1) Cost (FY 1992 BY\$)	1209.4	1371.4	
	(2) Quantity	2421	2662	
	(3) Unit Cost	0.500	0.515	+3.00
b.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1992 BY\$)	615.9	697.7	
	(2) Quantity	2358	2573	
	(3) Unit Cost	0.261	0.271	+3.83

(U) The current estimates have been revised in consideration of actual contractor costs for recurring and nonrecurring production costs.

## 13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	533.0	586.5	*	1119.5
Previous Changes:				
Economic	-12.9	-45.2	-	-58.1
Quantity	+1.4	+504.2	-	+505.6
Schedule	-	+24.0	-	+24.0
Engineering	-	-58.8	-	-58.8
Estimating	+159.5	-115.8	-	+43.7
Other	-	-	-	-
Support	-	-48.3	-	-48.3
Subtotal	+148.0	+260.1	-	+408.1
Current Changes:				
Economic	+0.9	-4.1	-	-3.2
Quantity	+1.0	-37.9	-	-36.1
Schedule	+0.2	-3.6	-	-3.4
Engineering	- 1	+11.9	-	+11.9
Estimating	+67.7	+58.5	_	+126.2
Other		-	-	-
Support	-	-1.3	-	-1.3
Subtotal	+70.6	+23.5	-	+94.1
Total Changes	+218.6	+283.6	-	+502.2
Current Estimate	751.6	870.1	-	1621.7

# 13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PRÓC	MILCON	TOTAL
Development Estimate	481.1	443.8	_	924.9
Previous Changes:				
Quantity	+0.8	+393.9	-	+394.7
Schedule	-	-	+	ate.
Engineering	+0.4	-41.0	-	-40.6
Estimating	+130.8	-82.1	-	+48.7
Other	-	-	-	-
Support	-	-37.9	-	-37.9
Subtotal	+132.0	+232.9		+364.9
Current Changes:				
Quantity	+1.5	-31.7	-	-30.2
Schedule	+0.2	-	-	+0.2
Engineering	-	+8.4	-	+8.4
Estimating	+58.9	+46.0	-	+104.9
Other	-	-	-	-
Support	-	-1.7	-	-1.7
Subtotal	+60.6	+21.0		+81.6
Total Changes	+192.6	+253.9		+446.5
Current Estimate	673.7	697.7		1371.4

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

		<u></u>	
(1)	RDT&E		0.0
	Revised escalation indices. (Economic)	. N/A	-0.2
	Economic adjustment for negative program change. (Economic)	N/A	+1.1
	Strechout of Airborne Laser integration schedule (USAF). (Schedule)	+0.2	+0.2
	Adjustment for Current and Prior Inflation. (Estimating)	-0.7	-1.5
	Net increase for hardware and software terminal enhancements. (Estimating)	+9.3	+10.6
	Increased funding for EA-6B Link-16 integration (new MIDS platform) (Navy). (Estimating)	+50.3	+58.6
	Quantity increase of 6 MIDS EMD terminals from 83 to 89 (Navy and USAF). (Quantity)	+1.5	+1.8
	RDT&E Subtotal	+60.6	+70.6
(2)	Procurement	N1 / 2	_6 7
	Revised escalation indices. (Economic)	N/A	-0.7
	Economic adjustment for negative program change. (Economic)	N/A	+2.6

.

# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations --

	(Dollars i Base-Year	in Millions) Then-Year	}
Quantity decrease of 9 MIDS-LVT(2) from 94 to 85 (Armv). (Quantity)	-4.6	-6.3	
Allocation to Schedule variance resulting from Quantity Change (Army), (OR) (Schedule)	0.0	-0.6	
Allocation to Engineering variance resulting from Quantity Change (Army) (OR) (Engineering	+0.9	+1.4	
Allocation to Estimating variance resulting from Quantity Change (Army), (OR) (Estimating)	+1.9	+2.9	
Quantity increase of 20 MIDS-LVT from 1,174 to 1,194 (Navy), (Quantity)	+8.9	+13.8	
Allocation to Schedule variance resulting from Quantity Change (Navy), (OR) (Schedule)	0.0	+0.6	
Allocation to Engineering variance resulting from Quantity Change (Navy), (OR) (Engineering	-0.6	-1.5	
Allocation to Estimating variance resulting from Quantity Change (Navy), (OR) (Estimating)	-1.3	-4.6	
Quantity decrease of 76 MIDS Terminals from 1,370 to 1,294 (USAF). (Quantity)	-36.0	-45.4	
Allocation to Schedule variance resulting from Quantity Change (USAF). (OR) (Schedule)	0.0	-4.9	
Allocation to Engineering variance resulting from Quantity Change (USAF). (OR) (Engineering	+8.1	+12.0	
Allocation to Estimating variance resulting from Quantity Change (USAF). (OR) (Estimating)	+16.3	+23.5	
Stretchout of annual procurement buy profile (USAF). (Schedule)	0.0	+0.3	
Stretchout of annual procurement buy profile (Navy). (Schedule)	0.0	+1.0	
Reduced unit pricing based on actual contractor costs (Army). (Estimating)	-1.4	-2.0	
Increased production support for the F/A-18 in FY04 through FY10 (Navy). (Estimating)	+25.1	+31.3	
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5	
Increased production support in accordance with joint service agreement (Navy, Army, USAF). (Estimating)	+4.9	+6.9	
Net change in Other Weapons Systems because of revised procurement quantities and actual contractor costs (Navy, Army, USAF). (Support)	+1.7	+2.8	
Net change in Initial Spares because of revised procurement quantities and actual contractor costs (Navy, Army, USAF). (Support	-3.4	-4.1	
Procurement Subtotal	+21.0	+23.5	

MIDS-LVT, December 31, 2001

## 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

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	Changes							PAUC	
Dev Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.67	-0.023	-1.07	+0.008	-0.018	+0.064		-0.019	-1.06	0.609

#### b. (U) Procurement Unit Cost (PUC) History

## Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est	t						Cur Est		
	Econ	Qty	Sch	Eng	Est	Öth	Spt	Total	
0.931	-0.019	-0.523	+0.008	-0.018	-0.022		-0.019	-0.593	0.338

#### c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 1993	N/A	DEC 1993
Milestone III	N/A	N/A	N/A	JUL 2003
IOC	N/A	N/A	N/A	MAY 2003
Total Cost	N/A	1119.5	N/A	1621.7
Total Quantity	N/A	672	N/A	2662
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 planned for the Army unique LVT(2) variant but it has been replaced by a Full Rate Production decision planned October 2002. The primary emphasis of the SAR is on the joint service, international program for the MIDS-LVT(1) variant.

<u>Milestone III</u>	<u>Date</u>	
LVT	Jul 03	ļ
LVT (3)	Oct 99	(Actual)

### 14. (U) Unit Cost and Other History (Cont'd):

IOC

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LVT	May	03	
LVT(2)	Oct	02	
LVT (3)	Feb	01	(Actual)

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement (U) Fighter Data Link:	Initial Target	Contract Ceiling	Price Otv
Data Link Solutions, Wayne, NJ		X_1	
N00039-96-C-0038, FFP	\$3.1	N/A	6
Award: September 30, 1996			
Definitized: September 30, 1996			

Current	Contract Price		Estimated Price	At Completion
Target	<u>Ceiling</u>	<u>Otv</u>	Contractor	Program Manager
\$164.5	N/A	655	\$164.5	\$164.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

#### (U) Contract Comments:

The Fighter Data Link (FDL) contract was competitively awarded to Data Link Solutions, a joint venture of GEC-Marconi-Hazeltine (GMH) and Rockwell-Collins, on September 30, 1996 and is fully funded by the USAF. This contract supports Air Combat Command's urgent need for F-15 Link-16 terminals. Production option quantities were initially negotiated for 50, 200, 200, and 50 terminals, but were increased to procure the additional terminals needed to complete all F-15E installations. The award of 50 Pilot Production Terminals occurred September 14, 1998. 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, 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. To date, 713 terminals are on contract, which includes the requirements for combat coded aircraft, test assets and associated spares. Subsequent to Lot 3 award, the F-15 SPO determined that additional FDL terminals are required and with the advent of Operation Enduring Freedom, the USAF is reviewing the applicability of FDL terminals for other platforms. The MIDS International Program Office and Space and Naval Warfare Systems Command will execute changes to the approved contract ceiling and address the acquisition and other actions needed to implement additional FDL procurements.
MIDS-LVT, December 31, 2001

Initial Contract Drive

#### 15. (U) Contract Information (Cont'd):

Pilot production deliveries commenced February 2000 and the delivery of all 50 terminals was completed April 2001. The USAF achieved the Initial Operational Capability objective for FDL February 2001. USAF Test and Evaluation and Director, Operational Test and Evaluation successfully completed Follow-On Test and Evaluation of three suitability issues in August 2001: logistics support, Mean Time Between Failures and Built-In Test. An important performance aspect is that FDL's demonstrated reliability is four times greater than previous Link 16 systems. Lot 1 production terminal deliveries commenced April 2001 and 154 terminals have been delivered as of January 31, 2002.

			TUTCTOT	CONCLACE FI	TCE
(U) <u>MIDS P</u>	roduction Cont	<u>ract:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
Data Link Sol N00039-00-D-2 Award: Januar Definitized:	utions, Cedar 100, FFP y 20, 2000 N/A	Rapids IA	\$16.1	N/A	27
Current	Contract Pric	ce	Estimated Pr	ice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	Program	Manager
\$65.5	N/A	116	\$65.5	Ş	65.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The production contract includes First Article Qualification Test (FAQT), nonrecurring engineering, supportability, and the manufacture of 116 MIDS-LVT(1) and associated spares. In April 2001, the Government awarded a delivery order to increase production capacity from 4 terminals to 12 terminals per month starting August 2002. Contractor FAQT completed on schedule, June 1, 2001 and Government FAQT completed August 2001. DLS submitted their Air Worthiness Certification to the Government on August 31, 2001 and the National Security Agency issued COMSEC certification on October 2, 2001. The contractor commenced production deliveries November 2001 and 20 of 45 LRIP Lot 1 terminals have been delivered as of February 1, 2002.

MIDS-LVT, December 31, 2001

#### 15. (U) Contract Information (Cont'd):

Initial (	Contract P	rice
Target (	<u>Ceilina</u>	Oty
\$23.4	N/A	27
Estimated Pr	ice At Com	pletion
Contractor	Progra	n Manager
\$59.9		\$59.9
	Initial ( <u>Target</u> ( \$23.4 Estimated Pr: <u>Contractor</u> \$59.9	Initial Contract P <u>Target</u> <u>Ceiling</u> \$23.4 N/A Estimated Price At Comp <u>Contractor</u> <u>Program</u> \$59.9

## Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

The production contract includes First Article Qualification Test (FAQT), nonrecurring engineering, supportability, and the manufacture of 54 MIDS-LVT(1), 30 MIDS-LVT(2) and associated spares. In April 2001, the Government awarded a delivery order to increase production capacity from 12 terminals to 24 terminals per month starting August 2002. Due to delays in the design and qualification of Shop Replaceable Units, the start of contractor terminal FAQT was delayed until June 2001 and ViaSat has notified the Government that it will not be completed until March 2002. To reduce additional delays in US platform integration and test, the Government is conducting concurrent risk reduction testing with the contractor and terminal deliveries are scheduled to commence April/May 2002 after the contractor and the Government have completed FAQT.

## MIDS-LVT, December 31, 2001

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars) :

## a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY90-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-12)	<u>Total</u>
RDT&E	674.5	41.0	26.8	9.3	751.6
Procurement	280.7	67.9	86.4	435.1	870.1
MILCON	-	-	-	-	-
04M	-	-	-	-	-
Total	955.2	108.9	113.2	444.4	1621.7

b. Annual Summary -- MIDS-LVT

Appropriation: 0400 - RDT&E, Defense Agencies

		Flyaway	Flyaway		
		FY 1992	FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1990				9.4	9.0
1991				5.0	5.0
1992				16.2	16.5
1993				22.9	23.9
1994				21.9	23.3
1995				45.8	49.6
1996				38.8	42.7
1997				33.1	36.9
1998				40.3	45.2
1999				24.6	27.9
2000				33.8	39.0
2001				10.3	12.1
2002				9.1	10.9
2003				5.9	7.1
2004				4.6	5.7
2005				2.7	3.4
Subtotal	28			324.4	358.2

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

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## 16b. (U) Program Funding Summary (Cont'd):

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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 \$
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				54.0	62.3
2001				33.9	39.8
2002				24.8	29.5
2003				16.3	19.7
Subtotal	21			326.2	367.1

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
Subtotal	3			7.1	8.1

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 Ş
1997				3.3	3.7
1998				6.3	7.1
1999		· · · · · · · · · · · · · · · · · · ·			
2000				4.1	4.7
2001				1.6	1.9
2002				0.5	0.6
2003					<u></u>
2004				0.2	0.2
Subtotal	37			16.0	18.2

## 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1999	15	4.3	3.1	7.8	8.9
2000					
2001	15		3.0	3.6	4.2
2002	7		1.5	1.7	2.0
2003	10		1.8	2.1	2.5
2004					
2005	5		0.5	1.2	1.5
2006	6		0.7	1.5	1.9
2007	11		1.2	1.9	2.5
2008	12		2.2	3.4	4.6
2009	4		1.0	2.1	2.8
Subtotal	85	4.3	15.0	25.3	30.9

(U) Note: The Defense Agencies appropriation provides for the procurement of the Army unique MIDS-LVT(2) variant. This appropriation summary replaces information previously reported for appropriation 2035, Other Procurement Army.

Appropriation: 1506 - Aircraft Procurement, Navy

		Flyaway	Flyaway		
		FY 1992	FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1999	16	0.7	5.8	6.9	8.0
2000	38	31.1	14.9	52.1	61.0
2001	64	0.5	16.8	18.9	22.5
2002	57	0.2	18.0	20.4	24.6
2003	116	0.2	27.4	32.6	40.0
2004	148	0.2	33.7	38.1	47.6
2005	132	0.2	30.6	34.6	44.1
2006	120	0.1	27.2	31.4	40.7
2007	121	0.1	27.4		40.6
2008	138	0.1	31.6	34.6	46.7
2009	106	0.1	24.2	26.4	36.3
2010	42	0.1	13.2	15.0	21.0
2011	42		13.0	14.0	20.0
2012	20		9.0	9.7	14.1
Subtotal	1160	33.6	292.8	365.4	467.2

(U) NOTE: This USN appropriation identifies the MIDS-LVT(1) that are planned for the F/A-19C/D/E/F and the EA-6B.

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## 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Flyaway	Flyaway		
		FY 1992	FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2002	4		1.1	1.8	2.2
2003	3		0.7	1.0	1.2
2004	3		0.6	0.9	1.1
2005	4		0.9	1.1	1.4
2006	5		1.1	1.4	1.8
2007	5		1.0	1.3	1.8
Subtotal	24		5.4	7.5	9.5

Appropriation: 1810 - Other Procurement, Navy

Físcal Year	Qty	Flyaway FY 1992 Dollars Nonrec	Flyaway FY 1992 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	3		0.9	0.9	1.0
2000					
2001					
2002		······································			
2003	2		0.4	0.7	0.8
2004	5		1.0	1.5	1.9
Subtotal	10		2.3	3.1	3.7

Appropriation: 3010 - Aircraft Procurement, Air Force

		Flyaway	Flyaway		
		FY 1992	FY 1992	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001	28	3.7	7.1	16.1	19.2
2002	101	2.1	24.4	32.4	39.1
2003	144	0.2	28.2	34.1	41.9
2004	108	0.1	21.0	22.2	27.8
2005	85	0.1	16.7	17.8	22.7
2006	89	0.1	17.0	18.2	23.6
2007	79	0.1	15.1	16.6	21.9
2008	20		4.0	5.0	6.7
Subtotal	654	6.4	133.5	162.4	202.9

(U) NOTE: This USAF appropriation identifies the MIDS-LVT(1) that are planned for the F-16 and the Airborne Laser.

## 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3080 - Other Procurement, Air Force

Fiscal	2	Flyaway FY 1992 Dollars	Flyaway FY 1992 Dollars	Total Program	Total Program
Iear		Nonrec	Rec	Base-Year Ş	Then-Year Ş
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	279		43.7	47.0	55.2
2001	120		19.2	22.9	27.3
Subtotal	640	16.3	108.1	134.0	155.9

(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	Otv	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year S	Total Program Then-Year S
OSD	113	4.3	15.0	349.7	389.1
Navy	1215	33.6	300.5	702.2	847.5
Army	3			7.1	8.1
USAF	1331	22.7	241.6	312.4	377.0
Grand Total	2662	60.6	557.1	1371.4	1621.7

#### 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	58	56
	Procurement	200	191

- (U) Percent Total Program Quantities Delivered: 9.3%
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 955.2
  - (U) Percent Total Program Expended: 58.9%

(U) Note: Delivery information pertains to U.S. quantities only. RDT&E deliveries to date are from MIDSCO, Inc. for the MIDS-LVT and MIDS-LVT(2) and from Data Link Solutions (DLS) for the MIDS-LVT and MIDS-LVT(3). Procurement deliveries to date are from DLS for the MIDS-LVT and MIDS-LVT (3).

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#### 18. (U) Operating and Support Costs:

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a. (U) Assumptions and Ground Rules --The O&S Cost portion of the Program Manager Life Cycle Cost Estimate, updated December 2001, depicts a 33-year support period of 2573 MIDS-LVT terminals installed on numerous U.S. platforms associated with each Service's Link 16 requirement. This period included 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 it 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 Single MIDS Operational Requirements Document. Other pertinent cost estimates include use of values experienced by analogous systems including JTIDS and the AN/ARC-182 radio. The program office will analyze alternative life cycle support strategies concurrent with preparation for full rate production, with the objective of reducing per unit Operating and Support costs. 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.

MIDS-LVT	Avg Annual Cost Per
Avg Annual Cost per	Antecedent System
Terminal	
N/A	N/A
0.2	0.0
0.0	0.0
0.7	0.0
4.6	0.0
1.7	0.0
0.0	0.0
0.0	0.0
7.2	0.0
	MIDS-LVT Avg Annual Cost per Terminal 0.2 0.0 0.7 4.6 1.7 0.0 0.0 0.0 7.2

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Total O&S Cost	MIDS-LVT	Avg Annual Cost Per
BY\$ (In Millions)	368.6	N/A
TY\$ (In Millions)	575.1	N/A

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MIDS-LVT, December 31, 2001

18b. (U) Operating and Support Costs (Cont'd):

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SELECTED ACOUISITION REPORT (RCS: DD-A6T(06A)823) PROGRAM: JASSM

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AF-13 JASSM

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AS OF DATE: December 31, 2001



1. (U) Designation and Nomenclature (Popular Name): Joint Air-to-Surface Standoff Missile (JASSM)

2. (U) DoD Component: USAF

Joint Participants: USAF, USN

3. (U) Responsible Office and Telephone Number: AAC/YV JASSM System Program Office 102 West D Ave, Suite 300 Eglin AFB, FL 32542-6807

Col James R. McClendon Assigned: January 2, 2002 DSN 872-7321 x2253 COMM 850-882-7321 x2253 james.mcclendon@eglin.af.mil

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 0207325F (U) PE 0604312N **PROCUREMENT:** (U) APPN 3020 ICN 0207325F (Air Force)

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#### 5. (U) <u>References</u>:

SAR Baseline (Development Estimate):

(U) Approved Acquisition Program Baseline (Development) dated November 9, 1998.

Approved Program: (U) DAE Approved Acquisition Program Baseline (APB) dated December 21, 2001.

#### 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 does not replace any existing weapon system.

#### 7. (U) Executive Summary:

(U) The following Executive Summary covers the two-year period of January 2000 through December 2001.

JASSM successfully transitioned to Low Rate Initial Production (LRIP) with an Acquisition Decision Memorandum signed on December 21, 2001. The program was designated an ACAT IC program. The first LRIP contract was signed on January 14, 2002. We decreased the Lot 1 quantity from 95 to 76 in order to pay for increased costs associated with the Joint Chiefs of Staff (JCS) mandated insertion of a Selective Availability Anti-Spoofing Module (SAASM) Global Positioning System receiver. Lockheed Martin brought on a new vendor in order to incorporate SAASM into Lot 2. The Lot 1 non-SAASM receiver price was dependent on follow-on quantities. Termination of the subcontractor after Lot 1 caused an increased price to the GPS receiver for Lot 1. Lockheed Martin limited the missile unit price increase to only those costs associated with the receiver despite the reduction in Lot 1 quantity from 95 to 76 missiles.

The APB was updated at LRIP to reflect an Air Force production quantity of 3700, consistent with the ORD. The additional 1300 missiles were added to the end of the production program, increasing production from nine to thirteen lots and raising our average unit price.

ACC updated the ORD to include interoperability as a Key Performance Parameter (KPP) per Joint Staff direction. The JASSM top-level C4I Information Exchange Requirements (IERs) were coordinated with the Joint Interoperability Test Command (JITC), the focal point for Interoperability Certification.

The Joint Requirements Oversight Committee delayed completion of the Carrier

## 7. (U) Executive Summary (Cont'd):

Operability Key Performance Parameter (KPP) until FOTSE. The Navy is now funded for full aircraft integration/testing on the F/A-18 E/F with \$105 M for FY03 to FY07.

JASSM received a Below Threshold Reprogramming (BTR) of \$150K for long lead procurement of Precise Positioning System/Security Modules (PPS/SMs) required to build the Lot 1 JASSM Anti-Jam GPS Receiver (JAGR) for GPS navigation. The PPS/SM chips are no longer in production and the Tomahawk program, which requires the same chip, purchased all available chips within the United States. We identified available PPS/SM chips previously sold through FMS to Great Britain and bought the chips through an FMS buy back. The number of chips available support Lot 1 production only.

JASSM currently has a \$13M EMD funding shortfall driven by scope growth and a contract overrun. The Air Force committed at the LRIP decision to fund the shortfall and is aggressively identifying sources. The funding shortfall can be worked through BTRs because the shortfall is within JASSM's funding flex. The scope growth includes the Selective Availability Anti-Spoofing Module (SAASM) testing and manufacturability, JASSM seeker focal plane array (FPA) replacement and B-52 integration. Following JCS direction to incorporate SAASM by FY01, JASSM immediately modified the contract for only the design portion of the development in order to gain greater understanding of the remaining effort required to fully incorporate SAASM and to minimize the total cost. The remaining SAASM effort (testing and manufacturability) was defined during the design phase and put on contract. Lockheed had to develop an alternate source for the FPA due to the lower tier supplier backing out of the business arrangement. Lockheed's business arrangement was with Texas Instruments (TI). When Raytheon acquired TI, the government directed them to divest themselves of the TI seeker business. Raytheon pulled all seeker work out of TI except for JASSM. The business base for the FPA manufacturer, DRS, dried up, leaving DRS unable to meet their production price and delivery commitments. JASSM added time between development tests as part of the program restructure to lower program risk. Unanticipated scope growth occurred due to increased fixed costs associated with completion of the B-52 Operational Flight Program. JASSM experienced a contract over-run resulting from the following: parts obsolescence in the mission computer unit (MCU) forced seeker modifications; ongoing quality and qualification issues with the Raytheon Lot 1 JAGR; redesign of the wing and tail wing deployment actuators; engine issues with the fuel isolation valve and specific fuel consumption; and Lockheed manpower not downloading as quickly as planned.

We signed the contract modification incorporating the program restructure in June 2000 following approval by USD(AT&L). The restructure included EMD and production of Lots 1-5. Ten months were added to EMD due to late subcontractor hardware deliveries. Lockheed Martin agreed to limit the Lot 1-5 production increase to less than 5 percent contingent upon procuring 63 Pre-production Prove Out Test Units (PPOTUS) during EMD. The Air Force added \$4M to JASSM's FY02 budget to offset the FY01 Appropriation cut allowing us to incrementally fund PPOTUS. This action eliminated the funding shortfall to procure all 63 PPOTUS currently on contract. The 63 PPOTUS are required to preserve our FFP

#### 7. (U) Executive Summary (Cont'd):

production options.

We have successfully completed the all up round (AUR) detonation tests required to get full insensitive munition (IM) certification. JASSM is the first 1000-pound class munition to achieve this without waivers.

We conducted the first Control Test Vehicle (CT-1) mission on September 20, 2000 at the Eglin Test Range to gather airframe aerodynamic data and validate the air data system. CT-1 completed about seven minutes of powered flight before losing thrust and gliding to impact in the Gulf of Mexico. The fuel isolation valve failed to open, and the engine received fuel from only one of the four tanks. This led to a redesign of the fuel isolation value. CTV-2 successfully completed a 30-minute plus (200 plus miles) flight on November 17, 2000.

Between January and May 2001, we had three successful Developmental Tests (DT), meeting both the low and high altitude ORD range requirements. In July 2001, DT-4 flew its mission profile to the impact area, but during the terminal maneuver the missile failed to arm and did not detonate on impact. A failure board was convened, a problem with the fuze was discovered and corrections made. The target was re-attacked in September with DT-5. The missile failed to detonate (different issue than DT-4). Test data analysis revealed an arming logic failure (safety issue) prevented the fuze from arming. This safety mechanism was redesigned and tested. DT-5R was flown on November 20, 2001, detonating perfectly. The soft target was destroyed, meeting an ORD requirement and confirming the corrections to the JASSM arming logic.

On December 15, 2001, DT-6 was launched against a Defense Intelligence Agency certified hardened target. The JASSM demonstrated exceptional navigation accuracy in the most severe weather conditions encountered to date. A perfect profile was flown, terminal accuracy and warhead detonation resulted in the target being destroyed, and the hardened target ORD requirement met.

We, in conjunction with AFOTEC, have modified the DT/OT and IOT&E test matrix due to the JCS mandated insertion of a SAASM GPS receiver. We are on schedule to incorporate SAASM into Lot 2. We have split both the DT/OT and IOT&E test phases to adequately test both the non-SAASM and SAASM configured missiles before Milestone III. We increased DT/OT tests from eight to ten in order to accomplish the split test program. The program has funding for the additional testing. The split test phases will have a minimal schedule impact. Milestone III moved from February 2003 to October 2003, but there is no impact to contract awards or deliveries.

## 8. (U) Threshold Breaches:

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a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	NO
Performance	No
Cost RDT&E	NO
Procurement	No
MILCON	NO
06M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Breach			
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current <u>Estimate</u>
Milestone O	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(Ch-1)
Lot II Contract Award	JAN 2002	JAN 2002	NOV 2002
Milestone III	JUL 2002	OCT 2003	OCT 2003(Ch-2)
RAA/B-52	SEP 2002	SEP 2002	SEP 2003(Ch-3)
RAA/F-16	DEC 2003	DEC 2003	DEC 2003

(U) The Approved Program represents the APB updated at the December 2001 LRIP decision.

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

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#### 9b. (U) Schedule (Cont'd):

b. Current Change Explanations --(U) (Ch-1) The LRIP Decision/Contract Award was changed from November 2001 to December 2001 to reflect the actual date of the decision. The Acquisition Decision Memorandum was signed on December 21, 2001.

(Ch-2) Milestone III reflects the objective date for the approved program. The date was moved from February 2003 to October 2003 to accommodate the two-phased Initial Operational Test and Evaluation program to include incorporation of the Joint Chiefs of Staff mandated Selective Availability Anti-Spoofing Module (SAASM). There is no impact to production contract awards or deliveries.

(Ch-3) The B-52 RAA has moved from February 2003 to September 2003 due to the restructure, continuing resolution new start limitations and the contract award moving from November 2001 to January 2002.

#### 10. (U) Performance Characteristics:

a. Performance --

	Development	Program (APB)	strated	Current
Nissile Operational Range (NM)	-(Ъ)(1)			
Missile Mission Effectiveness Carrier Operability Interoperability				
(b)(1)				

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## 10b. Net Performance Characteristics (Cont'd):

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b. Current Change Explanations -- None

## 11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
а.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	771.1	892.5	915.2
	Procurement	960.0	1623.4	1659.1
	Flyaway	(914.3)		(1577.4)
	Other Wpn System Costs	(45.7)		(81.7)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(0.0)
	Construction (MILCON)	18.4	18.4	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1995 Base-Year \$	1749.5	2534.3	2574.3
	Escalation	323.8	596.5	545.3
	Development (RDT&E)	(67.5)	(87.4)	(77.7)
	Procurement	(249.6)	(502.4)	(467.6)
	Construction (MILCON)	(6.7)	(6.7)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	2073.3	3130.8	3119.6

(U) Note: Procurement funding does not include Seek Eagle funding of \$11.9M (\$.8M in FY02, \$3.7M in FY03, \$1.5M in FY04, \$3.0M 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	88	88
Procurement	2400	<u>3700</u>	<u>3700</u>
Total	2469	3788	3788

(U) Note: Total Program Quantity includes 88 fully configured RDT&E units for EMD (82 for the Air Force and 6 for the Navy) LRIP quantities of 76 for Lot 1 and 100 for Lot 2 were approved.

c. (U) Foreign Military Sales -- None.

d. (U) Nuclear Costs --None.

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## JASSM, December 31, 2001

## 12. (U) Dnit Cost Summary:

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		UCR	Current	
		Baseline	Estimate	Percent
		(DEC_2001_APB)(Dec_	2001 SAR)	Change
a.	(U) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 1995 BY\$)	2534.3	2574.3	
	(2) Quantity	3788	3788	
	(3) Unit Cost	0.669	0.680	+1.64
ь.	(U) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1995 BY\$)	1623.4	1659.1	
	(2) Quantity	3700	3700	
	(3) Unit Cost	0.439	0.448	+2.05

(U) The increase in the Base Year 1995 unit prices is driven by the January 2002 inflation rates, which are lower than the 2001 rates. JASSM has Then Year firm fixed prices for their first five lots and the the remaining production lots prices are the result of price based acquisition estimating. The number of constant dollars required increases as inflation decreases while the current dollars remain the same.

#### 13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	838.6	1209.6	25.1	2073.3
Previous Changes:				
Economic	-32.8	-24.7	-	-57.5
Quantity	+16.2	-	-	+16.2
Schedule	+96.9	+55.9	-	+152.8
Engineering	-56.3	-	-	-56.3
Estimating	+29.4	-43.8	-25.1	-39.5
Other	-	-	-	-
Support	-	+12.4	-	+12.4
Subtotal	+53.4	-0.2	-25.1	+28.1
Current Changes:				
Economic	+6.0	-9.0	-	-3.0
Quantity	-	+712.6	-	+712.6
Schedule		+62.6	-	+62.6
Engineering		-	-	~
Estimating	+94.9	+115.3	~	+210.2
Other	-	-	-	-
Support		+35.8	-	+35.8
Subtotal	+100.9	+917.3	-	+1018.2
Total Changes	+154.3	+917.1	-25.1	+1046.3
Current Estimate	992.9	2126.7	-	3119.6

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## 13a. (U) Cost Variance Analysis (Cont'd):

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(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

[	RDT&E	PROC	MILCON	TOTAL
Development Estimate	771.1	960.0	18.4	1749.5
Previous Changes:				
Quantity	+14.7	-	-	+14.7
Schedule	+87.6	+24.5	-	+112.1
Engineering	-47.4	-	-	-47.4
Estimating	+6.5	-19.1	-18.4	-31.0
Other	-	-	-	-
Support	-	+9.3	-	+9.3
Subtotal	+61.4	+14.7	-18.4	+57.7
Current Changes:				
Quantity	~	+489.0	-	+489.0
Schedule	-	+64.1	-	+64.1
Engineering	-	-	-	-
Estimating	+82.7	+104.6	-	+187.3
Other	-	-	-	-
Support	-	+26.7	-	+26.7
Subtotal	+82.7	+684.4	-	+767.1
Total Changes	+144.1	+699.1	-18.4	+824.8
Current Estimate	915.2	1659.1	-	2574.3

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

(1)	RDT&E Revised escalation indices. (Economic)	N/A	+2.7
	Economic adjustment for negative program	N/A	+3.3
	Addition of Navy funds to integrate on the	+84.8	+97.0
	Adjustment for Current and Prior Inflation.	-2.1	-2.1
	(Estimating)		
	RDT&E Subtotal	+82.7	+100.9
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	-11.5
	Economic adjustment for negative program change (Economic)	N/A	+2.5
	Revised approved estimate at LRIP decision. (Estimating)	+104.6	+115.3
	The quantity profile for the first nine lots was revised. The quantities changed from 87, 92, 242, 347, 360, 360, 360, 360, 192 to 76, 100, 250, 360, 360, 292, 297, 302, 363. (Schedule)	+64.1	+62.6

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JASSM, December 31, 2001

## 13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

The JASSM quantity requirement incresed from	(Dollars i	n Millions)
2400 to 3700 at the LRIP decision. (Quantity)	<u>Base-Year</u>	<u>Then-Year</u>
Contractor support for four additional years	+489.0	+712.6
of production (non-flyaway). (Support)	+26.7	+35.8
Procurement Subtotal	+684.4	+917.3

## 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	Changes						PAUC		
Dev Est	c						Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.840	0.016	-0.100	+0.057	-0.015	+0.045		+0.013	-0.016	0.824

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes							PUC	
Dev Est								Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.504	-0.009	+0.016	+0.032		+0.019		+0.013	+0.071	0.575

## c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	OCT 2003
IOC	JUN 2001	SEP 2002	N/A	SEP 2003
Total Cost	811.3	2073.3	N/A	3119.6
Total Quantity	44	2469	N/A	3788
Prog Acg Unit Cost	18.4	0.8	N/A	0.8

#### 15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT <u>s</u> E (U) <u>JASSM</u> )	EMD:		Initial ( <u>Target</u> (	Contract Pr Ceiling	ice <u>Oty</u>
Lockheed Mart: F08626-96-C-0 Award: Novembe	in, Orlando, H 002, CPAF er 13, 1998	ΓL.	\$172.5	N/A	0
Definitized: 1	November 13, 1	1998			
Current	Contract Pric	ce	Estimated Pri	ice At Comp	letion
<u>Target</u> \$381.0	<u>Ceiling</u> N/A	Oty 0	Contractor \$419.0	Program \$4	<u>Manager</u> 32.4
			<u>Cost Variance</u>	Schedule V	ariance
Previous Cumu	lative Variand	ces	\$-7.9	\$-9.	3
Cumulative Var	riances To Dat	e (11/25/01)	<u>\$~13.1</u>	\$-5.	4
Net Change	e		\$-5.2	\$3.	9

#### Explanation of Change:

(U) The improved schedule variance is due to improved supplier hardware deliveries and maintaining an aggressive flight test schedule despite problems. The unfavorable cost variance is due to contract overrun driven by the Missile Control Unit (MCU), the JASSM Anti-Jam GPS Receiver (JAGR) and the actuators. Also, Lockheed manloading was not reduced as planned.

#### (U) Contract Comments:

Both scope growth and overrun account for the difference of \$209.5 million between the Initial Contract Price and the Current Contract Price. Included in the scope was the previously reported EMD six-month extension at the Milestone II decision, the addition of Selective Availability Anti-Spoofing Module (SAASM), thermal battery upgrade, development of low cost Dummy Air Training Missiles (DATMs) and GPS characterization. Cost growth has been experienced in SAASM integration, JASSM seeker Focal Plane Array (FPA) replacement and B-52 Operational Flight Program (OFP). An extension of ten months due to late hardware deliveries and the finalization of the production configuration occurred in 2000. This schedule extension caused increased costs in aircraft integration and planned personnel attrition rates. Increased award fee to incentivize the contractor to meet schedule contributed to the increased price at completion.

## 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY96-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-14)	Total
RDT&E	749.7	81.1	57.0	105.1	992.9
Procurement	0.1	43.9	50,5	2032.2	2126.7
MILCON	-	-	-	-	-
OeM	-	-	-	-	-
Total	749.8	125.0	107.5	2137.3	3119.6

b. Annual Summary -- JASSM

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				4.9	5.2
1999				1.7	1.8
2000				1.8	1.9
2001				1.8	2.0
2002				1.7	1.9
2003				13.1	14.9
2004				22.4	25.9
2005				23.7	27.8
2006				18.2	21.8
2007				12.2	14.9
Subtotal	6			101.5	118.1

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1995 Dollars Nonrec	Flyaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				26.7	27.6
1997				153.5	160.7
1998				155.4	163.8
1999				114.3	121.7
2000				142.7	154.4
2001				100.5	110.6
2002		1		70,8	79.2
2003				37.1	42.1
2004				7.6	8.8
2005				4.9	5.7
2006				0.2	0.2

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#### 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway FY 1995	Flyaway FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Subtotal	82			813.7	874.8

Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001				0.1	0.1
2002	76		35.3	38.9	43.9
2003	100		36.7	44.1	50.5
2004	250		78.5	87.3	101.8
2005	360		117.4	122.5	145.5
2006	360		117.6	122.7	148.6
2007	292		153.9	160.1	197.6
2008	297		152.6	159.2	200.1
2009	302		153.0	159.6	204.4
2010	363		179.1	186.1	242.9
2011	325		141.1	147.4	196.1
2012	325		139.2	145.5	197.1
2013	325		137.3	143.6	198.3
2014	325		135.7	142.0	199.8
Subtotal	3700		1577.4	1659.1	2126.7

(U) Note: Permission to spend \$150K for long lead material in FY01 was received. Required were receiver parts no longer being manufactured for the Lot 1 receivers. The configuration changes in Lot 2.

Procurement funding does not include Seek Eagle funding of \$11.9M. (\$.8M in FY02, \$3.7M in FY03, \$1.5M in FY04, \$3.0M in FY05, and \$2.9M in FY07).

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Navy	6			101.5	118.1
USAF	3782		1577.4	2472.8	3001.5
Grand Total	3788		1577.4	2574.3	3119.6

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## 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	10	10
	Procurement	0	0

- (U) Percent Total Program Quantities Delivered: 0.3%
- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 647
  - (U) Percent Total Program Expended: 20.7%
- (U) Expenditures reflect Program Office information as of 31 December 2002.

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The JASSM O&S estimate includes only Air Force requirements. The Navy requirements are not yet defined. The sustainment and readiness plan/estimate for JASSM has evolved to one of total Contractor Logistics Support (CLS). Previous classifications of sustainment functions have now been realigned to reflect this logistics strategy. A 15-year bumper-to-bumper warranty is assumed with a 20-year shelf life and the subsequent demilitarization of the weapon. The JASSM program office will function as the ALC. This estimate was prepared May 2001 for the LRIP program review.

There is no antecedent system for JASSM.

b. (0) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

	JASSM Per JASSM	N/A
Cost Element		
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	2.0	N/A
Sustaining Support	0.0	N/A
Indirect Costs	0.0	N/A
Total	2.0	N/A

Total OSS Cost	JASSM	N/A
BY\$ (In Millions)	246.0	N/A
TY\$ (In Millions)	397.4	N/A



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SELECTED ACQUISITION REPORT (RCS: DD-AGT (QGA) 823) MAR 2 1 2002



Threshold Breaches Schedule Performance Characteristics Total Program Cost and Quantity Unit Cost Summary 8 Cost Variance Analysis 9 Unit Cost and Other History 10 Contract Information 11 Program Funding Summary 12 Delivery/Expenditure Information 12 Operating and Support Costs 13

1. Designation and Nomenclature (Popular Name) : Crusader Field Artillery System, XM2001 (Self-Propelled Howitzer), XM2002 (Resupply Vehicle), XM2003 (Resupply Module)

2. DoD Component : Army

3. Responsible Office and Telephone Number : COL Russell J. Hrdy Project Manager Crusader Attention: SFAE-GCS-CR Building 171, 1st Floor

Assigned: July 13, 2001 DSN 880-4588; COMM 973/724-4588 hrdy@pica.army.mil

4. Program Elements/Procurement Line Items : RDT&E: PE 63645A Project D409, DB88 PE 63854A Project D505, DC68 PE 64854A Project D2KT, D503

Picatinny Arsenal, NJ 07806-5000

## 5. References:

SAR Baseline (Planning Estimate) : DAE approved Acquisition Program Baseline (APB) dated January 4, 1995.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated December 18, 2000.

#### 6. Mission and Description :

Crusader will be the Army's principal fire support system providing direct and general support fires to the maneuver forces on the future battlefield. Crusader consists of the Self-Propelled Howitzer (SPH), XM2001, the Tracked Resupply Vehicle (RSV-T), XM2002, and the Wheeled Resupply Vehicle (RSV-W). The SPH and RSV(T) share a common chassis; the RSV-W is comprised of a Pallatized Load System (PLS) Truck and the Crusader Resupply Module (RSM), XM2003. The Crusader responds to the battlefield deficiencies identified in the Close Combat Battlefield Functional Mission Area and the Fire Support Battlefield Functional Mission Area and fulfills the need for an indirect fire weapon system that has increased range and can survive through autonomous operations.

Crusader's SPH will provide close, tactical, and operational fires during offensive and defensive operations. It will provide significantly increased lethality over the current M109-Beries fleet; provide increased rate-of-fire, hold more ammunition, be more responsive and survivable on the battlefield, with reduced manpower requirements; be deployable worldwide via the C-17 and C-5B aircraft, and, provide for forward maintenance, and employ future maintenance concepts.

The companion vehicles to the SPH will be Crusader's RSV-T and RSV-W. Both RSVs will sustain the SPHs with ammunition and fuel as it provides close, tactical, and operational fires. The RSV will be a self-propelled tracked (RSV-T) or wheeled (RSV-W) vehicle, depending on the operational scenario and threat protection required. The RSV automates resupply functions, providing increased payload capability and increased survivability while reducing manpower requirements. The RSV enables the SPH to achieve increased lethality and independent mission execution. The Crusader system is deployable worldwide via the C-17 or C-5, with any combination of two vehicles transportable in either aircraft. The Crusader system provides for forward maintenance and future maintenance concepts.

Crusader will be fielded to the Counterattack Corps in support of the Legacy Force. As the Army transitions to the Objective Force, Crusader will support and complement the organic, indirect capabilities of the Future Combat System (FCS). For this reason, the Army has designated Crusader as a Legacy-to-Objective Force System, as it will be the primary indirect fire support system to the Objective Force.

Transformation will take time...at least three decades and Crusader will remain

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#### 6. Mission and Description (Cont'd) :

in the force through 2032 and beyond. FCS will involve a spiral acquisition strategy where technologies are added in blocked upgrades. Crusader will play a key role in the objective forces unit of employment throughout the FCS evolution. Additionally, Crusader will provide a critical technological and operational bridge to the Objective Force. Crusader's fielding will enable the Army to fully exploit the adaptation of automation, robotics and information exploitation in lieu of soldier-performed tasks. Crusader's objective force characteristics will provide essential insight into the doctrinal and tactical ramifications of these advance technologies and capabilities.

Deployability, coupled with rapid sensor-to-shooter links to other joint sensors, high rate of fire at sustained rates, and precision accuracy all combine to allow a paradigm shift in the way the Army Joint Force fight. One, two, or three Crusaders can now be tailored into highly lethal packages providing critical and responsive support across the full spectrum of missions, including early entry, urban, and operations other than war scenarios. Paladin and foreign systems lack the mobility, range, rate-of-fire, and manpower effectiveness of Crusader. Crusader provides a unique combination of versatility, lethality, and precision - the fire support foundation for a capabilities-based force playing a decisive role in virtually any future war or contingency operation.

#### 7. Executive Summary :

The Principal Deputy Under Secretary of Defense (Acquisition & Technology) signed the Acquisition Decision Memorandum in fiscal year 1995 which approved Crusader to proceed into Program Definition and Risk Reduction (PDRR) phase. The ADM directed the Army plan for a Milestone II (currently referred to as MS B) DAB or equivalent review, incorporating as many acquisition reform measures as practical. MS B is scheduled for April 2003 at which point the development effort will transition into the System Development and Demonstration (SDD) phase.

In early fiscal year 1995, the Army entered into a contract to initiate the Program Definition and Risk Reduction. This effort included requirements analysis, concepting, design, fabrication, testing and delivery of two prototype Crusader systems (two self-propelled howitzers and two resupply vehicles).

In March 1996, the Army changed the armament system for Crusader from a liquid propellant-based to a solid propellant-based system. The solid propellant system selected by United Defense was the congressionally directed Crusader backup armament system developed by the Army Tank-automotive and Armaments Command (Picatinny Arsenal, New Jersey) and Benet Weapons Laboratory (Watervliet, New York). This change was made with due consideration given to the potential benefits of liquid propellant and the technical performance, schedule, and cost risks associated with the development and weaponization of that technology. The PDRR contract was refocused addressing necessary requirements, maturation, and development efforts for a solid propellant-based Crusader.

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## 7. Executive Summary (Cont'd) :

In fiscal year 1999, the Crusader program began a significant restructuring effort in accordance with the Army's Transformation initiative for a lighter weight, more rapidly deployable force. As a result, Crusader's two existing vehicles, the tracked self-propelled howitzer (XM2001), and the tracked resupply vehicle (XM2002) were redesigned, reducing vehicle weight by twenty tons per vehicle (from 60 tons to 40 tons). Additionally, half of the 480 systems' tracked resupply vehicles were replaced with a wheeled resupply vehicle consisting of a resupply module (XM2003) mounted on a Pallatized Load System Truck. The wheeled variant provides the Crusader with a less expensive resupply option for low-threat, benign terrain operations. The Army was successful in significantly reducing the system's weight while maintaining all key performance parameters.

Concurrent with the transformation efforts, the Army incorporated a new engine and reduced the PDRR prototype quantities implementing maximum use of modeling and simulation:

- The first self-propelled howitzer prototype delivered in the original PDRR program was converted to a firing platform for use at Yuma Proving Grounds. The test firings are providing very valuable reliability data on the solid-propellant armament system, automated resupply components, and the necessary software algorithms. To date, Crusader's firing platform has fired in excess of 4300 rounds, demonstrating the ability to meet the key performance parameters of range (40 kilometers) and rate-of-fire (10 rounds per minute), and increasing subsystem reliability. Other subsystems, including interim software releases, are being modeled and assembled in the contractors' system integration and virtual integration laboratories.

- The Army discontinued the development effort of the planned diesel engine and transmission because of weight penalties and performance shortfalls, respectively. Crusader's new powerpack now incorporates a turbine engine which is being developed as a common engine with the Abrams Tank (jointly funded), referred to as the Abrams-Crusader Common Engine (ACCE). The ACCE will provide Crusader with better performance, lower operation and support costs, reduced weight, and reduced logistical burdens.

Crusader's current development contract engages the expertise of United Defense Armament Systems Division (Minneapolis, Minnesota) as prime contractor, and United Defense Ground Systems Division (San Jose, California), General Dynamics Land Systems (Muskegon, Michigan and Sterling Heights, Michigan), General Dynamics Armament Systems (Burlington, Vermont), Raytheon (Fort Wayne, Indiana and El Segundo, California), Honeywell (Clearwater, Florida and Albuquerque, New Mexico), Alliant (Hopkins, Minnesota), and Electronic Data Systems (Herndon, Virginia) as major subcontractors. The Army Tank-automotive and Armaments Command (TACOM) provides the armament development effort to United Defense, the prime development contractor, through a Memorandum of Agreement between the two parties. The ACCE is being developed via a contract between the Army and Honeywell (Phoenix, A2) with General Electric (Lynn, MA) as a major sub-contractor. All development efforts are based upon streamlined acquisition initiatives, and integrated product development with the team consisting of each of the contractor players, the Tank-automotive and Armaments

## 7. Executive Summary (Cont'd) :

Command, the Army's Project Management Offices for Crusader (Picatinny Arsenal, New Jersey) and Abrams (Warren, MI), and the Training and Doctrine Command System Manager (Ft. Sill, Oklahoma).

The PM's Current Estimate current supports the restructured program.

## 8. Threshold Breaches :

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a. Acquisition Program Baseline (APB):

	Item	j Breach
Schedule		NO
Perfor	mance	No
Cost -	- RDTLE	NO
	- Procurement	NO
-	- MILCON	NO
_	- 0&M	NO
-	- Program Acquisition Unit Cost (PAUC)	NO
-	<ul> <li>Average Procurement Unit Cost (APUC)</li> </ul>	No

b. Nunn-McCurdy Unit Cost:

	Breach		
Program Acquis	ition Unit	Cost	No
Average Procur	ement Unit	Cost	No

## 9. Schedule:

a. Milestones --

		Plar	nning	Appi	roved	Curi	rent
	Es	timat	e (SAR)	Progra	am (APB)	Est	imate
ORD Approval		JUN	1993	JUN	1993	JUN	1993
Milestone I ASARC		OCT	1994	OCT	1994	OCT	1994
Milestone I DAB Review		NOV	1994	NOV	1994	NOV	1994
Development Phase I & II Contract	Award	JUN	1995	DEC	1994	DEC	1994
First Prototype Delivered		OCT	1999	N/A		N/A	
Early User Test							
Start		OCT	1999	N/A		N/A	(Ch-1)
Complete		JAN	2000	N/A		N/A	(Ch-1)
EMD Continuation Decision		N/A		N/A		N/A	
Phase III Contract Award		APR	2000	N/A		N/A	(Ch-1)
Critical Design Review (CDR)		JUN	2000	N/A		N/A	
Milestone II		APR	2000	APR	2003	APR	2003
First Pre-Production Delivery		APR	2002	N/A		N/A	
Pre-Production Qualification Test							
Start		APR	2002	OCT	2004	OCT	2004
Complete		JUL	2003	JUL	2006	JUL	2006

Crusader, December 31, 2001

## 9a. Schedule (Cont'd) :

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	Planning	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
LRIP	AUG 2003	FEB 2006	FEB 2006
LRIP Contract Award	OCT 2003	N/A	N/A (Ch-1)
LRIP First Delivery	OCT 2004	N/A	N/A
IOT&E			•
Start	JAN 2005	NOV 2007	NOV 2007
Complete	APR 2005	JAN 2008	JAN 2008
First Unit Equipped (FUE)	JUL 2005	APR 2008	APR 2008
Organic Support Capability	SEP 2005	N/A	N/A
Milestone III	OCT 2005	OCT 2008	OCT 2008
Full Rate Production Contract Award	OCT 2005	N/A	N/A (Ch-1)
Service Depot Support Date	DEC 2006	N/A	N/A
First Full Rate Production Delivery	FEB 2007	N/A	N/A

b. Current Change Explanations --

(Ch-1) The APB approved 18 December 2000, restructured the program and the milestones listed below are no longer being tracked. Their current estimates changed, as follows:

Milestone	From	To
Sarly User Test		
Start	TBD	N/A
Complete	TBD	N/A
Phase III Contract Award	May 03	N/A
LRIP Contract Award	Mar 06	N/A
Full Rate Production Contract Award	Nov 05	N/A

# 10. Performance Characteristics : a. Performance --

	Planning Estimate (SAR)	Ar Progr Obj/T	proved am (APB hreshol	d d	Demon- strated <u>Perf</u>	Current Estimate	2
AFAS Maximum mata of fina	12 605		,		30.4	20 1 12	
(rds/min)	3-5 mins		/		10.4	rds for 3-5 minutes	
Maximum range assisted (km)	50		/ N/A		40.1	40	
Cross Country Mobility (with rolling resis- tance of 90 kg per metric ton) (km/hr)	48		/		TBD	53	(Ch-1)
Highway Mobility (or level hard surface) (km/hr)	n 78	78	/ 67	•	TBD	67	

#### 10a. Performance Characteristics (Cont'd) :

Mean Time Between System Abort (MTBSA) (hrs)	Planning Estimate (SAR) 68	Apr Progra Obj/Th 68	510 1m 116 7	oved (APB) eshold 62	Demon- strated <u>Perf</u> TBD	Current <u>Estimate</u> 68	
Rearm AFAS	60 complete rds in less than 12 mins	48 complete rds in less than 10.4 mins	1111111	48 complete rds in 10.4 mins	TBD	46	(Ch-2)
Cross Country Mobility (with rolling resis- tance of 90 kg per metric ton) (km/hr)	48	48	/	39	TBD	53	(Ch-1)
Highway Mobility (on hard surface road) (km/hr)	1 78	78	/	67	TBD	67	
Mean Time Between System Abort (MTBSA)	116	116	/	104	TBD	116	

b. Current Change Explanations --

(Ch-1) The Current Estimate for cross country mobility has increased for the self-propelled howitzer (formerly referred to as AFAS) and the tracked resupply vehicle (formerly referred to as FARV) from the previously SAR. The projected increase, from 47 km/hr to 53 km/hr, is a result of the incorporation of the new powerpack consisting of the Abrams-Crusader Common Engine and Allison X5060 Transmission.

(Ch-2) The rearm parameter did not change. The quantity was adjusted from 60 to 48 rounds to reflect the lesser quantity of on-board ammunition. However, the rate of transfer remained the same.

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## 11. Total Program Cost and Quantity (Dollars in Millions):

		Planning	Approved	Current
a. (	Cost	Estimate (SAR)	Program (APB)	Estimate
I	Development (RDT&E)	2357.0	3751.2	3815.0
Ŧ	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)		
0	Construction (MILCON)	0.0	N/A	0.0
1	Acquisition O&M	0.0	N/A	0.0
2	Total FY 1995 Base-Year \$	2357.0	3751.2	3815.0
E	Escalation	423.0	439.5	471.3
	Development (RDT&E)	(423.0)	(439.5)	(471.3)
	Procurement	(0.0)	(N/A)	(0.0)
	Construction (MILCON)	(0.0)	(N/A)	(0.0)
	Acquisition O&M	(0.0)	(N/A)	(0.0)
2	Total Then Year \$	2780.0	4190.7	4286.3
b. (	Quantity			
De	evelopment (RDT&E)	0	11	1:
Pr	rocurement	N/A	<u>N/A</u>	N/A
TC	otal	N/A	11	11

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c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary :

Not required for Pre-Milestone B programs in accordance with Section 2433, Title 10, USC.

## 13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTSE	PROC	MILCON	TOTAL
Planning Estimate	2780.0	-	-	2780.0
Previous Changes:			and the second s	
Economic	-252.2	-	- 1	-252.2
Quantity	+140.0	- 1		+140.0
Schedule	+675.6	-	-	+675.6
Engineering	+936.2	-		+936.2
Estimating	+22.7	-	-	,22.7
Other		-	-	
Support		-	-	
Subtotal	+1522.3	-	-	+1522.3
Current Changes:				
Economic	+18.3	-	-	+18.3
Quantity	-	-		-
Schedule	-	-	-	-
Engineering	-	-		-
Estimating	-34.3	-	-	-34.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-16.0	-	-	-16.0
Total Changes	+1506.3	-	-	+1506.3
Current Estimate	4286.3	-		4286.3

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

The second	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2357.0	-	-	2357.0
Previous Changes:				
Quantity	+118.6	-	-	+118.6
Schedule	+582.4	-	- 1	+582.4
Engineering	+780.6	-	-	+780.6
Estimating	+5.5		- 1	+5.5
Other	-			-
Support		- 1	-	
Subtotal	+1487.1	-		+1487.1
Current Changes:			-	
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-29.1	-	-	-29.1
Other ,	-	-		
Support			-	•
Subtotal	-29.1	-	-	-29.1
Total Changes	+1458.0	-	-	+1458.0
Current Estimate	3815.0	- 1	-	3815.0

Crusader, December 31, 2001

## 13b. Cost Variance Analysis (Cont'd) :

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b. Current Change Explanations --

(1)	RDT&E	(Dollars in <u>Base-Year</u> T)	Millions) <u>hen-Year</u>
,	Revised escalation indices. (Economic)	N/A	+16.6
	Economic adjustment for negative program change. (Economic)	N/A	+1.7
	Adjustment for Current and Prior Inflation. (Estimating)	-8.0	- 9.2
	Distributed congressional reductions (Estimating)	-21.1	-25.1
	RDT&E Subtotal	-29.1	-16.0

## 14. 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. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
1	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	NOV 1994	N/A	N/A	NOV 1994
Milestone II	APR 2000	N/A	N/A	APR 2003
Milestone III	OCT 2005	N/A	N/A_	OCT 2008
FUE	JUL 2005	N/A	N/A .	APR 2008
Total Cost	2780.0	N/A	N/A	4286.3
Total Quantity	N/A	N/A	N/A	11
Prog Acq Unit Cost	N/A	N/A	N/A	389.7

Note: Unit Cost is based on RDT&E cost and quantity only.

## 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E Crusader Ph I/II Develop:	Initial <u>Target</u>	Contract Pr Ceiling	ice <u>Qty</u>
United Defense, Minneapolis, MN DAAE30-95-C-0009, CPIF/AF	\$61.4	N/A	0
Definitízed: January 29, 1997			
Current Contract Price	Estimated Pr	rice At Comp	letion
TargetCeilingOty\$1781.5N/A1	Contractor \$1829.3	Program \$18	Manager 330.9
	Cost Variance	Schedule V	ariance
Previous Cumulative Variances	\$-8.6	\$O.	0
Cumulative Variances To Date (12/28/01) Net Change	<u>\$-31.7</u> \$-23.1	\$-9. \$-9.	4

## Explanation of Change:

The contract was definitized on September 27, 2001 to reflect the lighter weight Crusader system. The net change (previously reported in the 1999 SAR) in the cumulative cost variance is primarily the result of prime definitization of subcontracts, increases in forward pricing rate agreements, and overtime efforts to maintain the software development schedule. The net change in the schedule variance does not pertain to critical path activities; and the effort is planned to come in on schedule to support Milestone B.

## 16. Program Funding Summary (Current Estimate in Millions of Dollars):

#### a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY94-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-10)	Total
RDT&E	1687.7	483.4	475.6	1639.6	4286.3
Procurement	-	-	-	-	-
MILCON	-	~	-	-	-
0&M	-	-	-	-	-
Total	1687.7	483.4	475.6	1639.6	4286.3

## 16b. Program Funding Summary (Cont'd) :

b. Annual Summary -- Crusader

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal		Flyaway FY 1995 Dollars	Flyaway FY 1995 Dollars	Total	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
1994				3.8	3.8
1995				64.0	65.0
1996			1	175.6	181.5
1997			a contraction of the second	221.4	231.5
1998				285.7	301.2
1999				281.7	300.5
2000				242.0	262.2
2001				310.5	342.0
2002				432.2	483.4
2003				418.0	475.6
2004				392.1	454.0
2005				360.3	425.0
2006	1			415.0	498.8
2007				162.7	199.3
2008				42.1	52.5
2009				7.5	9.5
2010				0 4	0.5
Subtotal	11			3815.0	4286.3

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		Flyaway Dollars	Flyaway Dollars	Total Program	Total Program
1	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	11			3815.0	4286.3

## 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): \$ 1778.8
 Percent Total Program Expended: 41.5%

Crusader, December 31, 2001

## 18. Operating and Support Costs :

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Not applicable for Pre-Milestone B programs.

Report Creation Date: 3/25/2002 1:55:39 PM
# AF-15 JPATS

## *** UNCLASSIFIED ***

## SELECTED ACOUISITION REPORT (RCS: DD-AGT(06A)823) PROGRAM: JPATS

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AS OF DATE: December 31, 2001

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 Building 11A Room 2011 1970 Monahan Way WPAFB, OH 45433-7211

Assigned: April 4, 2001 DSN 674-4291; COMM (937) 904-4291 Toni.Arnold@wpafb.af.mil 4. Program Elements/Procurement Line Items:

COL TONI A. ARNOLD

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CONGRESSIONAL

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

RDT&E: PE 0603208N PE 0604233F (Shared) **PROCUREMENT:** APPN 3010 ICN 0804740F (Air Force) APPN 1506 ICN 0804745N (Navy) MILCON: PE 0804741F PE 0805796N

- 1 -*** UNCLASSIFIED ***

02. C-0409

## 5. <u>References</u>:

SAR Baseline (Development Estimate): DAE Approved Acquisition Program Baseline dated 04 August 1995

<u>Approved Program / Production Estimate (PdE)</u>: CAE Approved Acquisition Program Baseline (APB) dated February 12, 2002.

#### 6. Mission and Description:

The Joint Primary Aircraft Training System (JPATS) is a USAF/USN program to replace USAF'S T-37B aircraft, USN'S T-34C aircraft, and the associated Ground Based Training Systems (GBTS). The aircraft and GBTS will be used to train entry-level students in the fundamentals of flying so they can transition into advanced training tracks leading to qualification as military pilots, navigators, and Naval Flight Officers.

The program represents a systems approach to aviator training requiring the purchase of air vehicles (782 production units), aircrew training devices (122), associated ground based training devices, an integrated training management system, instructional courseware, and contractor logistic support. The USAF will train at 6 bases and the USN at 3 bases. Each operational training location will be equipped with a full complement of operational flight trainers, instrument flight trainers, unit training devices and egress training devices. Courseware is being developed for the T-6A and converted from existing courseware for other platforms where appropriate. The Training Integrated Management System (TIMS) will provide a training and scheduling capability which will tie the efforts and activities of all AETC and CNATRA operating locations together.

The USAF will have contractor logistics support for most of the off-aircraft equipment maintenance. The on-equipment maintenance will be performed by third party contractor or organically supported. The USN will employ total contractor logistics support (CLS) for the entire aircraft. The GBTS will be a total contractor logistic support effort for both services.

#### 7. Executive Summary:

January 3, 2001: System Level Formative Evaluation (SLFE) started on schedule at Randolph Air Force Base (AFE) and was completed on May 10 (as scheduled). Air Education and Training Command (AETC) reported that students were 2 to 3 days (25%) ahead of schedule in the pre-solo phase when compared to current T-37 training operation.

January 12, 01: The combined Air Force Operational Test and Evaluation Center/Navy Operational Test and Evaluation Force (AFOTEC/OPTEVFOR) test team released the final Multiservice Operational Test and Evaluation (Aircraft) (MOT&E(A)) test report. This report identified three areas that needed improvement: (1) Maintenance fault isolation manuals, (2) Ultrahigh Frequency (UHF) radio intermittent reception, and (3) Inadequate Environmental Control System (ECS) performance at high ambient air temperatures. The System Program

JPATS, December 31, 2001

#### 7. Executive Summary (Cont'd):

Office (SPO) identified a plan to correct all of these deficiencies outlined below.

Maintenance Manuals: The maintenance manuals were updated in December 2000, June 2001, and December 2001. We expect incremental improvement as the user becomes more familiar with the system. The SPO has allocated funds for periodic updates.

ECS Cooling: Raytheon Aircraft Company (RAC) replaced the ECS system with a new system that doubles cooling capacity and improves distribution of cooling air in the cockpit. Contract negotiations are underway to begin retrofit and production cut in during the first half of Calendar Year (CY)02.

UHF Radios: RAC and Patuxent River developed and tested a number of solutions to the UHF drop out problem. The solution which the SPO will implement includes a second "UHF Only" antenna located on the top of the aircraft and a switching unit between the UHF antennae. This solution corrected all problems with UHF reception during testing. The SPO plans to begin including the fix into production aircraft with PT-80 in June of 2002. Retrofits will begin shortly thereafter.

January 17, 2001: Air Force Program Executive Officer for Airlift and Trainers (AFPEO/AT) chaired the Acquisition Strategy Panel (ASP) which approved the follow-on acquisition strategy for 216 T-6As and 36 aircrew training devices (ATDs). The strategy is to award a commercial Federal Acquisition Regulation (FAR) Part 12 sole source contract to RAC. This was the most efficient way to maintain product quality at a reasonable price.

January 31 ,2001: Based on MOT&E(A) findings, the SPO issued a Program Deviation Report on advising that the time to resolve identified issues would preclude meeting the Milestone III review as scheduled.

The Assistant Secretary of the Air Force decided to postpone the Milestone III review until November 2001 to provide the opportunity to thoroughly address the SPO's responses to the findings of the MOT&E(A) report prior to making a full rate production decision. Development and test of an improved ECS system, resolution of the UHF radio problem, and improvement of maintainability/supportability data were added as additional Milestone II exit criteria. Concurrently, the Assistant Secretary of the Air Force increased Low Rate Initial Production (LRIP) maximum quantity from 108 aircraft to 170 aircraft to permit exercise of the Lot 8 option.

March 12, 2001: A revised Acquisition Program Baseline (APB) was approved which established November 2001 as the new Milestone III objective with a threshold of May 2002. Other 'Fact-of-Life' changes were incorporated into the new APB including revising aircraft and Ground Based Training System (GBTS) quantities to reflect Operational Requirement Document (ORD) quantities (aircraft increase from 712 to 783 and ATDs increased from 109 to 122), and updating program costs to reflect implementation of Joint Estimating Team (JET) recommendations.

## 7. Executive Summary (Cont'd):

Funding Issues: The program had two Department of Defense (DoD) policy directives during the year. The first deferred further Navy procurement until Fiscal Year (FY)07, which reduced \$53.5 million of the "proposed" cost savings from the JET estimates over the Future Year Defense Plan (FYDP). In addition, the Air Force removed \$60M because of JET estimates of overall program costs. The program recommended to HQ AETC that they transfer initial spares funding to the production account to cover the unit cost increase.

Additional Requirements: RAC completed T-6A icing tests. The T-6A successfully met the ORD requirement of climbing or descending through a layer of light rime icing.

July 20, 2001: The second contractor dry run of the Training Integration Management System (TIMS) was completed. Seventy-seven percent of requirements passed. The third contractor dry run was completed on August 17, 2001. Over 84% of requirements passed testing during the dry run.

August 1, 2001: A T-6A aircraft experienced a seized engine in flight. The aircrew executed an uneventful dead-stick landing at Randolph AFB. Post flight analysis determined that the incident aircraft experienced a drop in oil pressure during a 9-turn aggravated spin (exceeded operational limit ~ 8 turns max), and a seized engine shortly thereafter. The SPO recommended that aggravated spins be temporarily limited to six turns and that aircrew members keep the aircraft within defined operational limits. The SPO issued an Interim Safety Supplement on December 10, 2001 with oil system and maneuver limitations.

Delivery Schedule: Parts shortages affected aircraft deliveries during the year, however, the full complement of aircraft was in place at Randolph AFB in August 2001 as scheduled, and there was no impact on the start of student training at Moody AFB in October. The program was on delivery schedule at the end of the year with the delivery of the 56th aircraft on December 28, 2001.

October 10, 2001: The first class started JPATS training at Moody AFB.

November 6, 2001: A landing gear unsafe indication resulted in an intentional gear up landing on at Moody AFB. The root cause was determined to be a failed main landing gear door tie pushrod end. The swaged fitting at end of pushrod failed, resulting in the stuck door that inhibited gear deployment. The SPO and Raytheon issued a Service Instruction to conduct a fleet wide inspection. No other pushrod ends were found to be defective. The contractor is also reviewing the vendor quality assurance process and is looking at redesigning the pushrod to eliminate this potential failure point.

November 6, 2001: Milestone III decision meeting pre-briefing resulted in a verbal Milestone III approval. Acquisition Decision Memorandum (ADM) confirming the decision was dated December 3, 01.

December 28, 2001: The production contract for aircraft Lots 9 through 13 was awarded. The first option on this contract included 40 air vehicles, technical

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JPATS, December 31, 2001

### 7. Executive Summary (Cont'd):

manual update, 2 Operational Flight Trainers, 2 Instrument Trainers, fire/familiarization training, dedicated contractor support and data.

December 31, 2001: AETC reported Mission Capable (MC) rates of 91.7% and 94.8% for Randolph AFB and Moody AFB, respectively. As the system matures this is the first time that both operational bases exceeded the ORD MC rate objective. Another logistics metric, the 'Maintenance Man Hour Per Flight Hour' data continues to improve. This objective has values specified for Operational Readiness Verification (ORV) and Full Operational Capability (FOC) (4.25 and 3.0, respectively) to reflect maturating of the system. Data for both Moody and Randolph AFBs already exceed the more stringent FOC objective.

Aircrew Training Devices (ATDs): (Functional Configuration Audit (FCA)/Physical Configuration Audit (PCA) is nearing completion with only 25 (none significant) of 382 items remaining open. Of the 83 Discrepancy Reports (DRs) reported by the operational test community during MOT&E(I), only 23 remain open. Ten (10) of those will be transferred to the Modification and Update Support System (MUSS) for correction. All required devices have been delivered and installed at Moody AFB. The last suite also included the Vital IX image generator. Transition to the Vital IX for other simulators at Moody AFB will conclude at the end of February while transition of the Randolph AFB devices will occur in the April timeframe. Lastly, the program is on track to deliver 1 Operational Flight Trainer (OFT), 1 Instrument Flight Trainer (IFT), and 2 Unit Training Device (UTD) sets to Laughlin AFB in May 2002. Installation of the third suite of simulators and the new Vital IX image generators at Moody AFB were delivered in November 2001. AETC's new requirement to add Hondo airport to Randolph Visual Database is being accomplished using the MUSS at no additional cost to the Government.

Operational Support Segment (OSS): In-Plant Formal Qualification Testing (FQT) for the Training Integration Management System (TIMS) was conducted November 6 - 20, 2001. Ninety-four (94) percent of the requirements were tested of which, 89% successfully passed. The other requirements (6%) will be tested during On-Site FQT. During In-Plant FQT, a significant number of Test Problem Reports (TPRs) were identified. Using this data, a new schedule for the completion of TIMS was developed and briefed to the users. This revision projects On-Site testing to occur April 8 - 26, 2002 with a delivery date in mid-May 2002. The additional timeline includes correction of the most important TPRs, addressing of requirements from the industry Software Development Plan (SDP), and close-out of FCA/PCA. The SPO and AETC have identified the necessary funds to complete the development effort.

Courseware: All development courseware (Joint Primary Pilot Training (JPPT), Pilot Instructor Training (PIT), and Administrative) has been completed.

The JPPT and PIT courses, delivered in late July 2001, are currently in use at Moody AFB and Randolph AFB respectively. Feedback on the courseware is being gathered and collated into a database for further review and corrective action if necessary.

## 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 --

	Devel	opment	Appı	coved	Curi	rent
	<u>Estimat</u>	e (SAR)	Prog	<u>am:PdE</u>	Est	mate
Milestone 0/I	JAN	1993	N/A		JAN	1993
Milestone II	AUG	1995	N/A		AUG	1995
Low Rate Initial Production Option	FEB	1995	N/A		N/A	
(LRIP) Exercise Award						
Aircraft Critical Design Review (CDR)	NUL (	1996	JUN	1996	NOV	1996
Start MOT&E	N/A		APR	2000	JUN	2000(Ch-1)
Milestone III	SEP	1999	NOV	2001	DEC	2001(Ch-2)
AF Req'd Asset Availability	N/A		JUN	2002	JUN	2002(Ch-3)
Navy Req'd Asset Availability	N/A		AUG	2003	AUG	2003(Ch-3)

## b. Current Change Explanations --

(Ch-1): Multi-service Operational Test and Evaluation (MOT&E) delay was due to late delivery/acceptance of the aircraft designated for the evaluation. Changed from April 2000 to June 2000

(Ch-2): Verbal Full Rate Production Decision on November 6, 2001. Acquisition Decision Memorandum was dated December 3, 2001. Changed from November 2000 to December 2001.

(Ch-3): Required Asset Availability (RAA) dates for the USAF (June 2002) and USN (August 2003) are substituted for Initial Operational Capability (IOC) dates for both services. The rationale for the substitution is that IOC is declared at the discretion of the operating commands after RAA and could be delayed based on operational considerations beyond the control of the acquisition community. RAA is directly controlled by the acquisition

## 9b. Schedule (Cont'd):

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community. RAA is driven by TIMS delivery. This is a new milestone. No change data included.

## 10. Performance Characteristics:

a. Performance --

Syllabus Maneuvers Mission Profiles (Contact, Familiarization, Precision Aero- batics, Instrument, and Navigation - High and Low)	Development <u>Estimate (SAR)</u> Accomp- lish all five mission profiles	Appro Program Obj/Thre Accomp- / lish all/ five / mission / profiles/	oved m;PdE <u>eshold</u> Accomp- lish all five mission profiles	Demon- strated <u>Perf</u> Demonst- rated all five mission profiles	Current Estimate Demonst- rated all five 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/ sym- / metric / /	+6 to -3 sym- metric; +4 to 0 asym- metric	+7 to -3.5 sym- metric +4.6 to -1 asym- metric	+7 to -3.5 sym- metric +4.6 to -1 asym- metric
Pressurization (PSI Differential)	5.0	5.0 /	3.5	3.5	3.5
Bird Strike Capabil- ity (4 1b bird, no catastropic damage) (KTAS)	Max Low Airspeed	Max Low / Airspeed/	270	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- / pared / surface /	Runway	Runway	Runway
Anthropometric Accommodation (Sitting Height in inches)	31.0 to 40.0	31.0 to / 40.0 /	32.8 to 40.0	31.0 to 40.0	31.0 to 40.0
Cockpit Configuration	able to be operatio nally	Inter- / change- / able / Instruc-/	Yes	Inter- change- able Instruc-	Inter- change- able Instruc-

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# 10a. Performance Characteristics (Cont'd):

		Approved	Demon-	
	Development Estimate (SAR)	Program; PdE	strated	Current
	flown	tor/ /	tor/	tor/
	from	Student /	Student	Student
	either	,		
	cockpit			
Cockpit Seating	0 Degree	0 / Stepped	d Stepped	Stepped
Configuration	Over-the	DEGREES / Tandem	Tandem	Tandem
	-Nose	OVER-THE/		
	Visi-	NOSE /		
	bility	VISIBILI/		
	from the	TY FROM /		
	Rear	THE REAR/		
	Cockpit	COCKPIT /		
	at	AT / DESTON /		
	Design	EVE /		
	Height	HEIGHT /		
Exterior Noise	FAR Part	FAR Part/ FAR Par	t FAR Part	FAR Part
	36, Most	36, Most/ 36, Mos	st 36, Most	36, Most
	Restric-	Restric-/ Restrie	- Restric-	Restric-
	tive	tive / tive	tive	tive
	App-	App- / App-	App-	App-
	licable	licable / licable	e licable	licable
	Standard	Standard/ Standa:	rd Standard	Standard
Takeoffs/Touch &	4000	4000 / 5000	4000	4000
Go/Land (WX, Weight,				
Main Operating Pages				
/Punway Longth - FT)				
TFR Certified	A11	All / TER	TFR	TFR
Instrumentation	Digital	Digital / Cert-	Cert-	Cert-
	except	except / ified	ified	ified
	Backups	Backups / (Selec	t- (Select-	(Select-
	-	/ able	able	able
		/ EADI/E	HS EADI/	EADI/
		/ I)	EHSI)	EHSI)
Visual System For	Yes	YES / Provid	e Provide	Provide
IFT/OFT		/ a visu	al a visual	a visual
		/ field /	or rield or	field of
		/ View	View	view
		/ commen	rate	rate
		/ with t	he with the	with the
		/ JPPT	JPPT	JPPT
		/ syllab	us syllabus	syllabus
		/ traini	ng training	training
		/ requir	em requirem	requirem
		/ ents	ents	ents

## 10a. Performance Characteristics (Cont'd):

Demonstrated performance for JPATS meets or exceeds all Key Performance Parameters.

b. Current Change Explanations -- None

## 11. Total Program Cost and Quantity (Dollars in Millions):

	Development	Approved	Current
a. Cost	Estimate (SAR)	Program: PdE	<u>Estimate</u>
Development (RDT&E)	343.9	289.2	289.8
Procurement	2674.9	4177.1	4244.7
Navy	(882.9)		(1436.8)
Air Force	(1042.3)		(1895.5)
Total Flyaway	(1925.2)		(3332.3)
Navy GBTS	(175.2)		(166.2)
Air Force GBTS	(190.6)		(204.5)
Navy Mission Support	(12.3)		(36.8)
Air Force Mission Sup	opo (37.8)		(71.6)
Air Force Other Suppo	ort (38.0)		(101.4)
Navy Other Support	(8.2)		(27.4)
Navy (A/V Support & I	LS		(47.7)
Air Force (A/V Suppor	t		(131.1)
Total Other Wpn Sys	(462.1)		(786.7)
Peculiar Support	(0.0)		
Initial Spares	(287.6)		(125.7)
Construction (MILCON)	68.0	62.7	62.8
Acquisition O&M	0.0	0.0	0.0
Total FY 2002 Base-Year \$	3086.8	4529.0	4597.3
Escalation	963.8	512.1	429.4
Development (RDT&E)	(19.4)	(-13.7)	(-14.4)
Procurement	(928.5)	(522.1)	(440.7)
Construction (MILCON)	(15.9)	(3.7)	(3.1)
Acquisition O&M	(0.0)	(0.0)	(0,0)
Total Then Year \$	4050.6	5041.1	5026.7
b. Quantity			
Development (RDT&E)	1	1	1
Procurement	<u>_711</u>	782	782
Total	712	783	783

Note: Production aircraft quantity increased from 711 to 782 aircraft to reflect ORD III requirements. ORD III has been signed by the Chief of Staff of the Air Force and the Chief of Naval Operations.

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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 (FEB 2002 APB)(Dec	Current Estimate 2001 SAR)	Percent
a. Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 2002 BYS)	4529.0	4597.3	
(2) Quantity	783	783	
(3) Unit Cost	5.784	5.871	+1.50
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2002 BY\$)	4177.1	4244.7	
(2) Quantity	782	782	
(3) Unit Cost	5.342	5.428	+1.61

## 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	363.3	3603.4	83.9	4050.6
Previous Changes:				
Economic	-6.6	-590.6	-4.0	-601.2
Quantity	-	-	- 1	-
Schedule		-48.3	-2.9	-51.2
Engineering	-	-	-	-
Estimating	-85.8	+828.7	-35.4	+707.5
Other	-	-	-	-
Support	-	-131.1		-131.1
Subtotal	-92.4	+58.7	-42.3	-76.0
Current Changes:				
Economic	+3.0	-	-1.9	+1.1
Quantity		+380.0	-	+380.0
Schedule		-70.1	- 1	-70.1
Engineering	-	-	-	-
Estimating	+1.5	+474.7	+26.2	+502.4
Other		-	-	
Support	1	+238.7	-	+238.7
Subtotal	+4.5	+1023.3	+24.3	+1052.1
Total Changes	-87.9	+1082.0	-18.0	+976.1
Current Estimate	275.4	4685.4	65.9	5026.7

# 13a. Cost Variance Analysis (Cont'd):

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Summary (FY 2002 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	343.9	2674.9	68.0	3086.8
Previous Changes:				
Quantity	-	-	- '	·
Schedule	-	-	~2.9	-2.9
Engineering	-	-	-	
Estimating	~62.5	+672.2	-27.0	+582.7
Other	-	-	-	-
Support	-	-76.0	-	-76.0
Subtotal	-62.5	+596.2	-29.9	+503.8
Current Changes:				
Quantity	-	+347.9	-	+347.9
Schedule	-	-	_	
Engineering	-		-	-
Estimating	+8.4	+387.0	+24.7	+420.1
Other	-	-	-	-
Support	-	+238.7	-	+238.7
Subtotal	+8.4	+973.6	+24.7	+1006.7
Total Changes	-54.1	+1569.8	-5.2	+1510.5
Current Estimate	289.8	4244.7	62.8	4597.3

b. Current Change Explanations --

(Dollars in Millions) <u>Base-Year</u> <u>Then-Year</u>

(1)	RDTAE		
	Revised escalation indices. (Economic)	N/A	+3.0
	Change in Air Force RDT&E requirements (Estimating)	+1.4	+1.5
	Adjustment to realign then year and base year dollars (Estimating)	+7.0	0.0
	RDT&E Subtotal	+ 8.4	+4.5
(2)	Procurement		
. – ,	Revised escalation indices. (Economic)	N/A	0.0
	Quantity increase of 71 aircraft from 711 to 782 aircraft to reflect ORD III requirements (Quantity)	+347.9	+380.0
	Acceleration of annual procurement buy profile. (Schedule)	0.0	-70.1
	Change in unit prices and buy profile (Estimating)	+387.0	+474.7
	Change in Initial Spares (Support)	-57.0	-57.0
	Other changes in Navy and Air Force support requirements (Support)	+295.7	+295.7
	Procurement Subtotal	+973.6	+1023.3

## 13b. Cost Variance Analysis (Cont'd):

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b.	Current	Change	Exp]	lanations	_
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	(Dollars in <u>Base-Year</u> Th	Millions) Men-Year
(3) MILCON		
Revised escalation indices. (Economi	c) N/A	-1.9
Adjustment for Current and Prior Inf (Estimating)	lation. +0.8	+0.8
Change in Air Force basing requireme (Estimating)	nts +0.6	+0.6
Revised estimate for construction requirements (Estimating)	+23.3	+24.8
MILCON Subtotal	+24.7	+24.3

# 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	Changes					PAUC			
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.69	-0.766	-0.035	-0.155		+1.55		+0.137	+0.731	6.42

b. Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate

PUC	Changes						PUC		
Dev Est	c						Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.07	-0.755	+0.021	-0.151		+1.67		+0.138	+0.923	5.99

# c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	JAN 1993	N/A	JAN 1993
Milestone II	N/A	AUG 1995	N/A	AUG 1995
Milestone III	N/A	SEP 1999	N/A	DEC 2001
RAA	N/A	JUN 2002	N/A	JUN 2002
Total Cost	N/A	4050.6	N/A	5026.7
Total Quantity	N/A	712	N/A	783
Prog Acq Unit Cost	N/A	5.7	N/A	6.4

#### 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E JPATS MD	(GBTS Only):		Initial <u>Target</u>	. Contract Pr <u>Ceiling</u>	rice <u>Oty</u>
Raytheon Aircraft Company, Wichita KS F33657-94-C-0006, FPIF/CPAF/FFP Award: February 5, 1996			\$83.4 \$93.3		0
Definitized:	February 5, 1	996			
Current	t Contract Prie	ce	Estimated H	rice At Comp	letion
<u>Target</u>	<u>Ceiling</u>	Oty	<u>Contractor</u>	Program	Manager
\$102.8	\$105.9	1	\$87.9	\$	87.9

Explanation of Change:

#### LOT I (GBTS)

The Lot I Air Vehicle effort is complete for EVMS reporting purposes. Lot I reporting is 'GBTS Only' (GBTS Management, GBTS Subcontract, Overhead, Cost of Money, and G&A), is more than 99% complete. The elimination of the ceiling price (block 8 and block 25) is due to the inclusion of two cost plus line items within the GBTS subcontract. The contractor's estimate at completion results in a variance at completion of \$-5.1M (negotiated cost: \$82.9M - \$88.0M). The Program Manager's estimate is in agreement with the contractor's estimate

Significant Effective Completion Date: Delivery of TIMS managed courses (CLIN 1038).

Estimated Completion Date: Completion of GBTS management (CLIN 1050).

Cost and Schedule variance reporting is not required on this FPIF/CPAF/FFP contract.

b. Procurement	Initial	Contract Pr	ice
JPATS LOT VI (GBTS):	<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
Raytheon Aircraft Company, Wichita KS			
F33657-94-C-0006, FFP/FPIF	\$58.3	\$64.5	0
Award: May 14, 1999			
Definitized: May 14, 1999			
Current Contract Price	Estimated P	rice At Comp	letion

Current	Contract Pric	ce	Estimated Pric	ce At Completion
Target	Ceiling	Oty	Contractor	Program Manager
\$26.4	\$29.6	22	\$22.3	\$22.3

Explanation of Change:

## LOT VI

Based on prior agreements and JET initiatives to conform to a commercial business based contract Raytheon discontinued, effective January 2001,

#### 15. Contract Information (Cont'd):

reporting Earned Value on all active and future Air Vehicle Lots (including but not limited to Lots 5 and 6). Lot VI report is for GBTS only. Based on JET recommendations, initiatives to convert production Lots 7 and 8 contracts to a commercial payment structure, agreement was made to eliminate Earned Value Management System (EVMS) reporting. Subsequent review with OSD analysts alleviated concerns and verified that SPO and Raytheon processes in place were adequate to monitor and track production, schedule and cost.

The Lot VI (GBTS) is now 75% complete. The contractor's estimate at completion results in a variance of \$1.4M (negotiated cost: \$23.7M - Contractor's EAC: \$22.3M). The program manager's estimate for best case and current estimate are capped at the ceiling price of \$29.6M. This represents the government liability for contract funding. The program office has obligated all funding on the contract at the limit of its liability. The cost variance is 27%.

Significant Effective Completion Date: Columbus TIMS delivery (CLIN 6110). Estimated Completion Date: Completion of site activation (CLIN 6008).

Cost and Schedule variance reporting is not required on this FFP/FPIF contract.

JPATS Lot	VII (GBTS):		Initial <u>Target</u>	. Contract P: <u>Ceiling</u>	rice <u>Otv</u>
Raytheon Air F33657-94-C- Award: June Definitized:	craft Company, 0006, FFP/FPIF 20, 2000 June 20, 2000	Wichita KS	\$33.4	\$39.9	29
Curren	t Contract Pric	e Otv	Estimated H	rice At Com	pletion m Manager

Target	cerring	ULY	CONCLACTOR	FLOOLAN MANAGE
\$33.9	\$37.9	0	\$29.2	\$29.2

Explanation of Change:

Lot VII (GBTS)

The quantity in paragraph 4d, Contract Delivery: AF = 3 Unit Training Devices (UTDs), 3 Operational Flight Trainers (OFTs) and 2 Instrument Flight Trainers (IFTs). Navy = 3 Training Integration Management Systems/ Computer Based Training Systems (TIMS/CBTSs) and 1 Modification and Upgrade Support System (MUSS).

Not receiving EVMS data on this contract yet.

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#### 15. Contract Information (Cont'd):

Significant Effective Completion Date: Completeion of USN ATD instructor initial training (CLIN 7124). Estimated Completion Date: Completion of site activation (CLIN 7005).

Cost and Schedule variance reporting is not required on this FFP/FPIF contract.

JPATS Lot VIII (GBTS):	Initial	Contract	Price
	<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
Raytheon Aircraft Company, Wichita KS F33657-94-C-0006, FPIF/FFP Award: December 15, 1999 Definitized: December 15, 1999	\$39.4	\$45.9	0

Current	Contract Price		Estimated Pr	ice At Completion
Target	Ceiling	Oty	Contractor	Program Manager
\$39.4	\$45.4	0	\$	\$

#### Explanation of Change:

Not receiving EVMS data on this contract yet.

Significant Effective Completion Date: Randolph UTD #3 delivery (CLIN 8103AA). Estimated Completion Date: Completion of GBTS management (CLIN 8108).

Cost and Schedule variance reporting is not required on this FPIF/FFP contract.

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JPATS Lot VII (Comel AV);	Initial	Contract Pr	ice
	<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
F33657-00-C-2192, FFP Award: N/A Definitized: December 15, 2000	N/A	N/A	40
Current Contract Price	Estimated P:	rice At Comp	letion
Target Ceiling Oty	<u>Contractor</u>	Program	Manager

Explanation of Change:

N/A

Lot VII (Commercial)

N/A

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## 15. <u>Contract Information (Cont'd)</u>:

This contract is subject to commercial pricing. All Lot VII aircraft dollars and aircraft quantities from contract F33657-94-C-0006 were transferred to a stand-alone commercial contract.

Significant Effective Completion Date: Delivery of P-108 (CLIN7 001AA). Estimated Completion Date: Completion of site activation (CLIN 7005).

Cost and Schedule variance reporting is not required on this FFP contract.

			Initial	Contract Pi	rice
Lot 9 Pro	duction:		<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>
Raytheon Air	craft, Wichita,	, KS			
F33657-01-C-0022, FFP			\$193.3	N/A	40
Award: Decem	ber 28, 2001				
Definitized:	December 28, 2	2001			
Curren	t Contract Pric	ce	Estimated P	rice At Comp	pletion
<u>Target</u>	<u>Ceiling</u>	Oty	Contractor	Program	n Manager
\$193.3	N/Ā	40	\$193.3	\$1	193.3

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

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# JPATS, December 31, 2001

# 16. <u>Program Funding Summary</u> (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY92-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-15)	<u>Total</u>
RDT&E	267.8	1.8	1.9	3.9	275.4
Procurement	712.8	245.8	251.8	3475.0	4685.4
MILCON	18.7	4.1	8.0	35.1	65.9
O&M	~	-	-	-	-
Total	999.3	251.7	261.7	3514.0	5026.7

b. Annual Summary -- JPATS

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Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway Fy 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				4.0	3.6
1995				4.0	3.7
1996				1.2	1.1
1997				1.8	1.7
1998				0.3	0.3
1999				0.6	0.6
2000				0.3	0.3
Subtotal				12.2	11.3

Appropriation: 3600 - Research, Development, Test + Eval, AF

		Flyaway	Flyaway		m 1
		FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1992				1.0	0.9
1993				2.2	1.9
1994				2.9	2.6
1995				38.7	35.4
1996				29.0	27.0
1997				43.3	40.9
1998				51.9	49.3
1999				39.9	38.3
2000				37.3	36.4
2001				24.0	23.8
2002				1.8	1.8
2003				1.9	1.9
2004				1.8	1.9
2005				1.9	2.0

## 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 \$
Subtotal		1		277.6	264.1

Appropriation: 1506 - Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	12		30.7	55.8	55.4
2001	24		60.7	80.3	80.6
2002	6		29.9	29.8	30.4
2003					
2004					
2005					
2006					
2007	24		104.6	145.3	162.1
2008	24		106.2	133.5	151.9
2009	48		217.9	249.2	288.8
2010	48		219.6	275.5	325.4
2011	48		221.7	249.9	300.9
2012	48		224.7	254.0	311.6
2013	46		220.9	263.7	329.6
2014				14.4	18.4
Subtotal	328		1436.9	1751.4	2055.1

Navy Procurement Flyaway Costs also include Award Fee.

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	3		64.0	86.0	80.4
1996	6		14.5	15.7	14.9
1997	15		39.4	63.1	60.4
1998	22		67.7	74.7	71.9
1999	22		64.3	110.6	107.8
2000	29		73.4	108.3	107.4
2001	34		88.8	133.5	134.0
2002	40		177.0	211.2	215.4
2003	35		162.9	242.8	251.8
2004	52		239.6	297.5	313.9
2005	53		247.7	302.0	324.6

# 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 \$
2006	54		254.2	316.1	346.5
2007	50		224.3	280.3	312.8
2008	39		177.6	215.5	245.2
2009				9.0	10.4
2010				11.6	13.7
2011				6.8	8.2
2012				3.4	4.2
2013				2.1	2.6
2014				1.7	2.2
2015				1.4	2.0
Subtotal	454	(	1895.4	2493.3	2630.3

Flyaway exceeds total program costs in FY96 due to OSD direction to roll funds to procure Aircraft. OSD directed the use of \$40.5M of FY95 excess funds to procure 6 A/C in FY96. OSD further directed the use of \$15.3M of FY96 funds to procure 3 A/C of the next lot (15 A/C) in FY97.

Appropriation: 1205 - Military Construction, Navy

Fiscal Year	Qty	Flyaway Fy 2002 Dollars Nonrec	Flyaway FY 2002 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				1.5	1.4
1999				1.4	1.4
2000				5.5	5.4
2001				1.5	1.5
2002				4.0	4.1
2003				1.9	2.0
2005	allements			10.2	11.0
2006			A CONTRACTOR OF	12.7	13.9
2008				5.4	6.2
ubtotal				44.1	46.9

#### 16b. Program Funding Summary (Cont'd):

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Appropriation: 3300 - Military Construction, Air Force

		Flyaway	Flyaway	T	
		FY 2002	FY 2002	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998				2.6	2.5
1999				3.4	3.3
2000				3.2	3.2
2003		1		5.8	6.0
2005				1.9	2.0
2006				1.8	2.0
Subtotal				18.7	19.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	328		1436.9	1807.7	2113.3
USAF	455		1895.4	2789.6	2913.4
Grand Total	783		3332.3	4597.3	5026.7

#### 17. Delivery/Expenditure Information:

a.	Deliveries To Date	<u>Plan</u>	Actual
	RDT&E	1	1
	Procurement	56	56

Percent Total Program Quantities Delivered: 7.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 737.1

Percent Total Program Expended: 14.7%

#### 18. Operating and Support Costs:

a. Assumptions and Ground Rules --The operations and support costs are based on the purchase of 782 aircraft, Aircrew Training Devices (ATDs), Training Integration Management System (TIMS), development and conversion courseware, and CLS which will be provided by Raytheon Aerospace.

Section 18b consists of seven elements. Mission Personnel includes the cost of military and civilian system-related personnel involved in the operation of this system. Unit-Level Consumption includes the cost of fuel resources and unit level consumables.

The JPATS logistics support concept reflects that organizational, intermediate

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## 18a. Operating and Support Costs (Cont'd):

and depot support are CLS. Therefore there is no cost for intermediate or depot level maintenance. Maintenance costs for contract support include contract labor, materials, and overhead incurred in providing the logistics support required by an aircraft system, subsystem or associated support equipment. GBTS CLS support is provided separately.

Sustaining Support includes the costs of replacement support equipment, modification kits, sustaining engineering, software maintenance, and simulator operations for the aircraft system. Indirect Support includes the costs of personnel support for specialty training, permanent changes of station and medical care.

Typically, CLS is estimated in Base Year (BY) and not converted to Then Year due to the length of the O&S support relative to the number of years for which inflation indices are available. Due to the lack of inflation indices through 2038, the dollar amounts in this section are in BY02.

This reflects the information briefed by the AF Cost Analysis Improvement Group prior to the Milestone III decision reflecting the JPATS Most Probable Life Cycle Cost supporting the Full Rate Production Decision on November 6, 2001.

* The antecedent systems are the T-37 for the Air Force and T-34 for the Navy.

At the JPATS Milestone I decision, the requirement for a Cost/Operational Effectiveness Analysis (COEA) was waived due to the streamlining initiatives for pilot programs. Thus, the direct comparison to the antecedent systems was not prepared.

O&S costs are combined Air Force and Navy figures for a typical steady state operating year (post FOC). Source is the JPATS Milestone III CAIG briefing.

Total O&S costs are combined Air Force and Navy requirements for the Air Vehicle and GBTS. Source is the JPATS Milestone III CAIG briefing.

T-37/T-34 JPATS N/A Cost Element 0.0 125.2 Mission Pay & Allowances 22.6 Unit Level Consumption 0.0 0.0 0.0 Intermediate Maintenance 0.0 0.0 Depot Maintenance 0.0 176.1 Contractor Support 75.9 0.0 Sustaining Support 31.2 N/A Indirect Costs 0.0 Total 431.0

b. Costs -- (FY 2002 Constant (Base-Year) Dollars in Millions)

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## JPATS, December 31, 2001

# 18b. Operating and Support Costs (Cont'd):

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Total Q&S Cost	JPATS	T-37/T-34
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/30/2002 2:11:30 PM

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#### SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: SMART T

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AS OF DATE: December 31, 2001

1. Designation and Nomenclature (Popular Name) : Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)

2. DoD Component : Army

A-20 SMART-T

Joint Participants: U.S. Air Force, U.S. Marine Corps, Joint Communications Support Element, Other DoD

## 3. Responsible Office and Telephone Number :

Project Manager MILSATCOM Mr. Henry I. Jehan, Jr. Assigned: March 5, 1999 PEO C3T ATTN: SFAE-C3T-MSA DSN 992-7244; COMM (732) 532-7244 henry.jehan@c3smail.monmouth.army Fort Monmouth, NJ 07703-5508 .mil

4. Program Elements/Procurement Line Items :

RDT&E: PE 0303142 (Shared) D455/D384/D2PT PE 0303142A* (Shared) (Army) **PROCUREMENT**: APPN 3080 ICN 21131F (Air Force) (Shared) APPN 3080 ICN 21131F (Air Force) (Shared) APPN 2035 ICN 28612A (Army) (Shared) APPN 2035 ICN 28612A (Army) (Shared) APPN 3080 ICN 33601F (Air Force) APPN 3080 ICN 33601F (Air Force) APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy APPN 2035 ICN 8C4002** (Army) APPN 2035 ICN BS9720 (Army) APPN 1109 ICN 041321 (Navy)

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#### 4a. Program Elements/Procurement Line Items (Cont'd) :

APPN 2035 ICN BB5777 (Army) APPN 2035 ICN BC4002** (Army)

* Program Element (PE) shared with the following Army RDT&E projects: D253, D384, D456, D559, D561 and D562

** Item Control Number BC4002 (Army) also used to fund the procurement of 8 SMART-T terminals for the White House Communications Agency (WHCA)

5. References:

SAR Baseline (Production Estimate) : AAE Approved Acquisition Program Baseline (APB) dated February 19, 1999.

Approved Program: AAE Approved Acquisition Program Baseline (APB) dated January 18, 2001.

#### 6. Mission and Description :

The SMART-T provides range extension capability to the Army's Mobile Subscriber Equipment (MSE) and Future Warfighter Information Network-Tactical (WIN-T). Specifically, it provides a satellite interface to permit uninterrupted voice/data communication as advancing forces move beyond the line-of-sight capability of terrestrial communications systems. This program supports Echelons Corps and Below (ECB) and special contingency operations. SMART-T equipment communicates at both low and medium data rates. It provides the security, mobility, and anti-jam capability required to defeat the threat and satisfy the critical need stated above. The SMART-T has inherent Low Probability of Interception and Low Probability of Detection (LPI/LPD) capability to avoid being targeted for destruction, jamming or eavesdropping. The prime mover is a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), which carries all electronics, power generation and a self-erectable antenna. The SMART-T can also be used in a fixed configuration. These terminals increase the tactical utility of the Milstar System. The Marines, Air Force and other DoD customers also use the SMART-T. The SMART-T terminals will be modified to communicate over the Advanced EHF satellites (AEHF).

#### 7. Executive Summary:

Milstar Flight 4 was successfully launched on February 27, 2001. SMART-T Reliability Growth Test, to establish 800 hours Meantime Between Failure (MTBF) at 80% Lower Confidence Level, was successfully completed in July 2001. An FOT&E was conducted at Fort Hood, TX, in September 2001. The findings documented in the FOT&E Test Report were that SMART-T successfully demonstrated effectiveness, survivability and partially demonstrated suitability requirements. An Integrated IPT (IIPT) was conducted on 28 January 2002 to review the test results. The IIPT recommended that the program move forward

# 7. Executive Summary (Cont'd) :

with the award of a follow-on production contract to procure the remaining SMART-T terminals and obtain conditional material release which should result once the FOT&E system fixes are complete. Follow-on meetings were held with DOT&E on 29 January 2002 and with the PEO on 8 February 2002 and both concurred with the IIPT's recommendation. Additional meetings are planned with senior army leaders to discuss FOT&E results and cost issues.

The Army remains fully committed to the SMART-T program. This was demonstrated by HQDA increasing SMART-T FY03 President's Budget program funding as a result of recent program successes. The increase in funding to procure the full Army Acquisition Objective (AAO) of 239 terminals caused a Procurement Cost Breach to the Acquisition Program Baseline (APB).

Contractual actions continue on the follow-on production contract. It is anticipated the full proposal, expected during March 2002, will reflect significant cost increases in the terminal unit cost. PM MILSATCOM is anticipating an April 2002 contract award to procure the Army's as well as other Service's SMART-T requirements.

#### 8. Threshold Breaches :

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	NO
Procurement	Yes
MILCON	NO
0&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 Department of the Army increased funding for the SMART-T program in order to procure the full AAO of 239 terminals. In addition, other services have increased their planned acquisition. These increases have resulted in a procurement cost breach to the SMART-T APB. A Program Deviation Report was prepared and submitted and a new APB will be prepared and submitted once complete.

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9. Schedule:

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a. Milestones --

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
MDR Study	FEB 1991	FEB 1991	FEB 1991
Market Survey	SEP 1991	SEP 1991	SEP 1991
LDR Technology Demonstrated (SCOTT Terminal Acceptance)	DEC 1991	DEC 1991	DEC 1991
Milestone II ASARC Review	MAY 1992	MAY 1992	MAY 1992
Development Contract Award	NOV 1992	NOV 1992	NOV 1992
Preliminary Design Review	MAY 1993	MAY 1993	MAY 1993
Critical Design Review	MAR 1994	MAR 1994	MAR 1994
DT&E			
Start	SEP 1994	SEP 1994	SEP 1994
Complete	DEC 1995	DEC 1995	DEC 1995
EDM Deliveries	FEB 1996	FEB 1996	FEB 1996
LRIP Decision	JAN 1996	JAN 1996	JAN 1996
Low Rate Production Contract Award	FEB 1996	FEB 1996	FEB 1996
FAT			
Start	SEP 1997	SEP 1997	SEP 1997
Complete	JUN 1998	JUN 1998	JUN 1998
LRIP First Delivery	MAR 1998	MAR 1998	APR 1998
LDR IOTEE			
Start	JUN 1998	JUN 1998	MAY 1998
Complete	JUN 1998	JUN 1998	JUN 1998
Milestone III ASARC Review	NOV 1998	NOV 1998	NOV 1998
Full Scale Production Award	NOV 1998	NOV 1998	JAN 1999
MDR FOT&E			
Start	SEP 1999	MAR 2001	JUL 2001
Complete	NOV 1999	APR 2001	SEP 2001
Terminal IOC	DEC 1999	AUG 2001	JUL 2001
DAMA ECP Award	JAN 1999	JAN 1999	JUL 1999
AEHF Development Initiated	JAN 2002	JAN 2002	FEB 2000
AEHF Production of Retrofit Kits	JAN 2005	JAN 2005	JAN 2005

ACRONYMS : AEHF - Advanced Extremely High Frequency ASARC - Army Systems Acquisition Review Council DAMA - Demand Assigned Multiple Access DT&E - Development Test and Evaluation ECP - Engineering Change Proposal EDM - Engineering Development Model - First Article Test FAT FOT&E - Follow-On Test and Evaluation IOC - Initial Operational Capability IOT&E - Initial Operational Test and Evaluation LDR - Low Data RateLRIP - Low Rate Initial Production MDR - Medium Data Rate SCOTT - Single Channel Objective Tactical Terminal

Note: Terminal IOC is the date when initial training and provisioning was

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# 9a. Schedule (Cont'd) :

completed.

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# b. Current Change Explanations -- None

# 10. Performance Characteristics : a. Performance --

a. reitormance		_			_		
	Production Estimate (SAR)	Ap Progr <u>Obj/T</u>	pr am hr	oved (APB) eshold	Demon- strated Perf	Current Estimate	2
Set-up Benign	30	30	7	30	20	20	(Ch-1)
Environment (min)	45	<i>a</i> <b>C</b>	,	AC	20	20	(a) )
(min)	". J	4 D	1	*1⊃	20	20	(Cn-1)
Tear-down Benign Environment (min)	30	30	/	30	13	13	(Ch-1)
Tear-down MOPP 4 Gear (min)	45	45	/	45	12	12	(Ch-1)
MTBF (hrs) (80%LCL)/ (Point estimate)	800	900	/	400	800	800	
Aggregate Data Rate (kbps)	1544	1544	7	1024	2240	2240	(Ch-1)
Interface Capability	With	With	1	With	With MSE	With MSB	2
	MSE	MSE	1	MSE			
Configuration (Full System)	HMMWV	HMMWV	1	HMMWV	HMMWV	HMMWV	
System Weight NTE (lbs)(Integrated on HMMWV)	3177	3177	/	3177	2486	2486	(Ch-2)
TRANSEC with Over the Air Rekey Capability	Required	Require	d/	Required	Demo ' d	Required	l
Bit Error Rate (BER) Airlift Transportability	10^-5	10^-5	1	10^-3	10^-5	10 ^-5	
System Only (By)	UH-60	UH-60	1	UH-60	UH-60	UH-60	
System and HMMWV (By)	CH-47	CH-47	1	CH-47	CH-47	CH-47	
Power Sources							
Prime (VDC)	28	28	1	28	28	28	
Alternate AC Power (VAC) @ 50-60 Hz	110-220	110-220	1	110-220	110-220	110-220	
Back-up (Vehicular) (Volts)	20-30	20-30	/	20-30	20-30	20-30	
DAMA							
Reduce satellite resources req'd to support MSE by a factor of AEHF	3	3	/	2	N/A	N/A	

# 10a. Performance Characteristics (Cont'd) :

<u>E:</u> Aggregate Data Rate	Production stimate (SAR) 8	Ap Progr <u>Obj/T</u> 8	pr am hr	oved (APB) eshold 8	Demon- strated <u>Perf</u> TBD	Current <u>Estimate</u> 8	
Configuration	Full System on HMMWV (1097)	Full System on HMMW (1097)	/ / //	Full System on HMMWV (1097)	TBD	Full System on HMMWV (1097)	
Bit Error Rate (BER) Interface Capability	10-7 WIN based MSE	10-8 WIN based MSE	1111	10-8 WIN based MSE	TBD TBD	10-B WIN Based MSE	(Ch-3)
Demontrated Performance	2	Fro	m		То		

Set-up Benign Environment (min)	27	20
Set-up MOPP 4 Gear (min)	32	20
Tear-down Benign Environment (min)	15	13
Tear-down MOPP 4 Gear (min)	18	12
Aggregate Data Rate(kbps)	1024	2240

ACRONYMS :

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AEHF	-	Advanced Extremely High Frequency
DAMA	-	Demand Assigned Multiple Access
HMMWV	-	High Mobility Multi-Purpose Wheeled Vehicle
kbps	-	Kilobits per second
LCL	-	Lower Confidence Level
min	-	Minutes
nbps	-	Megabits per second
MOPP	-	Mission Oriented Protective Posture
MSE	-	Mobile Subscriber Equipment
MTBF	-	Mean Time Between Failure
NTE	-	Not To Exceed
TRANSEC	-	Transmission Security

b. Current Change Explanations --(Ch-1) The following Current Estimates have changed to reflect performance demonstrated during the FOT&E conducted September 2001.

Current Estimate	From	To
Set-up Benign Environment (min)	30	20
Set-up MOPP 4 Gear (min)	45	20
Tear-down Benign Environment (min)	30	1.3
Tear-down MOPP 4 Gear (min)	45	12

# 10b. Performance Characteristics (Cont'd) :

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Aggregate	Data	Rate	(kbps)			1544		2	240				
(Ch-2) Th	e Curi	rent	Estimate	for	System	Weight	has	changed	from	3177	to	2240	
the second s	1 + 1	1	1.1.1.1	4 9	A								-

to agree with the weight of the test system. (Ch-3) The Current Estimate for Bit Error Rate has changed from 10-7 to

10-8 to reflect the satellite/terminal performance.

## 11. Total Program Cost and Quantity (Dollars in Millions):

	Production	Approved	Current
a. Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	315.2	313.8	312.8
Procurement	451.3	350.3	434.8
Recurring Rollaway	(265.5)		(233.4)
Other Rollaway	(126.3)		(139.6)
Recurring Rollaway			(0.0)
Other			(0.0)
Total Rollaway	(391.8)		(373.0)
Support Cost	(17.9)		(19.9)
Other System Cost	(18.5)		(21.1)
Total Other Wpn Sys	(36.4)		(41.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(23.1)		(20.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1999 Base-Year \$	766.5	664.1	747.6
Escalation	13.9	12.4	26.9
Development (RDT&E)	(-7.9)	(-6.1)	(-5.3)
Procurement	(21.8)	(18.5)	(32.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	780.4	676.5	774.5
b. Quantity			
Development (RDT&E)	0	0	0
Procurement	313	200	320
Total	313	200	320

The unit of measure for SMART-T is terminals.

Note: The RDT&E quantities exclude 12 Engineering Manufacturing Development (EMD) terminals produced under the SMART-T Development contract that are not fully configured and will not be fielded. In addition, the RDT&E quantities also exclude 3 EMD Advanced EHF upgrade terminals that will not be fully configured and will not be fielded.

# 11b. Total Program Cost and Quantity (Cont'd) :

Note: The LRIP quantities approved at Milestone II are 20 (1st year) and 32 (2nd year). The LRIP quantity exceeds 10% of the total planned buy to optimize the utilization of the Milstar MDR payload immediately upon launch.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

# 12. Unit Cost Summary :

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		(.TBN -	Basel	UCR ine	(Dec	Cur: Estin	nate	Percent
a. Prog. Acq. Unit Cost	(PAUC)	10141		111 07	(200	2001	brac,	Gildinge
(1) Cost (FY 1999	BY\$)		66	54.1		7	47.6	
(2) Quantity				200			320	
(3) Unit Cost			3 .	.321		2	.336	-29.66
b. Avg. Proc. Unit Cost	(APUC)							
(1) Cost (FY 1999	BY\$)		35	50.3		4	34.8	
(2) Quantity				200			320	
(3) Unit Cost			1.	752		1	. 359	-22.43

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# 13. Cost Variance Analysis :

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a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	307.3	473.1	-	780.4
Previous Changes:				
Economic	-	+0.1	-	+0.1
Quantity		-89.6	-	-89.6
Schedule	-	+1.0	-	+1.0
Engineering	-	-19.4		-19.4
Estimating	-1.6	-19.5		-21.1
Other	-	-		-
Support		+6.9		+6.9
Subtotal	-1.6	-120.5		-122.1
Current Changes:				
Economic	-	+0.2	- 1	+0.2
Quantity		+159.6	-	+159.6
Schedule	-	+0.6	-	+0.6
Engineering	-	-12.1	-	-12.1
Estimating	+1.8	-29.4	- (	-27.6
Other	-	- 1	- 1	-
Support	-	-4.5	-	-4.5
Subtotal	+1.8	+114.4	-	+116.2
Total Changes	+0.2	-6.1	-	-5.9
Current Estimate	307.5	467.0	-	774.5

Summary (FY 1999 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	315.2	451.3	-	766.5
Previous Changes:				
Quantity	-	-85.5	-	-85.5
Schedule	-	-	-	-
Engineering	-	-18.2	-	-18.2
Estimating	-4.2	-16.6	-	~20.B
Other	-	-	-	
Support	-	+6.B		+6.8
Subtotal	-4.2	-113.5	-	-117.7
Current Changes:				
Quantity	-	+149.0	-	+149.0
Schedule		-	-	-
Engineering	-	-11.6	-	-11.6
Estimating	+1.8	-35.9	-	-34.1
Other	-	-	-	-
Support		-4.5	-	-4.5
Subtotal	+1.8	+97.0	-	+98.8
Total Changes	-2.4	-16.5	-	-18.9
Current Estimate	312.8	434.8		747.6

#### 13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --(Dollars in Millions) Base-Year Then-Year (1) RDT&E Change estimate to upgrade LDR/MDR SMART-T to +1.8 +1.8AEHF (Estimating) RDT&E Subtotal +1.8 +1.8 (2) Procurement Revised escalation indices. (Economic) N/A +0.2Total Quantity Variance associated with increase of 2 units. (Quantity) Quantity increase of 2 units (JCSE). (Quantity) +1.2+1.3+1.6 +1.7 Allocation to Engineering variance resulting ~0.2 -0.2 from Quantity Change. (QR) (Engineering) Allocation to Estimating variance resulting -0.2 -0.2 from Quantity Change. (QR) (Estimating) Total Quantity Variance associated with +9.1 +9.7 increase of 15 units. (Quantity) Quantity increase of 15 units (Marine Corps). +12.1+12.9(Quantity) Allocation to Schedule variance resulting from 0.0 +0.1 Quantity Change. (QR) (Schedule) Allocation to Engineering variance resulting -1.6 ~1.6 from Quantity Change. (QR) (Engineering) Allocation to Estimating variance resulting -1.4 -1.7 from Quantity Change. (QR) (Estimating) Total Quantity Variance associated with +53.1 +56.9 increase of 90 units. (Quantity) Quantity increase of 90 units (Army). +71.9 +77.1(Quantity) Allocation to Schedule variance resulting from 0.0 +0.5 Quantity Change. (OR) (Schedule) Allocation to Engineering variance resulting -9.8 -10.3from Quantity Change. (QR) (Engineering) Allocation to Estimating variance resulting -9.0 -10.4from Quantity Change. (QR) (Estimating) Increase in estimate due to increased AAO +21.8 +23.4requirement (Estimating) Decrease due to change in AF program -3.2 -3.5 requirements (Estimating) Adjustment to reconcile flyaway and support costs. -4.5 -4.5 (Support) (Estimating) +4.5 +4.5 Decrease in estimate for material economies -6.4 -7.1 of scale. (Estimating)

SMART-T, December 31, 2001

# 13b. Cost Variance Analysis (Cont'd) :

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b. Current Change Explanations --

Decrease in production due to learning curve.	(Dollars :	n Millions)
(Estimating)	Base-Year	Then-Year
Decrease due to ability to fully field in one	-32.5	-24.3
versus multiple trips. (Estimating)	-9.5	-10.1
Procurement Subtotal	+97.0	+114.4

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				Chan	ges				PAUC
Prod Est									Cur Est
[	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.49	+0.001	+0.163	+0.005	-0.098	-0.152		+0.008	-0.073	2.42

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC				Chan	ges				PUC
Prod Es	τ								Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.51	+0.001	+0.185	+0.005	-0.098	-0.153		+0.008	-0.052	1.46

# c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR -	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAY 1992	MAY 1992	MAY 1992
Milestone III	N/A	SEP 1998	NOV 1998	NOV 1998
IOC	N/A	DEC 1999	DEC 1999	JUL 2001
Total Cost	N/A	1027.2	780.4	774.5
Total Quantity	N/A	364	313	320
Prog Acq Unit Cost	N/A	2.8	2.5	2.4

\$0.2

## 15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E AEHF Development:	Initial ( Target	Contract Price Ceiling Oty
Raytheon Company, Marlborough, MA DAAB07-96-C-A757, CPFF Award: March 29, 2001	\$49.2	N/A 3
Definitized: March 29, 2001		
Current Contract Price	Estimated Pri	ice At Completion
Target Ceiling Oty	Contractor	Program Manager
\$52.4 N/A 3	\$52.4	\$52.4

\$52.4	N/A	3	\$5.	2.4	\$52.4	
			Cost	Variance	Schedule_V	ariance
Previous Cumul	ative Variance	es		\$0.0	\$0.	0
Cumulative Var	iances To Dat	e		\$1.0	\$O.:	2

Net Change

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## Explanation of Change:

Favorable cost and schedule variances are partly due to being able to reuse more data from the LDR/MDR Terminal Program than originally planned and starting efforts earlier than planned. Note: Prior years completed RDT&E effort of \$51.5M not included in above figures.

\$1.0

b. Procurement		Initial	Contract Price
SMART-T LRIP/FRP:		Target	Ceiling Qty
Raytheon Company, Marlborough,	MA		
DAAB07-96-C-A757, FFP		\$212.8	N/A 387
Award: February 7, 1996			
Definitized: N/A			
Current Contract Price		Estimated Pr	rice At Completion
<u>Target</u> <u>Ceiling</u>	Qty	Contractor	Program Manage
\$143.5 N/A	141	\$146.3	\$146.3
		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:

Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

Current Contract Price and Estimated Price at Completion for the SMART-T LRIP/FFP contract has changed as a result of the termination of the DAMA production modification, the addition of several contract modifications, and the January 2001 expiration of the last production quantity option.

# 15. Contract Information (Cont'd) :

Contract options have been exercised for a total of 141 terminals.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY92-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-18)	Total
RDT&E	258.0	19.0	17.4	13.1	307.5
Procurement	237.5	27.0	56.7	145.8	467.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	495.5	46.0	74.1	158.9	774.5

b. Annual Summary -- SMART-T

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1992				22.1	20.0
1993				47.7	44.3
1994				60.0	56.7
1995				31.2	30.1
1996				20.9	20.5
1997				16.0	15.9
1998				16.9	16.9
1999				23.1	23.4
2000				13.1	13.5
2001				16.0	16.7
2002				17.9	19.0
2003				16.1	17.4
2004				11.0	12.2
2005				0.8	0.9
Subtotal				312.8	307.5

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000					
2001					

# 16b. Program Funding Summary (Cont'd) :

Appropriation: 0300 - Procurement, Defense Agencies

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	2		2.8	2.8	3.0
2003	2		2.8	3 2.8	3.0
Subtotal	4		5.6	5 5.6	6.0

The 2035 Appropriation funds the JCSE requirements (4).

Appropriation: 1109 - Procurement, Marine Corps

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1999	24		13.8	14.7	15.0
2000		-			
2001					
2002	1		1.6	1.6	1.7
2003	15		21.5	21.5	23.3
Subtotal	40		36.9	37.8	. 40.0

The 1109 appropriation funds the U.S. Marine Corps (USMC) requirements.

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Oty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year 3
1996	20	22.9	26.5	52.0	51.4
1997	23	18.6	11.3	34.7	34.7
1998		15.2		21.6	21.8
1999	45	25.8	25.7	56.0	57.3
2000		0.9		0.9	0.9
2001	49	5.2	56.2	34.1	35.9
2002	20	8.2	9.9	20.8	22.3
2003	17	9.8	8.7	27.8	30.4
2004	35	7.5	18.4	29.3	32.7
2005	38	8.2	20.5	36.5	41.6
2006		4.1		17.3	20.1
2007		4.3		12.2	14.5
2008		2.7		6.4	7.8
2009		2.7		4.0	5.0
2010		2.4		2.1	2.6
2011				1.9	2.5
# 16b. Program Funding Summary (Cont'd) :

Appropriation: 2035 - Other Procurement, Army

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year Ş
2012				2.0	2.6
2013				1.9	2.6
2014				2.0	2.7
2015				1.9	2.7
2016				2.0	2.8
2017				1.9	2.8
2018				1.9	2.8
Subtotal	_247	138.5	177.2	371.2	400.5

The 2035 appropriation funds the Army requirements (239) and the Other DoD requirements (8).

Appropriation: 3080 - Other Procurement, Air Force

Fiscal Year	Qty	Rollaway FY 1999 Dollars Nonrec	Rollaway FY 1999 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	9		4.7	5.1	5.1
1998				0.3	0.3
1999	20	1.1	9.0	14.0	14.3
2000				0.2	0.2
2001				0.6	0.6
2002					
2003					
2004					
Subtotal	29	1.1	13.7	20.2	20.5

The 3080 appropriation funds the requirements for the U.S. Air Force (73).

		Rollaway	Rollaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Army	247	138.5	177.2	684.0	708.0
OSD	4		5.6	5.6	6.0
Navy	40		36.9	37.8	40.0
USAF	29	1.1	13.7	20.2	20.5
Grand Total	320	139.6	233.4	747.6	774.5

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#### 17. Delivery/Expenditure Information :

a. Deliveries To Date	Plan	Actual
RDT&	E 0	0
Proc	urement 63	55

Percent Total Program Quantities Delivered: 17.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 209.3

Percent Total Program Expended: 27.0%

#### 18. Operating and Support Costs :

a. Assumptions and Ground Rules --

The following assumptions and ground rules used to develop the operating and support costs for the SMART-T program are based on the November 1998 SMART-T Program Office Estimate (POE) prepared in association with the Milestone III Decision Review.

A three-level maintenance structure is the framework for SMART-T maintenance planning, Unit Level, Direct Support (DS) and Depot Level Maintenance. The SMART-T program assumes contractor support over the life of the program (15 years). The contractor accomplishes all depot level repairs under a five-year failure free warranty. It is assumed that the warranty will be renewed over the remaining life of the terminal. Each complete terminal will be overhauled twice during its lifetime just prior to the subsequent warranty renewals. The conditions under which the SMART-T maintenance costs are calculated include using the annual operating hours per terminal of 1797 hours as extracted from the Operational Mode Summary (OMS) and Mission Profile (MP) section of the MAST ORD dated 10 MAR 1992. The assumptions are based on a peacetime scenario.

There is no antecedent system.

	SMART-T Average Annual	Avg Annual Cost Per Terminal (Antecedent)
Cost Element	SMART-T	
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	25.2	0.0
Intermediate Maintenance	7.4	0.0
Depot Maintenance	23.4	0.0
Contractor Support	11.6	0.0
Sustaining Support	1.1	0.0
Indirect Costs	15.5	N/A

b. Costs -- (FY 1999 Constant (Base-Year) Dollars in Thousands)

# 18b. Operating and Support Costs (Cont'd) :

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b. Costs -- (FY 1999 Constant (Base-Year) Dollars in Thousands)

	SMART-T	Avg Annual Cost Per
	Average Annual	Terminal (Antecedent)
Cost Element	SMART-T	1
Total	84.2	0.0

	······································	· ··· ·· ··
Total O&S Cost	SMART-T	Avg Annual Cost Per
BY\$ (In Millions)	392.0	N/A
TY\$ (In Millions)	504.8	N/A

Report Creation Date: 3/27/2002 8:38:07 AM

# I ABRAMS UPGRADE

INDEX

SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: M1A2 ABRAMS UPGRADE

#### AS OF DATE: December 31, 2001

SUBJECT PAGE Cover Sheet Information 1 2 Mission and Description Executive Summary 2 Threshold Breaches 4 Schedule 4 Performance Characteristics 5 Total Program Cost and Quantity 8 Unit Cost Summary 9 Cost Variance Analysis 9 Unit Cost and Other History 11 12 Contract Information Program Funding Summary 14 Delivery/Expenditure Information 16 Operating and Support Costs 16 1. (U) Designation and Nomenclature (Popular Name): Tank, Combat, Full Tracked, M1A2 (M1A2 Abrams Tank)

### 2. (U) DoD Component: Army

#### 3. (U) Responsible Office and Telephone Number: PEO GCS COL DONALD P. KOTCHMAN ATTN: SFAE-GCS-AB Assigned: April 6, 2001 6501 E. 11 MILE ROAD DSN 786-6885; COMM (810) 574-6885 Warren, MI 48397-5000

#### 4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 23735 (Shared) For M1A2 Development Project D330 (U) PE 23758 (Shared) Horiz Btlfld Digit'n Project D374 (U) PE 63639 (Shared) Armament Project Project DC315

PROCUREMENT: (U) APPN 2033 ICN G82917 (Army) (U) APPN 2033 ICN GA0151 (Army) (U) APPN 2033 ICN GA0730 (Army) APPN 2033 ICN GA0750 (Army) (1)) APPN 2033 ICN GA0755 (Army) (U)(U) APPN 2033 ICN GB1302 (Army) APPN 2033 ICN GC0161 (Army) (U) (U) APPN 2033 ICN GE0161 (Army) OSM:

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kotchmad@tacom.army.mil

DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURIT: MEVEW DEPANTMENT OF DEFENSE

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M1A2 ABRAMS UPGRADE, December 31, 2001

### 4a. (U) Program Elements/Procurement Line Items (Cont'd):

(U) PE 118207 (Shared) Ml Overhaul

#### 5. (U) References:

<u>SAR Baseline (Production Estimate)</u>: (U) AAE Approved Acquisition Program Baseline dated January 15, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 6, 2000.

#### 6. (U) Mission and Description:

(U) The Abrams tank modernization strategy supports the Army Vision. The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower, situational awareness and shock effect. The 120 mm main gun on the MIA1 and MIA2, combined with the powerful 1,500 hp turbine engine and special armor, make the Abrams tank particularly suitable for attacking or defending against large concentrations of heavy armor forces in a highly lethal battlefield.

The M1A2 program provides the Abrams tank with the necessary improvements in lethality, survivability, and fightability required to defeat advanced threats. The M1A2 includes a commander's independent thermal viewer, an improved commander's weapon station, position navigation equipment, a distributed data and power architecture, an embedded diagnostic system, and improved fire control system. The M1A2 System Enhancement Program (SEP) adds second-generation thermal sensors, Thermal Management System (TMS) and upgrades to processors/memory to enable the M1A2 to use the Army's common command and control software enabling the rapid transfer of digital situational data and overlays.

#### 7. (U) Executive Summary:

(U) The M1A2 Abrams tank program is the successor to the M1 and M1A1 tank acquisition programs. Ten M1A2 prototypes were delivered to Army test sites in 1991. An Early User Test & Evaluation (EUT&E), using five of these prototypes, was conducted from June through December 1991. The other prototypes were used to assess ballistic and nuclear vulnerability, system reliability, and logistic supportability. The first of five M1A2 pilot production vehicles was delivered in March 1992. Based on the results of a special Army System Acquisition Review Council (ASARC) held on March 21, 1992, the Army Acquisition Executive (AAE) decided to proceed with low rate initial production (LRIP) of 62 M1A2 tanks. The Congress then directed the Defense Department to proceed with a program to upgrade the M1 tank to the M1A2 configuration. In FY99, a System Enhancement Package(SEP) Engineering Change Proposal(ECP) was incorporated into the M1A2 configuration. The SEP ECP includes the FBCB2 digitization requirements, a Second Generation FLIR, an upgrade to the computer core, color flat panel displays, and an environmental conditioning unit to mitigate power consumption and electronics heat.

# 7. (U) Executive Summary (Cont'd):

An Acquisition Decision Memorandum (ADM), signed on December 18, 1992 by the Deputy to the USD(A), approved the Army's first Acquisition Program Baseline for the Abrams Upgrade Program. M1A2 Live Fire Testing, New Equipment Training, the Initial Operational Test and Evaluation (IOT&E), and the Production Qualification Test (PQT) were completed during 1993 and 1994. The last of the 62 low rate initial production M1A2 tanks was delivered in March 1994. The M1A2 Milestone III ASARC was held on April 8, 1994. The resultant Acquisition Decision Memorandum (ADM), approving the M1A2 for full scale production and deployment, was signed by the Army Acquisition Executive (AAE) on April 20, 1994.

The first production M1A2 upgraded from the M1 configuration was delivered in October 1994. The First Unit Equipped (FUE) milestone was reached on October 21 1995. The latest Acquisition Program Baseline was approved by the AAE on March 6, 2000. The M1A2 SEP FUE took place in July 2000.

The M1A2 Test and Evaluation Master Plan (TEMP) Update 04 which includes the survivability analysis for the M1A2 Tank 2000 was signed by OSD in Dec 2000. M1A2 SEP Conditional Material Release was obtained in Mar 2000. Field Operator's Test and Evaluation IV (FOTE IV) was successfully completed at Fort Hood in Nov 00. The M1A2 SEP performed well at the Division Capstone Exercise (DCX) at Ft Irwin with both offensive and defensive operations receiving accolades from the owning units. The DCX test also verified the digital communication compatibility of the M1A2 SEP tank with platforms on both the SINCGARS network and EPLRS network, which included the Bradley M2A3 and the Kiowa Warrior.

On August 17, 2001 the VCSA approved a full recapitalization program for the Abrams tank which procures 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.

# 8. (U) <u>Threshold Breaches</u>:

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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) <u>Schedule</u>:

a. Milestones --

	Produ	uction	App:	roved	Curi	rent
	<u>Estimat</u>	te_(SAR)	Progra	am (APB)	Est	imate
Block II ASARC Approval	FEB	1985	FEB	1985	FEB	1985
Award Block II Preliminary System	JUL	1985	JUL	1985	JUL	1905
Development Contract						
Award ICWS/SE #3 Preliminary Engineer	ringSEP	1986	SEP	1986	SEP	1986
Development Contract						
Award CO2 LRF Preliminary Engineering	J SEP	1986	SEP	1986	SEP	1986
Development Contract						
Award Block II Advanced System	DEC	1987	DEC	1987	DEC	1987
Development Contract						
MIA2 Milestone II Decision Review	DEC	1988	DEC	1988	DEC	1988
Award Block II FSD Contract	DEC	1988	DEC	1980	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 MIA1 Production Contract	MAY	1992	MAY	19 <b>9</b> 2	MAY	1992
(Incorporating Block II Changes)						
First M1A2 Production Delivery	NOV	1992	NOV	1992	NOV	1992
Live Fire Test						

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# 9a. (U) <u>Schedule (Cont'd)</u>:

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Production	Approved	Current
Estimate (SAR	<u>Program (APB)</u>	<u>Estimate</u>
JAN 1993	JAN 1993	JAN 1993
JUL 1993	JUL 1993	OCT 1993
FEB 1993	FEB 1993	FEB 1993
AUG 1994	AUG 1994	DEC 1994
FEB 1993	• FEB 1993	FEB 1993
ion		
SEP 1993	SEP 1993	SEP 1993
DEC 1993	DEC 1993	DEC 1993
MAR 1994	MAR 1994	MAR 1994
APR 1994	APR 1994	APR 1994
JUN 1995	JUN 1995	OCT 1995
SEP 1997	SEP 1997	SEP 1997
	Production <u>Estimate (SAR)</u> JAN 1993 JUL 1993 FEB 1993 AUG 1994 FEB 1993 ion SEP 1993 DEC 1993 MAR 1994 APR 1994 JUN 1995 SEP 1997	Production         Approved           Estimate         (SAR)         Program         (APB)           JAN         1993         JAN         1993           JUL         1993         JUL         1993           JUL         1993         JUL         1993           FEB         1993         FEB         1993           AUG         1994         AUG         1994           FEB         1993         · FEB         1993           ion         SEP         1993         DEC         1993           DEC         1993         DEC         1993           MAR         1994         MAR         1994           APR         1994         APR         1994           JUN         1995         JUN         1995           SEP         1997         SEP         1997

b. Current Change Explanations -- None

# 10. (U) <u>Performance Characteristics</u>:

a. Performance --

		Approved			Demon-		
Ε	Production stimate (SAR)	Progr Obi/T	am hr	(APB) eshold	strated Perf	Current Estimate	
Maximum Width (inches)	144	144	1	144	144	144	
Maximum Height	96	96	1	96	96	96	
(inches) (grnd to							
center of turret							
roof)							
Maximum Combat Weight	68.5	68.5	-7	69.5	68.5	68.7	
(tons)							
Minimum Range (miles)							
Paved Roads				_			
With NBC	257	257	1	243	254	243	
Without NBC	270	270	1	256	270	256	
Maximum Speed (mph)							
Paved Roads	41.5	41.5	1	41.5	42.5	41.5	
(0% slope)							
Cross Country	30	30	1	30	30	30	
Acceleration (0-20							
mph) (sec)							
Paved Roads(0%slope)							
With NBC	7.5	7.5	1	9.0	7.0	7.5	
Without NBC	7.2	7.2	1	9.0	6.9	7.2	
Combat Mission	360	360	1	320	449	360	
Reliability (MMBF)							
System Maintainability	1.04	1.04	/	1.40	0.95	1.25	
(Maintenance Ratio)							
Track Life (miles)	2000	2000	1	1000	1509	1509	
Air Transportability	C5A,C17	C5A, C17	1	C5A, C17	C5A	C5A,C17	

# 10a. (U) Performance Characteristics (Cont'd):

		A	pproved	Demon-		
	Production	Prog	ram (APB)	strated	Current	
	Estimate (SAR)	Obi/	Threshold	Perf	Estimate	
Fightability-Improved Commander's Weapon Station Visibility	40	40	/ 25	25	25	
over MIA1 (%) Location Determination (% of distance	+/-2	+/-2	/ +/-3	+/~0.6	+/- 3	
Heading error (after 1 hr) (deg-RMS)	+/-1	+/-1	/ +/-3	+/-0.88	+/- 3	
Testability (BIT) (%) On-Board System Level Detection	95	95	/ 95	99	95	
Capability	05	95	/ 90	96	90	
LEU FAULT ISOLATION	5	5	/ 10	9.6	10	
Pate	5	-	/ 10	2.0		
115mm APESDS	(b)(1)					
(Hull/Turret Side						
Crew Areas.	(Team) = 100					
Bustle/Hull Ammo	and the second se					
Comp)						
Targets Acquired/Unit						
Time Over MIA1 (%)						
Average 1st Round Hit						
Probabilities (Round/	105,500 -1.21					
Condition/Ranges)	General Content					
Heat/S-S/1500-						
3000m	10					
Heat/S-M/1500-	The second					
Heat/M-S/1500-						
2500m	0					
Heat/M-M/1500-						
2500m						
KE/S-S/1500-3000m						
KE/S-M/1500-2500m	The second					
KE/M-S/1500-2500m	The Parts					
KE/M-M/1500-2500m						
Armor Protection vs						
Threat (deg)						
Heat Rounds:						
127mm ATGM (Hull &	And a state of the					
Turrent Side Crew		-				
Areas Bustle and			-			
Hull Ammo						
Compartment)						

-

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#### 10a. (U) Performance Characteristics (Cont'd):



The value for Average 1st Round Hit Probablity for Heat rounds moving tank/moving target (M-M) for distance 1500-2500m has changed from TBD to (1) The value for Average 1st Round Hit Probablity for Kinetic Energy rounds moving target (M-M) for distance 1500-2500m has changed from TBD to (b)(1) These changes are due to test data analysis being completed and receipt of final test report.

Demonstrated range on paved roads with NBC was changed from 290 to 253 miles. Demonstrated range on paved roads without NBC was changed from 305 to 270 miles. Demonstrated range adjusted due to loss of fuel tank because of space claim for Under Armor Auxiliary Power Unit (UAAPU) which was eliminated due to lack of funding. UAAPU is expected to be added to SEP tank as a product improvement.

b. Current Change Explanations -- None

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# 11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Production	Approved	Current
a. (D) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	755.4	907.8	889.5
Procurement	6028.6	7981.8	7485.7
Rollaway	(4960.9)		(6242.3)
Other Wpn System	(791.1)		(961.4)
Peculiar Support	(108.5)		(135.1)
Initial Spares	(160.1)		(146.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>_207.9</u>	<u>    85.3</u>	<u>    85.3</u>
Total FY 95 Base-Year \$	6991.9	8974.9	8460.3
Escalation	970.0	822.7	635.6
Development (RDT&E)	(-84.8)	(-64.3)	(-66.1)
Procurement	(1020.8)	(805.3)	(700.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(34.0)	(1.7)	(1.7)
Total Then Year \$	7961.9	9797.6	9096.1
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	<u>1060</u>	<u>1155</u>	<u>1155</u>
Total	1060	1155	1155

Note: Excludes 10 RDT&E prototypes from the SAR Baseline and 0 from the Current Estimate that are not considered fully configured.

(U) Excluded are an additional 15 production pilots and 4 upgrade pilots that are not considered fully configured end items. The total procurement quantity of 1155 MIA2 tanks includes 62 Low Rate Initial Production (LRIP) new production M1A2 tanks, which were all delivered in FY93, and 1093 M1A2 tanks upgraded from M1 tanks.

c. (U) Foreign Military Sales --

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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:

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		UCR	Current	
		Baseline	Estimate	Percent
		(MAR 2000 APB) (	Dec 2001 SAR)	Change
a.	(U) Prog. Acg. Unit Cost (PA	UC)		
	(1) Cost (FY 95 BY\$)	8974.9	8460.2	
	(2) Quantity	1155	1155	
	(3) Unit Cost	7.770	7.325	-5.73
b.	(U) Avg. Proc. Unit Cost (AF	PUC)		
	(1) Cost (FY 95 BY\$)	7981.8	7485.4	
	(2) Quantity	1155	1155	
	(3) Unit Cost	6.911	6.481	-6.22

# 13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	Ma0	TOTAL
Production Estimate	670.6	7049.4	-	241.9	7961.9
Previous Changes:					
Economic	+4.8	-469.0	-	-1.4	-465.6
Quantity	-	+578.7	-	-	+578.7
Schedule	-	-181.8	_	-10.5	-192.3
Engineering	+25.0	+136.3	-	-	+161.3
Estimating	+134.0	+1829.2	~	-143.0	+1820.2
Other	-	~	-	-	-
Support	-	+112.1	-	-	+112.1
Subtotal	+163.8	+2005.5		-154.9	+2014.4
Current Changes:					
Economic	+0.5	+110.9	-	-	+111.4
Quantity	-	-938.2	-	-	~938.2
Schedule	-	-18.4	-	-	-18.4
Engineering	-	-	-	-	-
Estimating	-11.5	-114.6	-		-126.1
Other	-	-	-	-	-
Support	-	+91.1	_	-	+91.1
Subtotal	-11.0	-869.2		-	-880.2
Total Changes	+152.8	+1136.3		-154.9	+1134.2
Current Estimate	823.4	8185.7	-	87.0	9096.1

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# 13a. (U) Cost Variance Analysis (Cont'd):

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(U) Summary (FY 95 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	-	+488.8			+488.8
Schedule		-	-	-	-
Engineering	+22.9	+118.1	_	-	+141.0
Estimating	+121.6	+1455.8		-122.5	+1454.9
Other	-	-	-		-
Support	-	+111.0	-	-	+111.0
Subtotal	+144.5	+2173.7	-	-122.5	+2195.7
Current Changes:					
Quantity	-	-692.1	-	-	-692.1
Schedule		-	-	-	-
Engineering	-	-	-	-	-
Estimating	-10.4	-97.0	-	-	-107.4
Other	-	-	-	-	-
Support	~	+72.5	+	-	+72.5
Subtotal	-10.4	-716.6	_	-	-727.0
Total Changes	+134.1	+1457.1	-	-122.5	+1468.7
Current Estimate	889.5	7485.7	-	85.4	8460.6

b. (U) Current Change Explanations --

## (Dollars in Millions) Base-Year Then-Year

(1)	RDT&E		
	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)	-0.2	-0.2
	Congressional decrement eliminated BCIS Program (Estimating)	-2.7	-3.0
	Refinement of estimates for ballistic and non ballistic portions of the live fire test (Estimating)	-7.5	-8.3
	RDT&E Subtotal	-10,4	-11.0
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+21.8
	Economic adjustment for negative program change. (Economic)	N/A	+89.1
	Reduction in quantity of M1A2 to M1A2 SEP retrofits from 608 to 419 per VCSA recapitalization decision on 17 Aug 01 (Quantity)	-692.1	-938.2

# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations		
	(Dollars in	Millions)
	<u>Base-Year T</u>	<u>hen-Year</u>
Acceleration of annual procurement buy profile (Schedule)	. 0.0	-18.4
Adjustment for Current and Prior Inflation. (Estimating)	-14.3	-17.0
Refinement of estimate for retrofit from the M1A2 to M1A2 SEP configuration (Estimating)	-82.7	-97.6
Adjustment for Current and Prior Inflation. (Support)	-3.6	-3.6
Initial Spares reduction due to quantity change. (QR) (Support)	-94.7	-116.4
Reduced Peculiar Support due to quantity change (QR)(Support)	-23.3	-29.4
Change in Other Wpn System (Support)	+194.1	+240.5
Procurement Subtotal	-716.6	-869.2

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		Changes							
Prod Est								Cur Est	
	Econ	Qty_	Sch	Eng	Est	Oth	Spt	Total	
7.51	-0.307	-0.933	-0.182	+0.140	+1.47		+0.176	+0.364	7.88

b. (U) Procurement Unit Cost (PUC) History

Current SA	AR Base	line t	o Ci	urrent l	Estimate
------------	---------	--------	------	----------	----------

			00110.00							
PUC		Changes								
Prod Est	Cr							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
6.65	-0.310	-0.854	-0.173	+0.118	+1.48		+0.176	+0.437	7.09	

#### 14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate (PdE)	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	9096.1
Total Quantity	N/A	N/A	1060	1155
Prog Acq Unit Cost	N/A	N/A	7.5	7.9

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement	Initial Con	tract Price
(U) <u>ABRAMS Upgrade:</u>	<u>Target</u> <u>Cei</u>	<u>lina Oty</u>
General Dynamics Corp., Warren, MI		
DAAE07-95-C-0292, FFP	\$1324.0	N/A 600
Award: March 10, 1995		
Definitized: September 25, 1996		
Current Contract Price	Estimated Price	At Completion
<u>Target Ceiling Oty</u>	Contractor	Program Manager
\$1392.2 N/A 580	\$1412.0	\$1412.0

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: This contract was converted from the Long Lead Materiel (LLM) funding contract to a 5 year Multiyear production contract starting in FY96.

This contract is completed and will no longer be reported in the SAR.

	Initial	Contract Pr	ice
(U) Upgrade Production LLM:	<u>Target</u>	<u>Ceiling</u>	Oty
General Dynamics Corp, Warren, MI			
DAAE07-00-C-N044, Cost Contract	\$741.2	N/A	307
Award: March 30, 2001			
Definitized: March 30, 2001			
Current Contract Price	Estimated P	rice At Comr	letion
Current Contract Fride	Contractor I.	Decara-	Managar
<u>Target Ceiling OLY</u>	Contractor	Program	<u>Manager</u>

#### 15. (U) Contract Information (Cont'd):

\$741.2 N/A 307 \$ \$

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this Cost Contract 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 FYO1. Since this is a FFP contract, cost and schedule variance information is not required.

(U) <u>New Contract: TRANSMISSI:</u>	Initial <u>Target</u>	Contract P. <u>Ceiling</u>	rice <u>Qtv</u>
ALLISON TRANSMISSION, INDIANAPOLIS IN DAAE07-01-C~N040, FFP/CPFF Award: December 22, 2000	\$39.9	N/A	204
Definitized: December 28, 2000			
Comments Comments During			

current	Contract Price		Estimated Price	At Completion
<u>Target</u>	<u>Ceilina</u>	<u>Oty</u>	<u>Contractor</u>	Program Manager
\$39.9	N/A	204	\$39.9	\$39.9

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP/CPFF contract.

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# 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

#### a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY85-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-10)	<u>Total</u>
RDT&E	804.6	0.2	9.4	9.2	823.4
Procurement	5216.4	720.6	522.1	1726.6	8185.7
MILCON	-	-	-	-	~
O&M	87.0	-	-	-	87.0
Total	6108.0	720.8	531.5	1735.8	9096.1

b. Annual Summary -- ABRAMS Upgrade

- . .

Appropriation: 2040 - Research, Development, Test + Eval, Army

		Rollaway	Rollaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1985				47.9	36.2
1986				29.2	22.7
1987				30.6	24.5
1988				89.3	74.4
1989				142.9	123.9
1990				84.2	75.8
1991				126.3	117.9
1992				74.9	71.6
1993				7.7	7.5
1994				32.9	32.8
1995				16.6	16.9
1996				49.8	51.5
1997				66.3	69.3
1998				35.1	37.0
1999				16.5	17.6
2000				11.4	12.3
2001				11.5	12.7
2002	· · · · · · · · · · · · · · · · · · ·			0.2	0.2
2003				8.3	9.4
2004				5.4	6.2
2005				2.5	3.0
Subtotal				889.5	823.4

#### 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2033 - Proc of Weapons & Tracked Combat Veh

		Rollaway	Rollaway		
		FY 1995	EY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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		101.2	289.0	298.5
1996	100		325.5	545.3	570.8
1997	120		409.9	457.8	483.5
1998	120		449.1	559.4	597.8
1999	120		571.4	661.1	711.9
2000	120		530.9	750.5	822.0
2001	100		604.1	491.7	546.1
2002	104		583.6	639.1	720.6
2003	103		441.7	455.1	522.1
2004			120.0	243.7	284.7
2005		56.9	145.1	178.2	212.1
2006			206.3	269.7	327.1
2007			242.6	306.8	379.2
2008			254.3	317.2	399.5
2009			46.8	47.5	61.0
2010			47.4	48.2	63.0
2011					
2012					
Subtotal	1155	297.5	5918.3	7485.7	8185.7

(U) Within FY01-FY10, recurring rollaway dollars includes SEP Retrofit Program, which has no additional quantities associated with it. The VCSA recapitaliztion decision on 17 Aug 01 reduced the total number of MIA2 to MIA2 SEP retrofits from 608 to 419. The total number of MIA2s produced is 1155 but only 966 will be in a SEP configuration. The remaining 189 vehicles will stay in the MIA2 configuration. Nonrecurring dollars in FY05 are to close all upgrade facilities not required for other programs.

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#### 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2020 - Operation & Maintenance, Army

		Rollaway	Rollaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1993				2.2	2.1
1994				17.3	17.2
1995				21.9	22.1
1996				20.1	20.7
1997				23.8	24.9
Subtotal				85.3	87.0

		Rollaway	Rollaway	Total	Total
	,	Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1155	297.5	5918.3	8460.5	9096.1

#### 17. (U) Delivery/Expenditure Information:

а.	(U)	Deliveries To Date	<u>Plan</u>	<u>Actual</u>
		RDT&E	0	0
		Procurement	890	890

(U) Percent Total Program Quantities Delivered: 77.1%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 5476.8
  - (U) Percent Total Program Expended: 60.2%

#### 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --Active units for M1A1(Forscom + Europe) drive an average of 650 miles per year. Reserve units and training tanks drive an average of 261 miles per year. An average for an operating vehicle is 550 miles per year. Source Operating & Support Management Information System (OSMIS) 1998 for M1A1. Assume the same annual usage for M1A2. More of the M1A1 tanks are in Reserve Units, therefore MPA and training costs are lower than M1A2 tanks. Depot maintenance for M1A1 includes Abrams Intergrated Management (AIM) tank overhauls of 135 per year averaged over the M1A1 fleet.

# 18b. (U) Operating and Support Costs (Cont'd):

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b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

	ABRAMS Upgrade	Avg Annual Cost Per
	M1A2 in an Active	MIAL in an Active
Cost Element	Army Battalion	Army Battalion
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	159.8	63.4
Intermediate Maintenance	41.7	28.5
Depot Maintenance	9.5	31.5
Contractor Support	9.3	0.0
Sustaining Support	2.8	3.2
Indirect Costs	148.8	101.7
Maintenance Personnel-PA	0.7	0.5
Indirect Support Personn	148.8	105.7
Training (OPA, MPA, OMA)	145.5	108.9
War Reserve Ammo	9.3	9.3
Modification Kits	10.4	7.7
Crew Costs	123.6	82.5
Indirect Costs	N/A	N/A
Total	810.2	542.9

Total O&S Cost	ABRAMS Upgrade	Avg Annual Cost Per
BY\$ (In Millions)	15649.2	0.8
TY\$ (In Millions)	21595.0	0.9

Report Creation Date: 03/20/2002 10:45:30 AM

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N-3 AIM-9X

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SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: AIM-9X

AS OF DATE: December 31, 2001

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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

Distance of the local sector

# 3. (U) Responsible Office and Telephone Number:

Program Executive Officer (PMA259) CAPT David Venlet 47123 Buse Road Unit IPT, Suite 451 Assigned: April 1, 1999 Patuxent River, MD 20670-1547

DSN 757-7311; COMM (301)757-7311 VENLETDJ@NAVAIR.NAVY.MIL

02.0.0635

4. (U) Program Elements/Procurement Line Items: RDT&E: PE 0207161F Project 4132 (U) PE 0207161N Project 0457 (U)PE 0603715D Project W0456 (U) **PROCUREMENT:** APPN 1507 ICN 0204162N (Navy) TIO D (U)APPN 1507 ICN 0206138M (Navy) (U) APPN 3020 ICN 0207161F (Air Force) 71197 (U) AS AMEIDED AS AMENDED CANILLA PETALIONS ۰. Depure ••

List Security Class Guide of 10/30/01 Downgrade instructions. Jree Declassify on va

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#### 5. (U) References:

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SAR Baseline (Development Estimate):
(U) USD(A&T) AIM-9X Acquisition Decision Memorandum dated December 16, 1994.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 21, 2000.

#### 6. (U) Mission and Description:

(U) The AIM-9X Sidewinder is a 5th generation Infra-Red(IR) air-to-air missile that complements the Advanced Medium Range Air-to-Air Missile (AMRAAM). Air superiority is essential to the warfighter and includes first-shot, first kill opportunity against an enemy employing IR countermeasures. Improvements in missile seeker performance and kinematic capability allow current missile components to be retrofitted to the maximum extent possible. These improvements extend the AIM-9X's capability into the Near Beyond Visual Range arena resulting in a more effective balance with AMRAAM. AIM-9X provides a kill region before a fighter-bogey merge, where AMRAAM capability is not achievable at high off boresight angles or may be denied by electronic attack.

#### 7. (U) Executive Summary:

(U) Demonstration/Validation (DEM/VAL) contracts were awarded December 1994, to Raytheon Company and Hughes Aircraft Company and completed June 1996. After evaluation of both companies Engineering and Manufacturing Development (EMD) and Low Rate Initial Production (LRIP) proposals, along with an assessment of the United Kingdom's Advanced Short Range Air-to-Air Missile, Hughes Aircraft Company was selected to complete development and produce the AIM-9X. The EMD contract with Hughes Aircraft Company (now Raytheon Missile Systems) was awarded December 13, 1996.

An OSD program protection policy resulted in an AIM-9X anti-tamper requirement. Control Actuator System (CAS) hardware technical issues delayed first test launch from July 1998 until March 1999.

As a result of the initial launch delay, the Program Office staffed an APB revision. These changes were reported in the AIM-9X June 1999 quarterly Selected Acquisition Report and the APB revision was approved in September 1999.

In October 1999, the FY 00 Appropriations Act zeroed FY 00 procurement funding. The decision delayed LRIP I contract award by six months from May 2000 to November 2000, resulting in a September 2003 Initial Operational Capability (IOC). An APB revision was approved in March 2000 reflecting the revised IOC date of September 2003.

Initial development consisted of safe separation and guided missile launches from both the F/A-18C/D and F-15C aircraft. Pre and post-flight modeling and simulation data closely matched actual flight data. CAS performance met requirements. In September 1999, Program Executive Office (Tactical)(PEO(T))

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AIM-9X, December 31, 2001

### 7. (U) Executive Summary (Cont'd):

authorized entry into Operational Assessment(OA)-IIA. Five guided missiles were launched (three from F/A-18C/D, two from F-15C), resulting in four successful intercepts of QF-4 target drones. The August 2000 report of results from the OA resulted in the best rating possible, "Potentially Operationally Effective and Suitable".

In September 2000, the Defense Acquisition Board (DAB) approved AIM-9X for entry into LRIP. For future LRIP lots and the Full Rate Production (FRP) decision, the AIM-9X program was designated an ACAT IC program, and the milestone decision authority was delegated to Navy Acquisition Executive.

In December 2001, the program completed all developmental testing objectives. Tests included missile level qualification, ship and field suitability, carrier suitability, and numerous logistics demonstrations for both Navy and Air Force. A total of 20 separation and 19 guided launches were completed over the development program with results successfully matching modeling and simulation.

In September 2001, the Navy Acquisition Executive approved production for LRIP II and III missiles. The contract for LRIP II was awarded to Raytheon Missile Systems in November 2001. The LRIP III contract will be awarded once FY03 funds are available. Initial Operational Test and Evaluation (IOT&E) will be conducted in FY 2002.

#### 8. (U) Threshold Breaches:

	Item	
Schedul	e	No
Perform	ance	No
Cost	RDT&E	No
	Procurement	No
	MILCON	No
	O&M	No
	Program Acquisition Unit Cost (PAUC)	No
	Average Procurement Unit Cost (APUC)	No

a. (U) Acquisition Program Baseline (APB):

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

### 9. (U) <u>Schedule</u>:

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a. Milestones --

	Develop	ment	Appr	oved	Curr	ent
	<u>Estimate</u>	(SAR) P	rogra	m (APB)	Esti	mate
Milestone IV/I	DEC 199	94	DEC	1994	DEC	1994
DEM/VAL Contract Award	DEC 19	94	DEC	1994	DEC	1994
Early Operational Assessment						
Start	FEB 19	95	FEB	1995	MAR	1995
Complete	FEB 199	96	FEB	1996	MAY	1996
Milestone II	OCT 19	96	OCT	1996	DEC	1996
EMD Contract Award	JAN 19	97	JAN	1997	DEC	1996
Critical Design Review	JUL 19	98	JUL	1998	MAR	1998
IOT&E						
Complete	AUG 200	01	NOV	2002	JAN	2003(Ch-1)
LRIP DAB Decision	APR 20	00	APR	2000	SEP	2000(Ch-2)
Milestone III SAE Review	MAR 20	02	MAR	2003	JUN	2003(Ch-3)
Initial Operational Capability	AUG 20	02	SEP	2003	SEP	2003

(U) <u>ACRONYMS</u> 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) All dates listed for Approved Program (APB) are the objective goals.

(Ch-1) The Program Manager's Estimate is revised for IOT&E Complete from Nov 2002 to Jan 2003 based on current IOT&E schedule. Threshold requirement is May 2003.

(Ch-2) The Program Manager's Estimate was revised for LRIP DAB from Aug 2000 to Sep 2000 to reflect actual date of Defense Acquisition Board (DAB).

(Ch-3) The Program Manager's estimate is revised for MS III SAE Review from May 2003 to Jun 2003 based on IOT&E schedule. Threshold requirement is Sep 2003.

# 10. (U) <u>Performance Characteristics</u>:

a. Performance --

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Day/Night Capability Infrared counter counter measures (IRCCM)	Development <u>Estimate (SAR)</u> Yes (b)(1)	Approved Program (APB <u>Obj/Threshol</u> Yes / Yes	Demon- ) strated <u>d Perf</u> Yes	Current Estimate Yes
Aircraft Interface		1 or - 1 1 or	- (	
Missile Weight (ibs)	192	192 / 210	.= <.or.=	<.or.=
Missile Size	1 ) L	172 7 210	100	176
Length (in.)	<.or.= 115	<.or.= / <.or 115 / 123	.= 119.2	119.2
Box Size (in.)	<.or.≖ 12.5 × 12.5	<.or.= / <.or 12.5 x / 12.5 12.5 / 12.5	.= <12.15 x x 12.15	<.or.= 12.5 x 12.5
Diameter (in.) Digital Interface	5 Employ from current fighter aircraft without digital inter- face	5 / <.or Employ / Empl from / from current / futu fighter / curr aircraft/ figh without / airc digital / with inter- / digi face / inte / face	<pre>,= 7 5 oy Employed from re/ F/A-18 ent C/D and ter F-15C raft with</pre>	5 Employ from current fighter aircraft with digital inter- face
Off Boresight				
Cueing/Verification	Inter- face to all current and planned aircraft systems which provide accurate Line of Site to target	Inter- / Inte face to / face all / with current / curr and / plan planned / airc aircraft/ rada systems / syst which / and provide / plan accurate/ Helm Line of / Moun Site to / Cuei target / Syst	r- JHMCS and Radar ent/ on both ned F-15C raft and r F/A-18C/ ems D ned .et ted ng em	Inter- face to all current and planned aircraft systems which provide accurate Line of Site to target

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# 10a. (U) Performance Characteristics (Cont'd):



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# 10b. (U) Performance Characteristics (Cont'd):

b. Current Change Explanations --

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Current Change Explanations N1 Changes in demonstrated performance characteristics continue to meet or exceed threshold levels.
(b)(1) to to the aggregate based on demonstrated Developmental Test performance.
(b)(1) (b)(1) (b)(1) (b)(1) (b)(1) (b)(1) (b)(1) (c)(1) (
(b)(1) based on demonstrated performance.
(Ch-4) Changed Launch(deg.)from(b)(1) to(b)(1) based on demonstrated performance.
(Ch-5) Change Probability of Kill (PK) from (b)(1) to (b)(1) benign, and from (b)(1) based on modeling and simulation results entering TOTAL.
(b)(1) (b)(1) based on
demonstrated Reliability Demonstration Test (RDT) and Captive Carriage performance. Also changed demonstrated reliability from (b)(1) based on flight test reliability performance alone.
(Ch-7) Incoming Missile from (b)(1) Deleted from Operational Requirements Document(ORD) in Ma 2000.
(U) (Ch-8) Changed Detect Non-operational Missile (BIT) all components from

>.or.=.80 to >.or.=.90 based on demonstrated performance.

(U) (Ch-9) Changed Detect Non-operational Missile (BIT - able Components) from >.or.=.95 to >.or.=.90 based on demonstrated performance.

(U) (Ch-10) Changed False Alarm Rate from TBD to 18 hours based on BIT False Alarm Metric changes to Mean Time Between False Alarm (MTBFA) in ORD May 2000 with threshold >.or.=16 hours.

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#### 11. (U) Total Program Cost and Quantity (Dollars in Millions):

a;	(U) Cost	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
	Development (RDT&E)	531.4	531.4	547.6
	Procurement	1932.6	1932.6	1876.9
	Flyaway	(1677.2)		(1816.5)
	Nonrecurring			(4.4)
	Total Flyaway	(1677.2)		(1820.9)
	Other Weapons Systems	(138.2)		(0.0)
	Peculiar Support	(78.1)		(40.9)
	Initial Spares	(39.1)		(15.1)
	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	2424.5
	Escalation	768.9	768.9	532.8
	Development (RDT&E)	(22.1)	(22.1)	(14.2)
	Procurement	(746.8)	(746.8)	(518.6)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	3232.9	3232.9	2957.3

(U) Costs listed for Approved Program (APB) are the objective goals.

Funding for Seek Eagle is not included in the current estimate above. It is reported in a separate program element and managed at Eglin Air Force Base (AFB), FL.

b. (U) Quantity			
Development (RDT&E)	49	49	45
Procurement	10000	10000	<u>10097</u>
Total	10049	10049	10142

(U) Note: The LRIP quantities approved at Milestone II were 150 (lst year), 250 (2nd year) and 600 (3rd year). Approved LRIP quantities on contract are 130 for LRIP I, 243 for LRIP II, and current planned buy is 581 for LRIP III. This does not represent more than 10% of the planned program buy.

c. (U) Foreign Military Sales --There has been considerable international interest in the AIM-9X. Approved classified briefs have been given to Australia, Norway, Belgium, Denmark, the Netherlands, Canada, Korea, Switzerland, and Finland. Classified briefs are planned for Turkey, Portugal and Spain in CY-02. In the world market, competing IR missiles are ASRAAM, PYTHON, and IRIS-T missiles. No country has selected AIM-9X yet but several are approaching decisions in 2002.

d. (U) Nuclear Costs --

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# 11d. (U) Total Program Cost and Quantity (Cont'd):

None.

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## 12. (U) Unit Cost Summary:

	ILC COSC SUMMARY.			
		UCR	Current	
		Baseline	Estimate	Percent
		(MAR 2000 APB) (Dec.	2001 SAR)	<u>Change</u>
a. (U)	) Prog. Acq. Unit Cost (PAUC)			
	(1) Cost (FY 1997 BY\$)	2464.0	2424.5	
	(2) Quantity	10049	10142	
	(3) Unit Cost	0.245	0.239	-2.45
b. (U)	) Avg. Proc. Unit Cost (APUC)			
	(1) Cost (FY 1997 BY\$)	1932.6	1876.9	
	(2) Quantity	10000	10097	
	(3) Unit Cost	0.193	0.186	-3.63

### 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	-17.8	-228.0	-	-245.8
Quantity	-	+20.3	-	+20.3
Schedule	+25.4	+43.1	- 1	+68.5
Engineering	+19.1	+151.3	-	+170.4
Estimating	-27.7	-117.5	-	-145.2
Other	-	-	-	-
Support		-279.6		-279.6
Subtotal	-1.0	-410.4		-411.4
Current Changes:				
Economic	+1.5	-12.8	- '	-11.3
Quantity	-0.8	1 –	-	-0.8
Schedule	-	+17.8	-	+17.8
Engineering	-	-	-	-
Estimating	+8.6	+127.8	- '	+136.4
Other	-	-	-	-
Support		-6.3	-	-6.3
Subtotal	+9.3	+126.5	-	+135.8
Total Changes	+8.3	-283.9	-	-275.6
Current Estimate	561.8	2395.5	-	2957.3

# 13a. (U) Cost Variance Analysis (Cont'd):

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(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	-	+13.7	-	+13.7
Schedule	+21.3	-	-	+21.3
Engineering	+18.4	+116.3	_	+134.7
Estimating	-29.6	-76.1	-	-105.7
Other	-	-	-	-
Support	-	-194.1	-	-194.1
Subtotal	+10.1	-140.2	-	-130.1
Current Changes:				
Quantity	-0.8	-	-	-0.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+6.9	+89.8	-	+96.7
Other	-	-	-	-
Support	-	~5.3	-	-5.3
Subtotal	+6.1	+84.5	-	+90.6
Total Changes	+16.2	-55.7	-	-39.5
Current Estimate	547.6	1876.9	-	2424.5

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

_

(1)	RDT&E	DAGE AVEL	111011 1C04
	Revised escalation indices (Economic)	N/A	+1.5
	Decrease of 2 Fully Configured RDT&E missiles from 25 to 23 - (Navy) (Quantity)	-0.6	-0.6
	Decrease of 2 Fully Configured RDT&E missiles from 24 to 22 (Air Force) (Quantity)	-0.2	-0.2
	Adjustment for Current and Prior Inflation - Navy (Estimating)	-0.8	-0.8
	Execution Adjustments Navy - To include Anti-Tamper and additional testing requirements (Estimating)	+5.9	+6.5
	Adjustment for Current and Prior Inflation - Air Force (Estimating)	-0.7	-0.7
	Execution Adjustments Air Force ~ To include Anti-Tamper and additional testing requirements (Estimating)	+2.5	+3.6
	RDT&E Subtotal	+6.1	+9.3
(2)	<u>Procurement</u> Revised escalation indices. (Economic) Economic adjustment for negative program change. (Economic)	N/A N/A	-13.4 +0.6

# 13b. (U) Cost Variance Analysis (Cont'd):

: -

b. (U) Current Change Explanations		
	(Dollars i <u>Base-Year</u>	in Millions) <u>Then-Year</u>
Stretchout of annual procurement buy profile. (Schedule)	0.0	+18.1
Acceleration of annual procurement buy profile. (Schedule)	0.0	-0.3
Adjustment for Current and Prior Inflation - Navy (Estimating)	-0.3	-0.3
Costing assumptions - Navy revised at LRIP Adoption of Procurement Price Commitment Curve and conversion of government furnished equipment to contractor furnished equipment (Estimating)	+37.5	+53.3
Adjustment for Current and Prior Inflation - Air Force (Estimating)	-0.3	-0.3
Costing assumptions - Air Force revised at LRIP. Adoption of Procurement Price Commitment Curve and conversion of governmen furnished equipment to contractor furnished equipment (Estimating)	+52,9 t	+75.1
Adjustment for Current and Prior Inflation - Navy and Air Force (Support)	-0.1	-0.1
Change in Initial Spares - Navy revised estimate to reflect change in buy profile (Support)	+1.5	+1.9
Change in Peculiar Support - Navy revised estimate for training support and equipment. (Support)	-8.3	-10.2
Change in Thitial Spares - Air Force revised estimate to reflect change in buy profile (Support)	+4.2	+4.9
Change in Peculiar Support - Air Force revised estimate for training support and equipment (Support)	-2.6	-2.8
Procurement Subtotal	+84.5	+126.5

# AIM-9X, December 31, 2001

# 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
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PAUC		Changes							PAUC
Dev Est	C							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.322	-0.025	-0.002	+0.009	+0.017	-0.001		-0.028	-0.030	0.292

#### b. (U) Procurement Unit Cost (PUC) History

Current	SAR	Baseline	to	Current	Estimate

PUC	Changes								
Dev Est	st							Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.268	-0.024	-0.001	+0.006	+0.015	+0.001		-0.028	-0.031	0.237

# c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	DEC 1994	DEC 1994	N/A	DEC 1994
Milestone II	OCT 1996	OCT 1996	N/A	DEC 1996
Milestone III	SEP 2002	MAR 2002	N/A	MAY 2003
IOC	SEP 2003	AUG 2002	N/A	SEP 2003
Total Cost	695.0	3232.9	N/A	2957.3
Total Quantity	0	10049	N/A	10142
Prog Acq Unit Cost	0.0	0.3	N/A	0.3

#### 15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E (U) <u>AIM-9</u>	 X: att Co Tuccor		Initial <u>Target</u>	. Contract Pr <u>Ceiling</u>	rice <u>Otv</u>
N00019-97-C- Award: Decem	0027, CPIF/AF ber 13, 1996	006	\$169.2	N/A	49
Curren	t Contract Pric	.990 Ce	Estimated F	rice At Comr	letion
<u>Target</u> \$264.8	<u>Ceiling</u> N/A	Oty 45	<u>Contractor</u> \$314.3	Program \$3	Manager 314.3

AIM-9X, December 31, 2001

#### 15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	Schedule Variance
Previous Cumulative Variances	\$0.7	\$-1.1
Cumulative Variances To Date (12/31/01)	<u>\$-6.1</u>	<u>S-1.7</u>
Net Change	\$~6.8	\$-0.6

#### Explanation of Change:

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(U) Net change in cumulative cost variances are due to flight tests, software and government furnished equipment issues.

(U) Contract Comments: Contract is 98% complete. This will be the last reporting period for the RDT&E contract. The initial and current contract prices do not include the contractor's investment of \$48M. The estimated price at completion includes the investment of \$48M.

b.	Procurement		Initial	Contract Pr	ice
(U)	<u>AIM-9X:</u>		Target	<u>Ceiling</u>	<u>Oty</u>
Hughes	Aircraft Co., Tucson,	AZ			
N00019-	-97-C-0027, FFP		\$49.7	N/A	130
Award:	November 20, 2000				
Definit	tized: N/A				
C	Current Contract Price		Estimated P	rice At Comp	letion
Tarc	<u>ret Ceilina</u>	<u>Oty</u>	<u>Contractor</u>	Program	Manager
\$86	6.2 N/A	373	\$86.2	\$	86.2

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: Initial Contract price is for LR1P I. Current Contract Price combines LRIP I and LRIP II.

#### AIM-9X, December 31, 2001

# 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY95-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-18)	Total
RDT&E	503.4	22.0	4.8	31,6	561.8
Procurement	56.2	59.6	111.0	2168.7	2395.5
MILCON	-	_	-	-	
0.5M	~	-	-	-	-
Total	559.6	81.6	115.8	2200.3	2957.3

(U) Funding for P3I included in the RDT&E appropriation.

b. Annual Summary -- AIM9X

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Appropriation: 0400 - RDT&E, Defense Agencies

		Flyaway	Flyaway		
		EY 1997	FY 1997	Totai	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				47.6	46.4
Subtotal				47.6	46.4

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal		Flyaway FY 1997 Dollars	Flyaway FY 1997 Dollars	Total Program	Total
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
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				22.5	23.8
2002				15.2	16.3
2003				1.7	1.9
2004				0.6	0.7
2005				1.0	1.1
2006				1.1	Ĩ.3
2007				1.1	1.3
Subtotal	23			263.9	270.7

# 16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3600 - Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY 1997 Dollars Nonrec	Flyaway FY 1997 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				18.9	18.8
1997				29.0	29.1
1998				50.3	50.9
1999				47.8	49.0
2000				37.9	39.4
2001				20.5	21.7
2002				5.3	5.7
2003				2.7	2.9
2004				0.4	0.4
2005				5.0	5.7
2006				13.4	15.4
2007				4.9	5.7
Subtotal	22			236.1	244.7

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	21.1	25.6	27.5
2002	105	0.1	20.8	23.1	25.2
2003	295	0.1	45.9	48.8	54.2
2004	142	0.1	27.0	28.1	31.8
2005	148	0.1	28.6	29.9	34.5
2006	151	0.1	28.9	30.4	35.7
2007	153	0.1	28.4	30.9	37.0
2008	369	0.1	64.6	66.2	80.7
2009	367	0.1	69.2	70.8	87.9
2010	371	0.1	67.0	68.6	86.8
2011	371	0.1	64.9	66.4	85.7
2012	370	0.1	63.6	65.2	85.7
2013	368	0.1	65.3	66.9	89.3
2014	368	0.1	64.0	65.5	89.4
2015	368	0.1	62.5	64.1	89.1
2016	368	0.1	61.9	63.5	90.0
2017	368	0.1	62.7	64.3	92.9
2018	255	0.1	43.8	43.9	64.6
Subtotal	5000	2.7	890.2	922.2	1188.0

# 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1997	FY 1997	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001	67	0.1	22.4	26.7	28.7
2002	138	0.1	26.5	31.5	34.4
2003	286	0.1	45.7	51.1	56.8
2004	344	0.1	62.6	65.4	74.0
2005	246	0.1	47.0	49.2	56.7
2006	251	0.1	46.9	50.1	58.8
2007	249	0.1	45.5	47.7	57.1
2008	390	0.1	66.2	67.4	82.1
2009	390	0.1	70.8	72.1	89.6
2010	397	0.1	69.0	69.1	87.4
2011	397	0.1	66.7	66.8	86.1
2012	341	0.1	59.3	59.4	78.1
2013	277	0.1	53.3	53.4	71.2
2014	277		52.2	52.2	71.3
2015	277	0.1	51.0	51.1	71.0
2016	277	0.1	50.5	50.6	71.7
2017	254	0.1	47.1	47.2	68.2
2018	239	0.1	43.6	43.7	64.3
Subtotal	5097	1.7	926.3	954.7	1207.5

(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.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Oty	Nonrec	Rec	Base-Year \$	Then-Year \$
OSD				47.6	46.4
Navy	5023	2.7	890.2	1186.1	1458.7
USAF	5119	1.7	926.3	1190.8	1452.2
Grand Total	10142	4.4	1816.5	2424.5	2957.3

# 17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	Plan	<u>Actual</u>
	RDT&E	4 5	35
	Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 524.3
# 17b. (U) Delivery/Expenditure Information (Cont'd):

(U) Percent Total Program Expended: 17.7%

# 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The estimate for the Operational 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 this joint service air-to-air missile (excluding base operating support). The estimate assumes 12 carriers deployed per year (beginning in the third year of operations.) Unit level consumption primarily relates to the annual training firings and transportation Receipt, Segregation, Storage and Issue (RSSI). The system is procured with an All-Up-Round (AUR) warranty of 2000 hours power-on time or 10 years, whichever comes first, on all Contractor Furnished Equipment (CFE). Depot AUR maintenance is limited to component repair of failed Government Furnished Equipment (GFE) and 2nd destination transportation. The Active Optical Target Detector (AOTD), rocket motor, and warhead are to be provided GFE until the year 2008. The cost estimate considers a twenty (20) year service life for AUR and a thirteen (13) year service life for Captive Air Training Missiles (CATM's). The estimate spans a thirty-three (33) year period. Contractor support is required to repair out of warranty and voided warranty AURs. This cost includes the required AUR repairs, software support, and technical publication revisions. The sustaining support consists of replenishment spares, support equipment replacement, systems engineering and program management, and missile demilitarization. Intermediate maintenance and indirect costs are as noted.

	AIM9X	AIR FORCE
	Avg Annual Cost Per	Avg Annual Cost Per
Cost Element	Missile	Missile
Mission Pay & Allowances	0.7	0.3
Unit Level Consumption	4.2	7.5
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.7	0.6
Sustaining Support	3.2	1.6
Indirect Costs	0.1	0.2
	N/A	N/A
Total	8.9	10.2

## b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

# 18b. (U) Operating and Support Costs (Cont'd):

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T	an	
Total O&S Cost	AIM9X	AIR FORCE
BY\$ (In Millions)	292.1	335.3
TY\$ (In Millions)	559.8	675.0

Report Creation Date: 03/25/2002 10:49:34 AM

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SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: CEC

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AS OF DATE: December 31, 2001

1. (U) Designation and Nomenclature (Popular Name): Cooperative Engagement Capability (CEC); AN/USG-2/3

2. (U) DoD Component: Navy

N-5 (EC

Joint Participants: U.S. Air Force (AWACS); U.S. Army (PATRIOT); JLENS Program (Studies/Demonstrations)

# 3. (U) Responsible Office and Telephone Number:

Program Executive Office Capt. Michael S. Frick Theater Surface Combatants (PMS-465) Assigned: March 7, 2002 1333 Isaac Hull Avenue, S.E. DSN 336-1977; COMM (202) 781-1977 Washington, DC 20376-4401 FrickMS@NAVSEA.NAVY.MIL

## 4. (U) Program Elements/Procurement Line Items: RDT&E:

PE 0603658N Project K2039, K2616, U2039, U2394 (U) PE 0603755N (Shared) Project U2039 (Shared) (U) **PROCUREMENT:** APPN 1611 ICN 000000000 (Navy) (Shared) (U)APPN 1506 1CN 120000000 (Navy) (Shared) (U) APPN 1810 ICN 2606000000 (Navy) (U)

APPN 1109 ICN 3300000000 (Navy) (Shared) (U) APPN 1506 ICN 3700000000 (Navy) (Shared) (U)



Derivea Downgrade instructions: Unit Declassify_o

ID (03C 119.5) of 1 November 1999 ----

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02.0-0637

CEC, December 31, 2001

## 5. (U) <u>References</u>:

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<u>SAR Baseline (Development Estimate):</u> (U) NAE approved Acquisition Program Baseline (APB) dated 31 May 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated August 30, 2001.

### 6. (U) Mission and Description:

(U) a. 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.

b. 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.

c. 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.

d. CEC consists of the the Data Distribution System (DDS) and the Cooperative Engagement Processor (CEP), which is integrated with a host combat system. The DDS encodes and distributes ownship sensor and engagement data and is a high capacity, jam resistant, directive system providing precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor which is able to convert sensor data from each CU to output data which can be utilized for real-time target tracking by all cooperating units. The data is passed to the ships' combat system and the ship can then cue its onboard sensors for fire control and target prosecution, or use the fire control quality data from other units through CEC to engage targets without tracking them.

e. Equipment nomenclature: AN/USG-2 (shipboard) system, AN/USG-3 (airborne) system.

### 7. (U) Executive Summary:

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(U) a. Battle group interoperability was the primary focus of the CEC program throughout calendar year 2000 into early 2001. Specific interoperability measures related to CEC effectiveness were defined and established in the approved Test and Evaluation Master Plan (TEMP). Testing during this period included a series of progressively more complex test objectives and exit criteria and culminated in Technical Evaluation (TECHEVAL) of the AN/USG-2 (shipboard) system during February and March 2001 and Operational Evaluation (OPEVAL) in April and May 2001.

b. Based on OPEVAL results, the Commander, Operational Test and Evaluation Force (COMOPTEVFOR) certified the AN/USG-2 (shipboard) system with computer program Baseline 2.0 as operationally effective and operationally suitable. The correction of relatively minor interoperability problems encountered during Operational Evaluation (OPEVAL) of the CEC AN/USG-2 (shipboard) equipment and computer program Baseline 2.0 are being addressed.

c. Follow-on Test and Evaluation (FOT&E-1) of the integrated CEC (AN/USG-3) and E-2C HAWKEYE 2000 was initiated as scheduled in January 2002. FOT&E-1 is scheduled for completion in August 2002.

d. A review by the CEC Milestone III Overarching Integrated Product Team (OIPT) was successfully conducted on 20 February 2002. The Chairman of the OIPT recommended to the Milestone III decision authority, the Under Secretary of Defense (Acquisition, Technology and Logistics), that a "paper" Defense Acquisition Board (DAB) review be conducted in lieu of a formal presentation to and review by the DAB. As of this writing, final approval by the USD (AT&L) is pending.

e. Final approval by USD (AT&L) is expected to result in the transition to Production and Deployment (P&D) (formerly Full Rate Production) of the AN/USG-2 (shipboard) and continued Limited Rate Initial Production (LRIP) of AN/USG-3 (airborne) systems.

## 8. (U) Threshold Breaches:

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a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost RDT&E	No
Procurement	Yes
MILCON	No
0&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 Milestone III review by the Defense Acquisition Board planned for November 2001 was delayed to March 2002 due to scheduling issues and delays in completion of documentation requirements.

The total procurement cost estimate exceeds the approved Acquisition Program Baseline (APB) cost threshold. The increased procurement cost is due to the projected procurement of additional AN/USG-3 (airborne) systems for outfitting of E-2C HAWKEYE 2000 production aircraft, and the projected procurement of CEC equipment for U.S. Marine Corps requirements. A revision of the APB has been submitted and is expected to be approved during the Milestone III review process.

## 9. (U) <u>Schedule</u>:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR	) Program (APB)	<u>Estimate</u>
Milestone II	MAY 1995	MAY 1995	MAY 1995
Development Contract Modification	MAY 1995	MAY 1995	MAY 1995
Preliminary Design Review Complete	FEB 1996	FEB 1996	JUL 1996
Critical Design Review Complete	AUG 1996	AUG 1996	DEC 1996
Baseline System Initial Operational	SEP 1996	SEP 1996	SEP 1996
Capability			
IOT&E (DT-IIB/OT-IIA1)			
Start	MAY 1997	MAY 1997	MAY 1997
Complete	JUL 1997	AUG 1997	AUG 1997
LRIP Decision	DEC 1997	DEC 1997	FEB 1998
Low Rate Production Contract Award	JAN 1998	APR 1998	APR 1998
Service Final DT&E			

## 9a. (U) Schedule (Cont'd):

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	Deve.	lopment	App	roved	Cur	rent
	Estimat	te (SAR)	Progra	am (APB)	Est:	imate
Start	MAR	1998	JUT.	2000	JAN	2001
Complete	APR	1998	NOV	2000	MAY	2001
IOTSE - OPEVAL (OT-IIA2)						
Start	MAY	1998	SEP	2000	MAR	2001
Complete	MAY	1998	NOV	2000	MAY	2001
Milestone III	OCT	1998	JUL	2001	MAR	2002(Ch-1)
Organic Support Date	JUL	2000	OCT	2001	OCT	2001
Service Depot Support Date	JUL	2000	OCT	2000	OCT	2000
FOT&E-1 (DTIIIA/OT-IIIA)E-2C						
Start	N/A		JAN	2002	JAN	2002
Complete	N/A		AUG	2002	AUG	2002
FOT&E-2 (DTIIIB/OT-IIIB)E-2C						
Start	N/A		MAR	2003	MAR	2003
Complete	N/A		JUL	2003	JUL	2003
Full Rate Production Contract Award	NOV	1998	JUL	2001	DEC	2001
Full Operational Capability	JUL	2000	DEC	2003	DEC	2003
AIR IOC	N/A		DEC	2003	DEC	2003

b. Current Change Explanations - (U) (Ch-1): The Milestone III Defense Acquisition Board review previously
 planned for November 2001 was delayed to March 2002 due to scheduling
 issues and delays in completion of documentation requirements.

# 10. (U) Performance Characteristics:

a. Performance ---

	Development Estimate (SAR)	Approved Program (APB) <u>Obi/Threshold</u>	Demon- strated Perf	Current Estimate
Track Base Size	(b)(1)		(b)(1)	(b)(1)
Update Rate (1/sec)	1			
Remote	-		TBD	1.
Operational			(b)(1)	1
To Data Rate (without				
any Compression Technology				
Implemented) (Mbps)			TBD	
(kW/MHz (b)(1)			100	

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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):

		Developme	nt P	<pre>\pproved</pre>	Current	
a.	(U) Cost	<u>Estimate (</u>	<u>SAR) Pro</u>	ogram (AP	<u>B) Estimat</u>	e
	Development (RDT&E)	10	30.4	1686.	8 1832.	9
	Procurement	11	50.3	1571.	7 1840.	3
	Rollaway	(6	77.3)		(1559.	4)
	Other Weapon Systems	Cost (4	73.0)		(280.	9)
	Peculiar Support		(0.0)		(0.	0j
	Initial Spares		(0.0)		(0.	0)
	Construction (MILCON)		0.0	0.	o o.	0
	Acquisition O&M		41.2	0.	00.	0
	Total FY 1995 Base-Year	ş <u>22</u>	21.9	3258.	5 3673.	2
	Escalation	3	51.2	402.	7 565.	2
	Development (RDT&E)	(	57.8)	(87.	9) (113,	6)
	Procurement	(2	80.3)	(314.	8) (451.	6)
	Construction (MILCON)		(0.0)	(0.	0) (0.	0)
	Acquisition O&M	_(	13.1)	(0.	0) (0.	01
	Total Then Year \$	25	73.1	3661.	2 4238.	4
b.	(U) Quantity					
,	Development (RDT&E)		9	1	6 1	6

Development	(RDT&E)	9	16	16
Procurement		<u>174</u>	<u>194</u>	256
Total		183	210	272

(U) A total of thirty-four (34) AN/USG-2 (shipboard) and AN/USG-3 (airborne) systems were procured under Low Rate Initial Production (LRIP) contracts. The procurement of LRIP units exceed 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 contracted LRIP quantities were authorized as follows:

(a) LRIP-1 - ASN(RDA) memorandum of 2 March 1998 to the Program Executive Officer for Theater Air Defense; and ASN(RDA) memorandum of 24 August 1998 to the Program Executive Officer for Theater Air Defense and Surface Combatants.

(b) LRIP-2 - ASN(RDA) memorandum of 14 May 1999 to the Program Executive Officer for Theater Surface Combatants.

(c) LRIP-3 - ASN(RDA) memorandum of 7 April 2000 to the Program

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## 11b. (U) Total Program Cost and Quantity (Cont'd):

Executive Officer for Theater Surface Combatants.

(d) LRIP-4 - Principal Deputy Under Secretary of Defense (Acquisition, Technology and Logistics) memorandum of 4 May 2001 to the Secretary of the Navy.

c. (U) Foreign Military Sales --

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A FMS program was initiated with the United Kingdom (UK) (case #UK-P-LII). Funds of \$2.5 million were 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 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 \$173.1 million.

d. Nuclear Costs -- None.

### 12. (U) Unit Cost Summery:

a.	(U) Prog. Acq. Unit Cost (PAUC)	UCR Baseline (AUG 2001 APB)(Dec	Current Estimate 2001 SAR)	Percent <u>Change</u>
	<ul><li>(1) Cost (F1 1993 B13)</li><li>(2) Quantity</li><li>(3) Unit Cost</li></ul>	210 15.517	272 13.504	-12.97
b.	<pre>(U) Avg. Proc. Unit Cost (APUC)   (1) Cost (FY 1995 BY\$)   (2) Quantity   (3) Unit Cost</pre>	1571.7 194 8.102	1840.3 256 7.189	-11.27

# 13. (U) Cost Variance Analysis:

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	MaO	TOTAL
Development Estimate	1088.2	1430.6	-	54.3	2573.1
Previous Changes:					
Economic	-36.6	-112.5	-	-5.2	-154.3
Quantity	+8.0	+217.1	-	-	+225.1
Schedule	+85.9	+40.8	-	_	+126.7
Engineering	+208.8	-112.5	-	-	+96.3
Estimating	+430.6	+1086.4	i –	-49.1	+1467.9
Other	-	-	-	-	-
Support	-	-405.7	-	-	-405.7
Subtotal	+696.7	+713.6	-	-54.3	+1356.0
Current Changes:					
Economic	-0.3	-23.7	-		-24.0
Quantity	-	+253.6	-	-	+253.6
Schedule	-	+33.7	-	-	+33.7
Engineering	+18.0	-	-	-	+18.0
Estimating	+143.9	-321.4			-177.5
Other	-	-	-	-	-
Support	-	+205.5			+205.5
Subtotal	+161.6	+147.7	-		+309.3
Total Changes	+858.3	+861.3	-	-54.3	+1665.3
Current Estimate	1946.5	2291.9	~	-	4238.4

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	1030.4	1150.3	-	41.2	2221.9
Previous Changes:					
Quantity	+7.7	+145.8	-	-	+153.5
Schedule	+78.9	-	-	-	+78.9
Engineering	+193.3	-86.3	-	-	+107.0
Estimating	+381.7	+977.7	-	-41.2	+1318.2
Other	-	-	-	_	-
Support	-	-387.8	-	-	-387.8
Subtotal	+661.6	+649.4	-	-41.2	+1269.8
Current Changes:					
Quantity	-	+110.3		-	+110.3
Schedule	{ _	+18.7		-	+18.7
Engineering	+15.8	_	-		+15.8
Estimating	+125.1	-284.1		-	-159.0
Other	-	-	-	-	-
Support	-	+195.7	-	-	+195.7
Subtotal	+140.9	+40.6	-		+181.5
Total Changes	+802.5	+690.0	-	-41.2	+1451.3
Current Estimate	1832.9	1840.3	-	-	3673.2

# 13b. (U) Cost Variance Analysis (Cont'd):

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	b. (U) Current Change Explanations		
		(Dollars : <u>Base-Year</u>	in Millions) <u>Then-Year</u>
(1)	RDTGE		
	Additional FY 2003 funds programmed by Navy to assess Tactical Component Network (TCN) Technology for potential application to CEC program. (Engineering)	N/A +15.8	-0.3 +18.0
	Addition of FY 1998-99 funds programmed for integration of CEC with Space Based Infrared Sensors-Low (SBIRS-Low) and FY 2000 funds for Area Air Defense Commander (AADC). Funds were previously omitted from CEC program cost estimates. (Estimating)	+22.0	+23.6
	Addition of U.S. Marine Corps funds programmed to support CEC integration with AN/TPS-59 radar. (Estimating)	+18.7	+21.1
	Addition of FY 2002 funds appropriated by Congress "only for" Enhanced Communications and Network Node Expansion; Next Generation/Reduced Size CEC Equipment; Baseline 2.1b support; and Multi-level security. (Estimating)	+29.0	+32.4
	Addition of FY 2003-04 funds programmed for CEC integration with E-2C HAWKEYE 2000 aircraft. (Estimating)	+19.2	+21.9
	Addition of FY 2006-07 to Future Years Defense Program (FYDP). (Estimating)	+54.2	+65.5
	Miscellaneous FY 2002-05 budget adjustments, i.e., directed reduction of funds budgeted for Contractor Support Services (-\$8.3 million then-year dollars). (Estimating)	-18.0	-20.6
	RDT&E Subtotal	+140.9	+161.6
(2)	<pre>Procurement Increased funding to procure twenty-five (25) additional AN/USG-3 (airborne) systems. AN/USG-3 procurement quantity increased from seventy (70) to ninety-five (95). (Quantity)</pre>	+87.3	+128.4
	Elimination of procurement of sixteen (16) AN/USG-2 (shipboard) systems previously planned for installation on LSD, LHA, and DD 963 class ships. CEC equipment will not be installed on these	-168.5	-200.0

# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations	(Dollars : <u>Base-Year</u>	in Millions) <u>Then-Year</u>
<pre>ships. (Quantity) Additional procurement of thirty-two (32) AN/USG-2 systems planned for future DD(X) place phine (Ourstitud)</pre>	+171.8	+281.1
Elimination of one (1) system procured by the United Kingdom (UK) (FMS). The previously reported procurement is for CEC subsystems only, is less than a fully configured AN/USG-2 system, and should not have been included in the procurement program.	-4.9	-5.3
Addition of planned procurement of five (5) AN/USG-2 (shipboard) systems by the U.S. Marine Corps (Quantity)	+24.6	+49.4
Additional cost resulting from planned Cruiser Conversion program, ship construction delays of the LPD and CVN 77 programs, and revision of ship availability schedules due to	+18.7	+33.7
Addition of increased FY 2002 Congressional OP,N funds for Low Cost Planar Array (LCPA) production (Estimating)	+7.6	+8.5
Correction to align flyaway and support costs in accordance with OSD Cost Analysis Improvement Group (CAIG) approved Program Life Cycle Cost Estimate (PLCCE) for Milestone III. (Estimating)	-195.7	-205.5
<pre>Miscellaneous budget adjustments, i.e., directed reduction of funds as a result of reduced reliance on Contracted Advisory and Assistance Services (CAAS) (-\$7.0 million then-year \$); transfer of OP,N funds to RDT&amp;E,N appropriation to support increased E-2C aircraft integration requirements (-\$4.2 million then-year \$)</pre>	-15.1	-16.3
Revised escalation indices. (Economic) Revision of projected AN/USG-3 (airborne) unit cost based on actual LRIP-4 contract pricing. (Estimating)	N/A -80.9	-23.7 -108.1

CEC, December 31, 2001

# 13b. (U) Cost Variance Analysis (Cont'd):

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b. (U) Current Change Explanations	
	(Dollars in Millions) Base-Year Then-Year
Correction to align flyaway and support	+195.7 +205.5
costs in accordance with OSD Cost	
Analysis Improvement Group (CAIG)	
approved Program Life Cycle Cost	
Estimate (PLCCE) for Milestone III. (Suppor	·t)
Progurement Subtotal	+40.6 +147.7
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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	Changes								PAUC
Dev Est	د (								Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.06	-0.656	-2.84	+0.590	+0.420	+4.74		-0.736	+1.52	15.58

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

Current	SAR Base	line to	Current	Estimate					
PUC	Changes								
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.22	-0.532	-0.797	+0.291	-0.439	+2.99		-0.782	+0.731	8.95

## c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate (PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	MAY 1995	N/A	MAY 1995
Milestone II	N/A	MAY 1995	N/A	MAY 1995
Milestone III	N/A	OCT 1998	N/A	FEB 2002
IOC	N/A	SEP 1996	N/A	SEP 1996
Total Cost	N/A	2573.1	N/A	4238.4
Total Quantity	N/A	183	N/A	272
Prog Acg Unit Cost	N/A	14.1	N/A	15.6

CEC, December 31, 2001

### 15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E	Initial (	Contract Price
(U) <u>E-2C/CEC Integration:</u>	<u>Target</u> (	Ceiling Oty
Northrop-Grumman Corp., Betnpage, Long 1 N00019-97-C-0069, CPAF Award: March 31, 1997	s., NY \$63.7	N/A C
Current Contract Price	Estimated Pri	ice At Completion
<u>Target Ceiling Oty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$122.4 \$122.4 0	\$118.2	\$121.3
Previous Cumulative Variances Cumulative Variances To Date (11/30/01) Net Change	<u>Cost Variance</u> \$1.5 <u>\$2.2</u> \$0.7	<u>Schedule Variance</u> \$0.9 <u>\$0.1</u> \$-0.8

Explanation of Change:

(U) Cost and schedule variances are not significant.

### (U) Contract Comments:

The E-2C/CEC integration contract is structured as a Cost Plus Award Fee (CPAF) contract. The contract addresses the development of interfacing computer programs for integration of CEC AN/USG-3 (airborne) equipment with the E-2C HAWKEYE 2000 aircraft Mission Computer Upgrade (MCU) electronic suite.

The contract is structured as a basic with two (2) contract options. The key element of the basic contract is the modification of an existing E-2C aircraft to include the integration of CEC AN/USG-3 (airborne) equipment, as well as development of necessary software. That aircraft was delivered to the Navy on 31 July 1998.

Option 1, priced at \$39.5 million and exercised in December 1998, includes the development of Build 2a computer program to be installed in production aircraft. Option 2, with a contractor proposed price of \$21.2 million for a 2nd CEC-configured E-2C (production representative) aircraft has not been executed.

The contract was modified in February 2001 to include additional cost of \$355,600.00 for modification of computer programs to correct interoperability issues uncovered during testing of the integrated CEC AN/USG-3 (airborne) equipment and the E-2C HAWKEYE 2000 aircraft MCU electronic suite.

CEC, December 31, 2001

### 15. (U) Contract Information (Cont'd):

(U) Cont E	ngr Des/Dev:			Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Otv</u>
Raytheon Syst N00024-99-C-5 Award: April	ems Company, St 110, CPAF 30, 1999	. Petersburg	FL	\$118.9	N/A	
Definitized:	February 16, 20	00				
Current <u>Target</u> \$145.7	Contract Price <u>Ceiling</u> N/A	Oty	ç	Estimated Pr <u>ontractor</u> \$146.3	rice At Co <u>Progr</u>	mpletion am <u>Manager</u> \$148.8
Previous Cumu	lative Variance	9	<u>C</u>	ost Variance \$1.9	e <u>Schedule</u> Ş	Variance
Net Chang	riances To Date e	(11/30/01)		<u>\$0.9</u> \$-1.0	<u>\$-</u> \$-	2.6

## Explanation of Change:

(U) Cost and schedule variances are not significant.

(U) Contract Comments:

The Continued Engineering Design and Development (CEDD) contract provides for the contractor to act as the Design Agent for CEC computer baselines 2.0 and 2.1. Included are requirements for the contractor to participate in future computer program architecture design. The current contract includes the below indicated options. With the exception of (b), all contract options have been exercised.

a. Raytheon participation in Navy team review of computer program architecture.

b. Development of a Low Cost Common Equipment Set (LCCES).

c. Development of productization of a Shipboard Planar Array (SBPA).

d. Development of enhanced CEC communication capabilities.

e. Development of a design concept study to implement Forward Pass capabilities with CEC.

f. Integration of Common Command and Decision (Common C&D) for combat system interoperability.

g. Implementation of a System Protection (anti-tamper) capability for CEC subsystems.

The contract was modified to include specific responsibilities as the Design Agent for CEC Baseline 1.0 and 2.0. Included are support of Baseline 2.0 Operational Evaluation (OPEVAL) and Follow-On Test and

## 15. (U) Contract Information (Cont'd):

Evaluation (FOT&E) test events; support of Baseline 1.0 and 2.0 equipment and computer program maintenance and installation processes including platform integration engineering.

b. Procurement --<br/>(U) LRIP-2/3:Initial Contract Price<br/>Target Ceiling OtyRaytheon Systems Co., St. Petersburg, FLN00024-99-C-5116, FFP\$73.3N/A12Award: September 28, 1999<br/>Definitized: June 1, 2000September 28, 1999\$73.3N/A12

Current	Contract Price		Estimated P	rice At Completion
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>	Contractor	Program Manager
\$104.5	N/A	14	\$104.5	\$104.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

## (U) Contract Comments:

On 30 August 2001, the contract was modified from a Fixed Price Incentive Fee (FPIF) contract to a Firm Fixed Price (FFP) contract. The renegotiated contract was an agreed-to equitable adjustment for later than contractually required delivery of AN/USG-2 equipment. The modified contract delivery schedule conforms to amended Navy equipment installation plans because of changing ship availability schedules, and includes contractor provided additional spares equipment at no cost to the Government. The renegotiated contract also eliminated the requirement for submission of Cost Performance Reports (CPR) by the contractor.

The contract includes the procurement of thirteen (13) AN/USG-2 (shipboard) systems, 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.

The contract was also modified to include the procurement of CEC equipment for United Kingdom (UK) test purposes, spares and an installation and checkout (INCO) kit. Also included are contract options for the procurement of maintenance training, technical assistance, and technical data.

CEC, December 31, 2001

## 15. (U) Contract Information (Cont'd):

	Initial	Contract	Price	
(U) <u>LRIP-4:</u>	<u>Target</u>	<u>Ceilina</u>	Oty	
Raytheon Systems Company, St. Petersburg FL				
N00024-01-C-5169, FFP	\$62.7	N/A	7	
Award: June 29, 2001				
Definitized: June 29, 2001				
Current Contract Price	Estimated P	rice At Co	mpletion	

<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	Contractor	Program Manager
\$62.7	N/Ā	7	\$62.7	\$62.7

## Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

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 parts 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 Firm Fixed Price (FFP) contract allows the contractor to earn incentive payments for performance meeting or exceeding the specified contract delivery requirements. Before the contractor is eligible for incentive payments under this contract, all outstanding system deliveries under production contracts N00024-99-C-5116 and N00024-00-C-5145 must be completed and accepted by the Navy.

(U) <u>LRIP-3A:</u>	Initial <u>Target</u>	Contract <u>Ceiling</u>	Price <u>Otv</u>
Raytheon Systems Company, St. Petersburg FL N00024-00-C-5145, FFP Award: May 26, 2000	\$38.1	N/A	6
Definitized: May 26, 2000			
Current Contract Price	Estimated P	rice At Co	mpletion

Target	Ceiling	<u>Otv</u>	<u>Contractor</u>	Program Manager
\$38.1	N/A	6	\$38.1	\$38.1

Explanation of Change:

None.

CEC, December 31, 2001

### 15. (U) Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

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Delivery of a total of six (6) AN/USG-3 (airborne) systems is required under the contract. The contract includes options for the procurement of Spare Parts Kits and AN/USG-3 maintenance training courses.

The contract was modified in August 2000 to exercise an option for the procurement of Spare Parts Kits.

The contract was further modified to specify required delivery dates of AN/USG-3 subsystems. The action to modify contract deliveries is intended as a schedule risk reduction effort to allow the Northrop-Grumman Corporation the flexibility to incrementally install AN/USG-3 subsystems onboard E-2C aircraft, rather than initiating the installation process after availability of a full AN/USG-3 system. The first two (2) complete AN/USG-3 systems were delivered in accordance with the revised delivery schedule. The on-time delivery allowed the initiation of FOT&E-1 testing as planned.

Initial Contract Price(U) LRIP-1:TargetCeilingOtvRaytheon Systems Company, St. Petersburg FLN00024-98-C-5409, FFP\$53.2N/A7Award: April 27, 1998Definitized: June 13, 2000N/A7

Current	Contract Pric	e	Estimated Price	At Completion
Target	<u>Ceiling</u>	Otv	<u>Contractor</u>	Program Manager
\$58.9	N/A	7	\$58.9	\$58.9

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: The contract required delivery of seven (7) AN/USG-2 (shipboard) systems.

On 13 June 2000, the contract was restructured from a Cost Plus Award Fee/Incentive Fee (CPAF/IF) contract to a Firm Fixed Price (FFP) contract.

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## 15. (U) Contract Information (Cont'd):

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All required deliveries have been accomplished, with the seventh (7th) and final AN/USG-2 system delivered to the Navy on 15 December 2000. Since the contract is complete, this will be the last report.

# 16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY94-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-22)	Total
RDT&E	1604.6	109.6	89.4	142.9	1946.5
Procurement	414.4	124.5	138.2	1614.8	2291.9
MILCON	-	-	-	-	-
OEM	-	-	-	-	-
Total	2019.0	234.1	227.6	1757.7	4238.4

b. Annual Summary -- CEC

Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Rollaway	Rollaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1994				203.4	202.2
1995				151.8	153.8
1996				248.4	255.9
1997				215.1	224.3
1998				190.7	200.5
1999				178.1	189.6
2000				174.8	188.8
2001				163.6	179.8
2002				98.2	109.6
2003				78.9	89.4
2004				36.8	42.4
2005				29.8	35.0
2006				27.4	32.8
2007				26.8	32.7
Subtotal	16			1823.8	1936.8

# 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	_			9.1	9.7
Subtotal				9.1	9.7

Appropriation: 1109 - Procurement, Marine Corps

Fiscal		Rollaway FY 1995 Dollars	Rollaway FY 1995 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Kec	Basc-Year \$	Then-Year \$
2005	2		10.1	10.1	12.0
2006	3		14.5	14.5	17.5
Subtotal	5		24.6	24.6	29.5

Appropriation: 1506 - Aircraft Procurement, Navy

		Rollaway	Rollaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2000	6		32.0	32.0	35.1
2001	1		10.0	10.0	11.1
2002	5		24.1	24.1	27.3
2003	5		23.4	23.4	26.9
2004	9		36.0	36.0	42.2
2005	3		13.4	13.4	16.0
2006	4		17.7	17.7	21.5
2007	4		17.5	17.5	21.7
2008	4		17.4	17.4	22.0
2009	4		17.2	17.2	22,2
2010	- 4		17.2	17.2	22.5
2011	4		17.0	17.0	22.8
2012	4		17.0	17.0	23.1
2013	4		16.9	16.9	23.4
2014	4		16.8	16.8	23.8
2015	4		16.7	16.7	24.1
2016	4		16.7	16.7	24.4
2017	4		16.6	16.6	24.8
2018	4		16.5	16.5	25.2
2019	4		16.5	16.5	25.6
2020	4		16.4	16.4	25.9
2021	4		16.3	16.3	26.3
2022	2		8.1	8.1	13.4
Subtotal	95		417.4	417.4	551.3

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## 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 1611 - Shipbuilding and Conversion, Navy

		Rollaway	Rollaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1995				9.4	10.1
1996				10.1	11.0
1997					
1998	2		16.7	19.0	20.7
1999_	1		8.1	43.5	48.0
2000	4		47.9	30.3	33.9
2001	3		27.0		
2002				10.6	12.3
2003	1		6.4	37.2	44.6
2004	6		48.0	17.7	21.8
2005	3		19.5	45.3	56.8
2006	8		58.3	18.4	23.5
2007	3		21.5	31.7	41.2
2008	5		30.5	33.1	43.5
2009	7		40.9	30.2	40.4
2010	6		38.0	32.3	44.4
2011	6		20.1	21.6	30.2
2012	3		20.1	21.5	30.8
2013	3		20.1	21.3	31.4
2014	3		20.1	21.2	
2015	3		20.1	21.5	32.7
2016	3		20.1	21.6	33.4
2017	3		20.1	18.2	28.4
2018	2		15.3	18.4	29.0
2019	2		15.3		
Subtotal	77		534.1	534.1	700.2

(U) The projected fiscal year procurement quantities indicated above reflect the year CEC AN/USG-2 (shipboard) systems were/will be procured. The base and then-year cost estimates reflect the fiscal year appropriated funds were/will be budgeted to procure CEC systems (i.e., FY 1995-96 funds supported to procurement of two (2) AN/USG-2 system in FY 1998).

Appropriation: 1810 - Other Procurement, Navy

Fiscal Year	Qty	Rollaway FY 1995 Dollars Nonrec	Rollaway FY 1995 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	5		41.8	63.6	67.3
1999	6		48.8	76.2	81.7
2000	2		24.0	54.6	59.4
2001	5		45.0	32.6	36.1
2002	5		49.5	75.6	84.9

### 16b. (U) Program Funding Summary (Cont'd):

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Appropriation: 1810 - Other Procurement, Navy

		Rollaway	Rollaway		
		FY 1995	FY 1995	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year Ş
2003	4		25.6	58.5	66.7
2004	9		71.9	82.7	96.0
2005	11		71.4	111.0	131.3
2006	6		43.7	71.2	85.8
2007	4		28.6	55.2	67.8
2008	10		60.9	62.9	78.7
2009	8		46.7	54.1	69.0
2010	4		25.4	48.5	63.0
2011				12.2	16.1
2012				5.3	7.1
Subtotal	79		583.3	864.2	1010.9

		Rollaway	Rollaway	Total	Total
l		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Navy	272		1559.4	3664.1	4228.7
Army				9.1	9.7
Grand Total	272		1559.4	3673.2	4238.4

## 17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Dat	te <u>Plan</u>	<u>Actual</u>
RDT&E	16	16
Procurer	nent 20	20

(U) Percent Total Program Quantities Delivered: 13.2%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2019
  - (U) Percent Total Program Expended: 47.6%

## 18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The O&S cost estimate was generated in January 2002 and supported the Milestone III Production and Deployment (P&D) (formerly Full Rate Production) decision.

1. MISSION PERSONNEL: CEC requires no system specific operating personnel. The cost of ship maintenance personnel as defined in the October 2001 Manpower Estimate Report are included.

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### 18a. (U) Operating and Support Costs (Cont'd):

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2. 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.

3. CONTRACTOR SUPPORT: Costs for prime contractor in-service engineering support are included.

4. 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.

5. INDIRECT SUPPORT: Costs for operational and maintenance training are included.

6. No antecedent system.

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b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

	CEC	Avg Annual Cost Per
	Avg Annual Sys Cost	Antecedent System
Cost Element		
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.2	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.2	0.0
Indirect Costs	0.0	N/A
Total	0.4	0.0

Total O&S Cost	CEC	Avg Annual Cost Per
BY\$ (In Millions)	2409.7	N/A
TYS (In Millions)	3749.6	N/A

Report Creation Date: 03/25/2002 11:42:54 AM

# N-23 T-AKE

### *** UNCLASSIFIED ***

### SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: T-AKE

## AS OF DATE: December 31, 2001

SUBJECT	PAGE
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Executive Summary	2
Threshold Breaches	3
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Performance Characteristics	4
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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 NAVAL SEA SYSTEMS COMMAND 1330 ISAAC HULL AVE SE STOP 2501 WASH NAVY YARD, DC 20376-2501

MR. ART DIVENS Assigned: May 5, 2000 DSN 326-0543; COMM 202-781-0543 divensaw@navsea.navy.mil

## 4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603564N (Shared) Project S0408 (Shared) PE 0604567N (Shared) Project S1803 (Shared) **PROCUREMENT:** APPN 4557 ICN 0204441N (DCA/DNA)

National Defense Sealift Fund account executed by the Naval Sea Systems Command under procedures directed by the National Defense Sealift Fund Charter dated October 15, 1994. This SAR addresses the T-AKE ship acquisition program financed by the NDSF.

FOR OPEN FUBLICATION

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07-C-0625

## 5. References:

SAR Baseline (Estimate): DAE Approved Acquisition Program Baseline dated September 20, 2001.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated September 20, 2001.

## 6. Mission and Description:

The LEWIS and CLARK Class (T-AKE) Dry Cargo/Ammunition Ship acquisition program will provide a two product (ammunition and combat stores - including dry stores, frozen and chilled products, spare parts and consumables) replacement for the aging single product combat stores (T-AFS) and ammunition (T-AE) shuttle ships. Working in concert with an oiler (T-AO), the team can perform a "substitute" station ship mission that will allow the retirement of the three product fast combat support ships (AOE 1 Class). In its shuttle role, T-AKE will provide logistics lift to station ships and other ships operating with naval sources from supply sources, such as friendly ports, and at sea from Modular Cargo Delivery System (MCDS) equipped merchant vessels.

The T-AKE will have the capability to effectively and efficiently provide naval forces with ordnance, stores and spare parts through both connected replenishment (CONREP) and vertical replenishment (VERTREP). Organic helicopter operations to conduct VERTREP require T-AKE to support two military cargo logistics helicopters or two equivalent commercial variants and associated aviation personnel. Additionally, T-AKE will have the capability to transfer a limited quantity of fuel by means of CONREP or Astern Refueling.

The T-AKE end force structure will be such that it meets fleet peacetime requirements and satisfies the majority of wartime requirements. As determined by the Analysis of Alternatives (AoA), twelve T-AKE Class ships are required for fleet peacetime operations. 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 ADM approving the program's entry into the Production and Deployment phase, was signed by the MDA on September 20, 2001.

On October 18, 2001, a contract for the Detail Design and Construction of the lead ship with options for eleven follow ships was awarded. The option for the first follow-on ship was awarded October 18, 2001 as well. A Post Award conference was held, followed by a Methods and Practices Conference, both of which set the foundation for teamwork between NASSCO, SUPSHIP San Diego and the Program Office. This teamwork has translated into daily contacts and rapid

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## 7. Executive Summary (Cont'd):

resolution of technical issues. Design Reviews 1 and 2 have been completed and the team is working toward a successful Initial Critical Design (ICDR) Review in May 2002. The ICDR will assess design maturity and management of technical program risk. Exercise of the second follow-on ship is based on the ICDR/OIPT approval.

In October 2001, funding issues caused one ship to be moved from FY04 to FY07. Changing the procurement profile causes changes in the funding profile.

FY00 and FY01 Shipbuilding and Conversion Navy (SCN) funds have been reprogrammed into the National Defense Sealift Fund (NDSF). An FY02 reprogramming action has been initiated to transfer these funds into NDSF. FY03 and follow ships are budgeted in NDSF.

## 8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
06M	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

# T-AKE, December 31, 2001

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9. Schedule:

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a. Milestones --

	Unknown SAR Type Approved					ent
	Estimat	e (SAR)	Progra	im (APB)	Esti	.mate
Contract Award	SEP	2001	SEP	2001	OCT	2001
Initial Critical Design Review & O	IPT MAR	2002	MAR	2002	MAY	2002(Ch-1)
OT II-A Start	APR	2002	APR	2002	AUG	2002(Ch -1)
OT II-A Complete	MAR	2003	MAR	2003	JAN	2003(Ch-1)
Final Critical Design Review & OIP:	r mar	2003	MAR	2003	APR	2003(Ch-1)
OT II-B Start	APR	2003	APR	2003	MAY	2003(Ch-1)
Lead Ship Delivery	JUL	2005	JUL	2005	JUL	2005
OT II-B Complete	JUL	2005	JUL	2005	DEC	2005(Ch-1)
OPEVAL Start	APR	2006	APR	2006	APR	2006
OPEVAL Complete	JUN	2006	JUN	2006	JUN	2006
100	OCT	2006	OCT	2006	OCT	2006

The TEMP is in the process of being staffed for approval.

b. Current Change Explanations --

(Ch-1) - These changes are due to the contract award date of October 18, 2001. The ICDR slipped from March 2001 to May 2001. The OT II-A start slipped from April 2001 to August 2001. The OT II-A complete has improved from March 2003 to January 2003. The FCDR and OIPT have slipped from March 2003 to April 2003. The OT II-B start has slipped from April 2003 to May 2003 and the OT II-B complete has slipped from July 2005 to December 2005.

## 10. Performance Characteristics:

a. Performance --

a. reriormance	Unknown SAR Type <u>Estimate (SAR)</u>	Approved Program (APB) Obj/Threshold	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Intership Cargo Handling Interoperability	Provide all REP systems and equipmnt required for seamless intrface w/existi ng and planned US ships	<pre>Provide / T=O all REP / systems / and / equipmnt/ required/ for / seamless/ intrface/ w/existi/ ng and / planned / US ships/</pre>	TBD	Provide all REP systems and equipmen t required for seamless interfac e w/existi ng & planned US ships

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# 10a. Performance Characteristics (Cont'd):

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		Appro	ved	Demon-	
	Unknown SAR Type	Program	(APB)	strated	Current
	Estimate (SAR)	Obj/Thre	shold	Perf	<u>Estimate</u>
C41 Interoperability	100% Top	100% Top/	100% Top	TBD	100% Top
	Level	Level /	Level		Level
	and	and /	and		and Navy
	NAVY	Navy /	Navy		TERS
	IEKS	IERS /	16KS		
		,	ad ad		
			25		
		,	CRITICAL		
Survivability	Survive	Survive /	Survive	TBD	Survive
002-12-007-203	flooding	flooding/	flooding	1	flooding
	by shell	by shell/	by shell		by shell
	damage	damage /	damage		damage
	at any	at any /	at any		at any
	location	location/	location		location
	, heel	, heel /	except		, heel
	angle	angle /	transver		angle
	NTE 15	NTE 15 /	se blkhd		NTE 15
	deg,	deg, /	bounding		deg,
	margin	margin /	an aft		margin
	line not	line not/	mach		line not
	submerge	submerge/	space,		submerge
	a		neel		a
		,	NTE 25		
		· · · ·	deg 20		
		. /	uey		
		,			
Endurance	14000 NM	14000 NM/	T≃O	TBD	14000 NM
	(20 kts)	(20 kts)/			(20 kts)
		/			
Sustained Speed	> 20 kts	> 20 kts/	20 kts	TBD	> 20 kts
	NTE 80%	NTE 80% /	NTE 80%		NTC 80%
	MCR	MCR /	MCR		MCR
Cargo Transfer Rate	> 2/4	> 2/4 /	=/> 149	TBD	> 2/4
(Sea State 2)	MTPH	MIPH /	MIPH		MTPH
	parretiz	parrecrz/	parretiz		parreriz
	ordnance	ordnance/	ordnance		ordnance
	to CV	to CV /	to CV		to CV
	(CONREP&	(CONREP&/	(CONREPA		(CONREP
	VERTREP)	VERTREP) /	VERTREP)		8
	,> 220	,> 220 /	,=/> 138		VERTREP)
	MTPH	МТРН /	MTPH		, > 220
	palletiz	palletiz/	palletiz		MTPH
	ed	ed /	ed		palletiz
	ordnance	ordnance/	ordnance		ed

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# 10a. Performance Characteristics (Cont'd):

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		Approved	Demon-	
	Unknown SAR Type	Program (APB)	strated	Current
	<u>Estimate (SAR)</u>	Obj/Threshold	Perf	Estimate
	to CV&CG	to CV&CG/ to CV&CG		ordnance
	SIMULTAN	SIMULTAN/ SIMULTAN		to CV&CG
	EOUSLY	EOUSLY / EOUSLY		SIMULTAN
	(CONREP)	(CONREP) / (CONREP)		EOUSLY
				(CONREP)
Supportability	MSC	MSC / T=O	TBD	MSC
	Standard	Standard/		standard
	s (CG	s (CG /		s (CG
	CERT &	CERT & /		CERT
	ABS)	ABS) /		ABSI
Reliability (Ship	Highest	Highest / T=O	TBD	Highest
Svstems)	commer	commer /	100	commerci
- , ,	cial	cial /		al
	standard	standard/		standard
	s. ABS	s. ABS /		S. ABS
	Rules.	Rules. /		Rules
	Rl	R1 /		RUICO,
	(redunda	(redunda/		/redunda
	ncy)	DCV) /		(redunda
	notation	notation/		ney/
	for prop	for prop/		for
	ulsion.	ulsion. /		propulsi
	steering	steering/		propursi
	& aux	£ aux /		steering
	systems.	systems./		and aux
	Redundan	Bedundan/		evetome
	CV in	cy in /		Systems. Redundan
	excess	excess /		cy in
	of comm	of comm /		eyress
	ercial	ercial /		of
	requirem	requirem/		commerci
	ents for	ents for/		al
	mission	mission /		requirem
	critical	critical/		ents for
	systems.	systems./		mission
		-3		critical
				systems
Reliability (Cargo	Ao-0.98	Ao=0.98 / Ao-0.80	TBD	Ao=.98
Transfer Systems)				

NOTES: Threshold and objectives are abbreviated directly from the Table of Key Performance Parameters (KPP) in the T-AKE ORD. Refer to the T-AKE ORD for the expanded KPP objectives and threshold.

Mission critical systems include cargo refrigeration, cargo handling gear, auxiliary equipment for mobility, fire fighting and exterior

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# 10a. Performance Characteristics (Cont'd):

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b. Current Change Explanations -- None

## 11. Total Program Cost and Quantity (Dollars in Millions):

	Unknown SAR Type	Approved	Current
a. Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	26.0	26.0	26.0
Procurement	4236.6	4236.6	4274.2
Sailaway	(4236.6)		(4274.2)
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	4300.2
Escalation	627.6	627.6	605.4
Development (RDT&E)	(-0.1)	(-0.1)	(-0.1)
Procurement	(627.7)	(627.7)	(605.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4890.2	4890.2	4905.6
b. Quantity			
Development (RDT&E)	0	0	0
Procurement	12	12	12
Total	12	12	12

All of the ships procured in the T-AKE program are considered Low Rate Initial Production quantities. A Beyond Low Rate Initial Production (BLRIP) report is to be submitted after completion of the OPEVAL. OPEVAL is scheduled to complete in June 2006. The PM is not required to go to OSD for the FY07 procurements.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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# 12. Unit Cost Summary:

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	UCR Baseline	Current Estimate	Percent
	(SEP 2001 APB) (	Dec 2001 SAR)	<u>Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2000 BY\$)	4262.6	4300.2	
(2) Quantity	12	12	
(3) Unit Cost	355.217	358.350	+0.88
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2000 BY\$)	4236.6	4274.2	
(2) Quantity	12	12	
(3) Unit Cost	353.050	356.183	+0.89

# 13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Unknown SAR Type Estimate	25.9	4864.3	-	4890.2
Previous Changes:				
Economic	-		-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	
Estimating	-	-	-	-
Other	-	-	~	-
Support	-		-	
Subtotal		-	-	-
Current Changes:				
Economic	-	-48.6	-	-48.6
Quantity	-	-	-	-
Schedule	-	+24.1	-	+24.1
Engineering	-	-	-	
Estimating	-	+39.9	-	+39.9
Other	-	-	-	-
Support	-			
Subtotal	-	+15.4	<u> </u>	+15.4
Total Changes		+15.4		+15.4
Current Estimate	25.9	4879.7		4905.6

# 13a. Cost Variance Analysis (Cont'd):

1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec. 1. Sec

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Summary (FY 2000 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Unknown SAR Type Estimate	26.0	4236.6	-	4262.6
Previous Changes:				
Quantity	-	- 1	-	-
Schedule	-	_	-	-
Engineering	-	_	-	-
Estimating	~	-	_	-
Other	-	-	-	_
Support	-	-		_
Subtotal		-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	- '
Estimating	~	+37.6	-	+37.6
Other	-	-	-	-
Support	~	-		-
Subtotal	**	+37.6	-	+37.6
Total Changes		+37.6		+37.6
Current Estimate	26.0	4274.2		4300.2

b. Current Change Explanations --

.

(Dollars in Millions) Base-Year Then-Year

(1)	Procurement		
	Revised escalation indices. (Economic)	N/A	-48.6
	Stretchout of annual procurement buy profile.	0.0	+24.1
	(Schedule)		
	Adjustment for Current and Prior Inflation. (Estimating)	+10.1	+10.8
	Revised estimate to reflect change in out-year inflation assumptions (Estimating)	+27.5	+29.1
	Procurement Subtotal	+37.6	+15,4

T-AKE, December 31, 2001

# 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	PAUC Changes it Est								PAUC Unk Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Join Doc
407.52									407.52

# a. Program Acquisition Unit Cost (PAUC) History

## Current SAR Baseline to Current Estimate

PAUC Unk Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
407.52	-4.05	-0.007	+2.01		+3.33			+1.28	408.80

b. Procurement Unit Cost (PUC) History

## Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Unk Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	1
405.36									405.36

## b. Procurement Unit Cost (PUC) History

# Current SAR Baseline to Current Estimate

PUC Unk Est	Changes							PUC Cur Est	
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	1
405.36	-4.05	-0.007	+2.01		+3.33			+1.28	406.64

## 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
100	N/A	N/A	OCT 2006	OCT 2006
Total Cost	N/A	N/A	4890.2	4905.6
Total Quantity	N/A	N/A	12	12
Prog Acq Unit Cost	N/A	N/A	407.5	408.8

Milestone C decision approved by DAB September 20, 2001.

# 14. Unit Cost and Other History (Cont'd):

.

## 15. Contract Information (Then-Year Dollars in Millions):

a. Procurement New Construction:	Initial Contract Target Ceiling	Price <u>Qty</u>
N0002402C2300, FPI 70/30 Share Award: October 18, 2001	\$689.5 \$788.1	2
Definitized: October 18, 2001		
Current Contract Price Target <u>Ceiling</u> Qty \$689.5 \$788.1 2	Estimated Price At Contractor Progr \$689.5	mpletion am Manager \$689.5
Previous Cumulative Variances Cumulative Variances To Date . Net Change	Cost Variance Schedule	Variance

# Explanation of Change:

Performance reporting will be recorded in the next SAR.

# 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY96-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To <u>Complete</u> (FY04-10)	Total
RDT&E	25.9	-	-	-	25.9
Procurement	846.7	360.8	388.8	3283.4	4879,7
MILCON	~	-	-	-	~
O&M	-	-	-	-	-
Total	872.6	360.8	388.8	3283.4	4905.6

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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 S
1996	· · · · · · · · · · · · · · · · · · ·	1.1		1.1	1.1
1997		3.7		3.7	3.6
1998		3.9		3.9	3.8
1999		5.9		5.9	5.9
2000		11.4		11.4	11.5
Subtotal		26.0		26.0	25.9

Appropriation: 9992 - Other Procurement Funding

Fiscal Year	Qty	Sailaway FY 2000 Dollars Nonrec	Sailaway FY 2000 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	1	84.3	383.3	467.6	488.9
2001	1		336.0	336.0	357.8
2002	1		332.3	332.3	360.8
2003	1		350.9	350.9	388.8
2004	1		390.0	390.0	441.2
2005	2		688.3	688.3	795.1
2006	2		633.8	633.8	747.5
2007	3		961.6	961.6	1158.0
2008			61.7	61.7	75.9
2009			36.6	36.6	45.9
2010			15.4	15.4	19.8
Subtotal	12	84.3	4189.9	4274.2	4879.7

Service	Oty	Sailaway Dollars Nonrec	Sailaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy		26.0		26.0	25.9
Other Funding	12	84.3	4189.9	4274.2	4879.7
Grand Total	12	110.3	4189.9	4300.2	4905.6

# 17. Delivery/Expenditure Information:

a. Del	iveries To	Date	<u>Plan</u>	Actual
		RDT&E		
		Procurement	0	0

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 33.9

Percent Total Program Expended: 0.7%

## 18. Operating and Support Costs:

a. Assumptions and Ground Rules --The T-AKE Program Office utilized the Navy Center for Cost Analysis (NCCA) Operating and Support Cost Analysis Model (OSCAM) to prepare the Operating and Support cost estimates. The date for the O&S costs is July 6, 2001.

The assumptions for the Cost Element categories are as follows:

MISSION PAY & ALLOWANCES. The Program Office developed a spreadsheet based on "The Center for Naval Analysis CRM 97-28.10/November 1999 Combat Logistics Force (CLF) Analysis of Alternatives: Cost Estimating Methodology (CNA CRM 97-28.10)" to calculate a composite of U.S. Navy and Military Sealift Command (MSC) monthly salary cost for officer and enlisted personnel. The costs generated accurately reflect the specific complement for T-AKE. These values were then input into the OSCAM and used to generate this cost.

UNIT LEVEL CONSUMPTION. Unit Level Consumption consists of Ship Petroleum Oil Lubricants (POL), Repair Parts/Supplies, Depot Level Repairables, and Purchased Equipment/Services that were calculated as follows:

Ship POL - The Program Office developed spreadsheets to calculate fuel consumption based on the actual propulsion plant characteristics and the ship's operating/speed profile. These values were then input into OSCAM.

Repair Parts/Supplies - The Program Office developed a spreadsheet which used CNA 97-28.10 Cost Estimating Relationships (CERs) for Supplies (USN) and Consumables (MSC) to calculate the composite U.S. Navy and MSC value. This value was then input into OSCAM.

Depot Level Repairables - The Program Office used the average cost of material consumed for repair for the CLF ships being replaced. This value was then input into OSCAM.

Purchased Equipment/Services ~ The Program Office used the NCCA CER for Variable Alongside Support Services to represent this cost. This value was then input in OSCAM.

INTERMEDIATE MAINTENANCE. MSC conducts Voyage Repairs (VR) in lieu of

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#### 18a. Operating and Support Costs (Cont'd):

Intermediate Level Maintenance. The OSCAM Intermediate Maintenance Ashore function was used in conjunction with the ship's notional operating schedule (1 VR per ship per operating guarter between Depot Level Maintenance periods) to generate the cost of Voyage Repairs.

DEPOT MAINTENANCE. The Depot Level Maintenance profile used in OSCAM was developed based on MSC's notional Depot Maintenance schedule. The Program Office used average costs for the CLF ships being replaced and NCCA CERs to estimate the associated costs.

CONTRACTOR SUPPORT. This cost element was not used because the T-AKE ship is built to commercial standards and is supported via commercial contract 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 (LANT & PAC) 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.

TYS were not calculated due to lack of inflation indices out past 2050.

Cost Element	T-AKE Avg Annual Cost per T-AKE Ship	No antecedent program for TAKE
Mission Pay & Allowances	13.6	0.0
Unit Level Consumption	8.3	0.0
Intermediate Maintenance	0.6	0.0
Depot Maintenance	4.1	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.8	0.0

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

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## 18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 2000 Constant (Base-Year) Dollars in Millions)

	T-AKE	No antecedent
1	Avg Annual Cost	program for TAKE
Cost Element	per T-AKE Ship	1
Indirect Costs	0.2	0.0
Total	27.6	0.0

Total O&S Cost	T-AKE	No antecedent
BY\$ (In Millions)	17552.6	N/A
TY\$ (In Millions)	N/A	N/A

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# A-5 BRADLEY UPERADE

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#### *** UNCLASSIFIED ***

## SELECTED ACQUISITION REPORT (RCS: DD-ALT(QLA)823) PROGRAM: BFVS A3 Upgrade

## AS OF DATE: December 31, 2001

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1. Designation and Momenclature (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 23735 Project 2TT, 332, 371 (Shared) PROCUREMENT : APPN 2033 ICN G20900 (Army) (Shared) APPN 2033 ICN G80717 (Army) APPN 2033 ICN GE0163 (Army) (Shared)

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02-C-0598

BFVS A3 Upgrade, December 31, 2001

## 5. References:

SAR Baseline (Production Estimate) : AAE Approved Acquisition Program Baseline (APB) dated April 9, 2001.

Approved Program :

AAE Approved Acquisition Program Baseline (APB) dated April 9, 2001.

#### 6. Mission and Description :

The upgraded Bradley Fighting Vehicle (BFV), M2A3 Infantry Fighting Vehicle (IFV) and M3A3 Cavalry Fighting Vehicle (CFV) will facilitate enhanced command and control, provide greater lethality, provide mobile protected transport of an infantry squad to critical points on the battlefield and perform cavalry scout and other claimant (Bradley equipped Fire Support Teams) missions in the 21st century. Upgrades in this program include advanced technology in the areas of command and control, lethality, survivability, mobility, and sustainability required to defeat current and future threat forces while remaining operationally compatible with the main battle tank. The M2A3/M3A3 will provide overwatching fires to support the dismounted infantry, and suppress/defeat enemy tanks, reconnaissance vehicles, IFV, armored personnel carriers, bunkers, dismounted infantry, and attack helicopters. The infantry version (M2A3) of the A3 BFV is used most often to close with the enemy by means of fire and maneuver. The primary tasks performed by the cavalry version (M3A3) as part of a troop and/or squadron are reconnaissance, security, and flank quard missions. The Bradley Fire Support Team vehicle (BFIST) variant acquires targets and coordinates all indirect fire support assets.

## 7. Executive Summary :

The Bradley A3 effort is part of the overall Modernization program aimed at upgrading the existing fleet by correcting deficiencies identified in the Battlefield Development Plan, while accomplishing the intent of the Base Sustainment Program approved by the Secretary of Defense as part of the FY94 Amended Budget Submission. The BFVS is on the Department of the Army's Industrial Preparedness Planning List, making it essential to the Army combat needs to domestically remanufacture these vehicles. Acquisition Decision Memorandum (ADM) approval from Milestone II was received on March 29, 1994. The first prototype delivery was October 1, 1996.

The ADM for the M2/M3A3 Bradley Army System Acquisition Review Council (ASARC), signed on July 18, 1997, approved entry into Low Rate Initial Production (LRIP), updated BFVS A3 Exit Criteria for Milestone III, and designated PEO-GCSS as Milestone Decision Authority for the follow-on LRIP decision. The contract for the first year of A3 LRIP was signed with United Defense LP (UDLP) in July 1997, and the second year in November 1997.

The third year (FY99) of the Bradley A3 LRIP program was awarded to UDLP on December 21, 1998 for 73 additional A3 vehicles. The Bradley A3 multiyear was delayed by one year due to a slip in the Initial Operational Test and Evaluation (IOT&E). The FY00 Appropriations Bill moved \$22M from the

#### 7. Executive Summary (Cont'd) :

Procurement Appropriation to RDT&E to fund the program restructure. The bill also cut an additional \$12M from the Procurement Appropriation. The Army Acquisition Executive (AAE) signed an Acquisition Decision Memorandum (ADM) on December 22, 1999 authorizing PEO-GCSS to procure a total of 230 Bradley A3 vehicles within LRIP, which was approximately 20% of the Army Procurement Objective at that time. A conditional Materiel Release was approved for vehicles to be fielded to 2/8 IN and 1/10 CAV at Fort Hood. These vehicles supported the Army's First Digitized Division.

No major issues have been identified from testing. Limited User Test (LUT) II was completed in August 1999. Live Fire Testing was completed at APG in September 1999 with a total of eighteen shots conducted. The Bradley A3 Initial Operational Test (IOT) was completed November 2000. The IOT consisted of four 96-hour scenarios. During each of these scenarios a Bradley A3/M1A2 SEP equipped Company Team conducted attack, defense, and movement to contact missions. The Bradley A3 demonstrated significant maintenance reliability throughout the IOT and is on track to support FBCB2 test events scheduled for the first or second quarter of FY03. PQT and PVT were completed at YPG and APG, respectively. The proof of performance (POP) test was successfully conducted in San Jose and demonstrated that A3 with TPU II met the Milestone III exit criteria in computer memory and processor utilization.

The Bradley A3 was approved for full-rate production and Type Classification Standard by the Bradley A3 Army Systems Acquisition Review Council (ASARC) on 27 April 2001 with the Milestone III production decision. An alternative contracting strategy was approved to award a single year contract that was convertible to a multiyear contract. On 2 May the contract for 109 Bradley A3 fighting vehicles was signed. The contract conversion was signed June 2001 for a total of 389 Bradley A3 vehicles to be procured via a three year multiyear contract (FY01-FY03).

Completed fieldings to date include 1/10 CAV, 2/8 INF in 4ID. Fielding of one company to 2/5 CAV in ICD began 7 January 2002 with the two remaining companies scheduled for February and March 2002, respectively.

BFVS A3 Upgrade, December 31, 2001

## 8. Threshold Breaches :

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a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	Yes
MILCON	No
O&M	No
<ul> <li> Program Acquisition Unit Cost (PAUC)</li> </ul>	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 total Procurement cost increased by more than 10% due to an increase in quantity from 926 to 1037. A Program Deviation Request (PDR) and a request for a new APB are forthcoming.

9. Schedule:

a. Milestones --

0. A2100C01100						
	Produ	ction	Appi	roved	Curi	rent
	Estimat	e (SAR)	Progra	am (APB)	_Est:	lmate
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 (PPG	T)					
Start	OCT	1996	OCT	1996	OCT	1996
Complete (Government)	JUL	1997	JUL	1997	ராட	1997
PQT						
Start	OCT	1998	OCT	1998	DEC	1998
Complete	JUL	1999	JUL	1999	JUN	1999
Initial Operation Test & Evaluation						
(IOTEE)						
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
Initial Operation Test & Evaluation						
(IOT&E)						
Start	OCT	2000	OCT	2000	OCT	2000
Complete	NOV	2000	NOV	2000	NOV	2000

BFVS A3 Upgrade, December 31, 2001

.

## 9a. Schedule (Cont'd) :

. . .

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
First Unit Equipped (FUE)	NOV 2000	NOV 2000	NOV 2000
Milestone III	MAR 2001	MAR 2001	APR 2001 (Ch-1)
1st Full Scale Production Contract	APR 2001	APR 2001	MAY 2001(Ch-2)

## b. Current Change Explanations -- None

# 10. Performance Characteristics : a. Performance --

		ADDT	oved	Demon-	
	Production	Program	(APB)	strated	Current
	Estimate (SAR)	Obj/Thr	eshold	Perf	Estimate
The command &	MIL-STD-	MIL-STD-/	MIL-STD-	MIL-STD-	MIL-STD-
control system	188-220	188-220 /	188-220	188-220	188-220
must comply with					
the Army Standard					
Protocol					
The command &	Combined	Combined/	Army	Future	Future
control system	Arms	Arms /	Brigade	Battle	Battle
must communicate	Command	Command /	and	Command	Command
fully with the	and	and /	Below	Brigade	Brigade
command and	Control	Control /		and	and
control system				Below	Below
employed by the					
armored forces					
Lethality:					
Command and Control:					
Improve the target	Dual	Dual /	Dual	Dual	Dual
acquisition and	track	track /	track	track	track
fire control	and	and /	and	and	and auto
system	auto	auto /	auto	auto	track
-	track	track /	track	track	with
	with	with /	with	with	IBAS
	IBAS and	IBAS and/	IBAS	IBAS	
	CIV	CIV /			
Survivability:					
NBC protection for	Ventila-	Ventila-/	Ventila-	Ventila-	Ventila-
dismount element	ted face	ted face/	ted face	ted	ted face
while in vehicle	pieces	pieces /	pieces	face	pieces
			,	pieces	
Mobility:					
Ability of the BFVS	16	16 /	16	16	16
to navigate in all					
weather conditions					
with GPS (accuracy					
plus or minus in					
meters)					

#### 10a. Performance Characteristics (Cont'd) :

		Appr	oved	Demon-	
	Production	Program	(APB)	strated	Current
	Estimate (SAR)	Obj/Thr	eshold	Perf	Estimate
The driver display	GPS	GPS /	GPS	GPS	GPS
will present	informa-	informa-/	informa-	Informat	Informat
navigational	tion and	tion and/	tion	ion	ion and
information	map	map /			map
Maintain cross-	MIA2	M1A2 /	M1A2	MIA2	MIA2
country mobility with main battle tank	Tank	Tank /	Tank	Tank	Tank
RAM (Mean Miles	500	500 /	400	417	500
Between Failure)		,			
Integrated Logistics					
Support:					
Systems fault	95	95 /	95	90	95
isolation					
capability to					
provide					
unambiguous fault					
isolation to:					
Mission critical					
Line Replaceable					
Units (LRU) (% of					
the time)					
Non-Mission	90	90 /	90	90	90
critical LRUS					
(% of the time)					

Acronyme:

NBC--Nuclear, Biological, and Chemical GPS--Global Positioning System RAM--Reliability, Availability, and Maintainability

Integrated Logistics Support: System fault isolation capability was demonstrated in the A3 IOT&E 1st quarter FY01. The System Evaluation Report of the Bradley FVS M2/M3A3, March 2001, which supports the ASARC decision, states that during the Diagnostics Demonstration, the diagnostic tools correctly detected and isolated faults to the correct LRU 90% of the time. Although this did not meet the 95% requirement, this capability is considered adequate, is low risk for future improvements and provides significant improvement over legacy system capabilities. Subsequent improvements to test equipment have improved this performance; therefore, we have left the estimate at 95%.

926

1037

## 10b. Performance Characteristics (Cont'd) :

Total

b. Current Change Explanations -- None

#### 11. Total Program Cost and Quantity (Dollars in Millions):

	Production	Approved	Current
a. Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	529.6	529.6	532.6
Procurement	3194.6	3194.6	3541.4
Non-recurring	(25.8)		(25.8)
Recurring	(2784.1)		(3101.2)
Total Rollaway	(2809.9)		(3127.0)
Training Devices	(31.8)		(36.9)
Other	(217.4)		(220.4)
Total Other Wpn Sys	(249.2)		(257.3)
Peculiar Support	(49.9)		(55.3)
Initial Spares	(85.6)		(101.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 2001 Base-Yea	r\$ 3724.2	3724.2	4074.0
Escalation	135.6	135.6	171.8
Development (RDT&E)	(-21.0)	(-21.0)	(-24.1)
Procurement	(156.6)	(156.6)	(195.9)
Construction (MILCON	) (0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3859.8	3859.8	4245.8
b. Quantity			
Development (RDT&E)	N/A	N/A	0
Procurement	926	926	1037

Note: Excludes 8 RDT&E prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

926

Two fully configured vehicles originally planned to be funded by RDT&E have now been funded by the Procurement Appropriation.

The previously approved LRIP quantity was 126. The current approved LRIP quantity is 230, which exceeds 10% of the total procurement quantity due to Army reduction of A3s from 1602 to 1109 and to the additional year of LRIP caused by the delay of IOT&E. The actual LRIP was for 206 vehicles and the new APB authorizes 926 vehicles. Subsequent to the Milestone III decision and APB approval, the Vice Chief of Staff of the Army, as part of the Ground Combat System Recapitalization Decision, approved a Bradley A3 quantity of 1037 for the Army's Counter Attack Corps.

## 11c. Total Program Cost and Quantity (Cont'd) :

- c. Foreign Military Sales -- None.
- d. Nuclear Costs -- None.

## 12. Unit Cost Summary :

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	UCR Baseline (APR 2001 APB)	Current Estimate (Dec 2001 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 2001 BY\$)	3724.2	4074.0	
(2) Quantity	926	1037	
(3) Unit Cost	4.022	3.929	-2.31
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 2001 BY\$)	3194.6	3541.4	
(2) Quantity	926	1037	
(3) Unit Cost	3.450	3.415	-1.01

## 13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	508.6	3351.2	-	3859.8
Previous Changes:				
Economic	-2.9	-9.B	-	-12.7
Quantity	-	-	-	
Schedule	-	-	-	- 1
Engineering	-	-	-	-
Estimating	+2.9	+16.0	-	+18.9
Other	-	-	-	-
Support	-	~6.2	-	-6.2
Subtotal	0.0	0.0	-	0.0
Current Changes:				
Economic	-1.1	-18.6	-	-19.7
Quantity	-	+318.6	-	+318.6
Schedule		+0.2	-	+0.2
Engineering	-	+13.5	-	+13.5
Estimating	+1.0	+24.7	-	+25.7
Other	-	-	-	-
Support	-	+47.7	-	+47.7
Subtotal	-0.1	+386.1	-	+386.0
Total Changes	-0.1	+386.1	-	+386.0
Current Estimate	508.5	3737.3	-	4245.8

## BFVS A3 Upgrade, December 31, 2001

## 13a. Cost Variance Analysis (Cont'd) :

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Summary (FY 2001 Constant (Base-Year) Dollars in Millions)

	RDTGE	PROC	MILCON	TOTAL
Production Estimate	529.6	3194.6	-	3724.2
Previous Changes:				
Quantity	-	-	-	- ]
Schedule	-	-	~	-
Engineering	-	-	-	-
Estimating	+2.0	+1.6	-	+3.6
Other		-	-	-
Support	-	-9.4	-	-9.4
Subtotal	+2.0	-7.8	-	-5.8
Current Changes:				
Quantity	-	+282.3	-	+282.3
Schedule	-	+0.1	-	+0.1
Engineering	~	+12.7	-	+12.7
Estimating	+1.0	+20.4	-	+21.4
Other	-	-	-	-
Support	~	+39.1	-	+39.1
Subtotal	+1.0	+354.6	-	+355.6
Total Changes	+3.0	+346.8	-	+349.8
Current Estimate	532.6	3541.4	-	4074.0

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

(1)	RDT&E	N/A	~1 1
	Revised escalation indices. (Sconosic)	M/A	-1.1
	Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.1
	Prior year obligation adjustment (Estimating)	-0.1	-0.1
	RDT&E Subtotal	+1.0	-0.1
(2)	Procurement		-
	Revised escalation indices. (Economic)	N/A	-18.6
	Adjustment for Current and Prior Inflation	+2.5	+2.5
	(Estimating)		
	Total Quantity Variance associated with increase of 111 vehicles from 926 to 1037.	+283.0	+319.3
	Quantity increase from 926 to 1037 vehicles. (Quantity)	+282.3	+318.6
	Allocation to Schedule variance resulting from Quantity Change. (OR) (Schedule)	+0.1	+0.2
	Allocation to Engineering variance resulting	+0.1	+0.1
	from Quantity Change. (QR) (Engineering)		
	Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating)	+0.5	+0.4

## 13b. Cost Variance Analysis (Cont'd) :

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b. Current Change Explanations		
5	(Dollars in	Millions)
	Base-Year T	hen-Year
Change in cost due to improvements to the Turret Processing Unit (TPU) (Engineering)	+12.6	+13.4
Prior year obligation adjustments (Estimating)	-0.1	-0.1
Changes to estimate based on actual contract awards (Estimating)	+17.5	+21.9
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Added Initial Spares requirement due to quantity increase. (QR) (Support)	+16.6	+18.7
Added Peculiar Support requirement due to quantity increased. (QR) (Support)	+5.5	+6.2
Added Training Devices estimate due to quantity increase. (QR) (Support)	+5.1	+5.2
Added Other Support estimate due to quantity increase. (QR) (Support)	+11.8	+17.5
Procurement Subtotal	+354.6	+386.1

QR = Quantity related changes.

# 14. Unit Cost and Other History (Than-Year Dollars in Millions):

## a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes							PAUC	
Prod Est							Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.17	-0.031	-0.139		+0.013	+0.043		+0.040	-0.074	4.09

## b. Procurement Unit Cost (PUC) History

#### Current SAR Baseline to Current Estimate

PUC	C Changes							PUC	
Prod Est						_			Cur Est
}	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.62	-0.027	-0.080		+0.013	+0.039		+0.040	-0.015	3.60

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## *** UNCLASSIFIED *** BFVS A3 Upgrade, December 31, 2001

## 14c. Unit Cost and Other History (Cont'd) :

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JAN 1994	JAN 1994	JAN 1994
Milestone III	N/A	NOV 1998	APR 2001	APR 2001
IOC	N/A	SEP 1998	NOV 2000	NOV 2000
Total Cost	N/A	4038.B	3859.8	4245.8
Total Quantity	N/A	1602	926	1037
Prog Acq Unit Cost	N/A	2.5	4.2	4.1

## 15. Contract Information (Then-Year Dollars in Millions):

Contract price increased to \$228.8M due to addition of non-recurring costs and LRIP vehicle configuration change.

a. Procurement		Initial	Contract Pi	rice
A3 Production Contra	Ct:	Target	Ceiling	Qty
United Defense L.P., You	rk,, PA			
DAABO796CX036, FFP		\$66.2	N/A	35
Award: July 25, 1997				
Definitized: July 25, 1	997			
Current Contract	Price	Estimated P	rice At Comp	letion
Marcat Cailing	Otar	Contractor	Drogram	n Managor

Target	Ceiling	Qty	Contractor	Program Manager
\$228.6	N/A	126	\$220.8	\$228.8

Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

A3 LRIP:		Initial <u>Target</u>	Contract Pr <u>Ceiling</u>	ice <u>Qty</u>	
United Defense L.P., York, PA DAAE07-00-C-M002, FFP Award: December 31, 1999 Definitized: August 31, 2000		\$152.4 \$152.4		80	
Current Contract Price Target Ceiling \$152.4 \$152.4	Qty 80	Estimated Pr Contractor \$152.4	rice At Comp <u>Program</u> \$1	letion <u>Manager</u> 152.4	

Explanation of Change:

#### 15. Contract Information (Cont'd) :

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

	Initial	Contract Pr	ice
A3 MY Contract:	Target	Ceiling	Qty
United Defense (LP), York, PA			
DAAE07-01-C-M016, FFP	\$184.5	\$184.5	109
Award: June 1, 2001			
Definitized: June 1, 2001			
Current Contract Price	Estimated Pr	ice At Comp	letion

Current	CONTRACT ALICE		partmated Line	VC CONDISCIÓN
Target	Ceiling	Qty	Contractor	Program Manager
\$184.5	\$184.5	109	\$184.5	\$184.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments:

Pending approval of the A3 O&S Cost Certification, on 2 May 2001, a single year contract was awarded to United Defense. This was the last Congressional Notification required to allow the award of a Bradley A3 multiyear contract. Contract DAAE07-01-C-M016 was converted to a multiyear contract on 1 June 2001. A total of 389 Bradley A3 Vehicles will be delivered under this contract (FY01-03).

## 16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY94-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To <u>Complete</u> (FY04-09)	Total
RDTEE	500.5	-	-	-	508.5
Procurement	1285.8	401.3	406.9	1643.3	3737.3
MILCON	-	-	-	-	-
OGM	-	-	*	-	-
Total	1794.3	401.3	406.9	1643.3	4245.8

b. Annual Summary -- BFVS A3 Upgrade

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Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Oty	Rollaway FY 2001 Dollars Nonrec	Rollaway FY 2001 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				42.5	38.9
1995				94.2	87.9
1996				139.9	132.9
1997				92.5	88.9
1998				73.2	70.9
1999				61.4	60.2
2000				28.9	28.8
Subtotal				532.6	508.5

Appropriation: 2033 - Proc of Weapons & Tracked Combat Veh

		Rollaway	Rollaway		
		FY 2001	FY 2001	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997	35	10.8	165.0	177.4	172.2
1998	18	0.2	106.5	108.6	106.7
1999	73	8.9	265.9	294.7	291.7
2000	80		279.1	321.6	323.8
2001	109	3.8	328.6	383.4	391.4
2002	142	2.1	367.7	387.2	401.3
2003	138		368.2	385.8	406.9
2004	131		350.3	386.5	415.0
2005	140		365.2	380.1	415.8
2006	100		280.8	298.8	333.1
2007	71		223.9	245.4	278.8
2008				100.8	116.7
2009				71.1	83.9
Subtotal	1037	25.8	3101.2	3541.4	3737.3

#### *** UNCLASSIFIED *** BFVS A3 Upgrade, December 31, 2001

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## 16b. Program Funding Summary (Cont'd) :

		Rollaway	Rollaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	1037	25.8	3101.2	4074.0	4245.8

#### 17. Delivery/Expenditure Information :

a. Deliveries To Date

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RDT&E	0	0
Procurement	162	162

Percent Total Program Quantities Delivered: 15.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1461.3

Percent Total Program Expended: 34.4%

Eight non-fully configured prototype EMD vehicles have also been delivered.

## 18. Operating and Support Costs :

a. Assumptions and Ground Rules --Operation and support costs reflect world wide regular Army activity and are presented as an estimate of the average annual cost per fielded M2A3 and M3A3. These costs assume the average operating tempo of 870 miles per year(for the M2A3). The source for this cost estimate is the A3 Army Cost Position (ACP), dated March 2001 updated January 2002.

The source for the M2/M3 A2 data is the Operating and Support Management Information System (OSMIS) updated April 2001.

BFVS A3 Upgrade Avg Annual Cost/Veh Reg Army M2A3/M3A3 M2A2/M3A2 Cost Element Mission Pay & Allowances Unit Level Consumption 172.5 170.5 76.0 25.6 Intermediate Maintenance 0.0 0.1 Depot Maintenance 3.2 17.0 Contractor Support 0.0 0.0 0.0 Sustaining Support 2.1

b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

*** UNCLASSIFIED *** BFVS A3 Upgrade, December 31, 2001

## 18b. Operating and Support Costs (Cont'd) :

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b. Costs -- (FY 2001 Constant (Base-Year) Dollars in Thousands)

Cost Element	BFVS A3 Upgrade Reg Army M2A3/M3A3	Avg Annual Cost/Veh M2A2/M3A2
Indirect Costs	5.7	3.1
Total	259.5	216.3

Total O&S Cost	BFVS A3 Upgrade	Avg Annual Cost/Veh
BY\$ (In Millions)	1788.4	0.3
TY\$ (In Millions)	2320.0	0.3

Report Creation Date: 03/19/2002 1:34:35 PM

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#### SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 823) PROGRAM: MCS

## AS OF DATE: December 31, 2001

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## 1. Designation and Nomenclature (Popular Name) : MANEUVER CONTROL SYSTEM (MCS)

## 2. DoD Component : Army

-16 Mcs

#### 3. Responsible Office and Telephone Humber : PM-ATCCS, SFAE-C3S-AT COL FORT MONMOUTH, NJ 07703-5405 Ass

INDEX

COL STEPHEN HORNER Assigned: August 25, 1999 DSN 992-4041; COMM 732-532-4041 shorner@c3smail.monmouth.army.mil

#### 4. Program Elements/Procurement Line Items : RDT5E:

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:

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SAR Baseline (Development Estimate) : DAE Approved Acquisition Program Baseline dated December 19, 1997.

Approved Program: DAE Approved Acquisition Program Baseline (APB) dated June 19, 2000.

#### 6. Mission and Description :

The Maneuver Control System (MCS) satisfies an urgent need for more efficient command and control of tactical operations on the battlefield. MCS provides commanders and staffs, at corps through battalion, more accurate, up to date information for quicker decisions and more effective utilization of firebower and maneuver resources. The MCS data base provides decision support information and functional tools in both text and map graphics form. The system also automates the preparation and distribution of operations orders and reports to facilitate the initiation and execution of the commander's decision. Reports received through MCS automatically update the database ensuring that current tactical information is available whenever and wherever it is needed. Since the initial MCS was introduced in Europe in 1981, this program has been and will continue to be an evolutionary development. the MCS capability continues to expand in pre-planned, time-phased steps toward the objective system. The use of Common Hardware/Software (CHS) computers and peripheral hardware enables the MCS to capitalize on state of the art, ruggedized, commercial MCS to capitalize on state of the art, ruggedized, commercial equipment and reduce life cycle costs. MCS is moving to ruggedized commercial workstations and notebook computers to enhance software development, support and training. MCS will also integrate its CHS equipment into Standardized Integrated Command Post System (SICPS) shelters.

## 7. Executive Summary :

In November 15, 1995, the MCS ORD for Block IV was approved. The MCS Block IV contract was awarded to Lockheed Martin Corporation Management and Data Systems Division on September 26, 1996. The Block IV effort is basically a combat developer approved sequencing of pre-planned product improvements to the Block III baseline functionality, providing application and functionality enhancements which reside on the Defense Information Infrastructure Common Operating Environment (DII COE) software infrastructure in line with the migration plan for compliance with the Army Technical Architecture (ATA). Block III application software will be considered as candidate reuse software by the Block IV contractor to satisfy a portion of the overall Block IV functional requirements. Block IV encompasses development of MCS software versions 12.1, 12.2 and 12.3 and fielding of this upgraded functionality to the Army, upon being successfully tested via an Operational Assessment/Operational Test (OA/OT). Software enhancements in Version 12.1 through 12.3 include developing and analyzing basic course of action, tools, war gaming, and embedded training at the operator and staff section level.

## 7. Executive Summary (Cont'd) :

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On November 22, 1996, a C3I Systems Overarching Integrated Product Team (OIPT) met to review the Army's request to procure hardware, prior to Milestone III for the training base. The Army proposed equipping the training base with MCS in two phases. An Acquisition Decision Memorandum was signed on January 24, 1997 authorizing the Army to acquire initial LRIP quantities of 81 CHS-2 systems for operational assessment in the training base. A DOT&E directed operational assessment on the training base was conducted in May 1997 using these 81 systems with the available MCS Block III software; the assessment concluded that MCS Block III is suitable for use in the TRADOC training base. The MCS Block III IOT&E was to be completed prior to a Milestone III decision to field MCS to operational units.

In March 1997, the MCS Block III software was successfully used in Task Force XXI Army War fighting Experiment (AWE). The lessons that were learned during Task Force XXI AWE, were successfully implemented in software modifications which were used in the Division AWE. MCS Block III, was part of the Army Battle Command System software baseline, which was used during Division AWE in November 1997. This demonstrated the tremendous operational potential of digital technology in achieving Information Dominance. A System Stress Test, of MCS Block III, was held at the Consolidated Technical Support Facility, Ft. Hood, TX in December 1997. This test demonstrated developmental test exit and operational test entrance criteria. The results supported proceeding to the Initial Operational Test and Evaluation in June 1998. Another MCS Acquisition Decision Memorandum (ADM) was signed on July 16,1997. authorizing the Army to extract the training base content from the MCS program. In FY 1997 and FY 1998, \$6.0M and \$15.7M, respectively, were extracted from the MCS Acquisition Program Baseline (APB) along with 207 High Capacity Unit (HCU) V1s, reducing the quantity from 3156 to 2949.

In June 1998, MCS Block III IOT&E was successfully conducted at Fort Hood, Texas. The IOT&E results were positive with OPTEC recommending Block III be fielded to First Digital Corps (FDC) however, because of DOT&E insistence, the Army did not seek a Milestone III decision to field Block III software. MCS Block III Y2K certification package was completed 23 December 1998, approved by PEO C3S and forwarded to Y2K authorities. Block III is used for training experiences.

In 1999, the DAE approved the changes in the MCS program acquisition strategy, under which the program would continue in EMD. The R&D effort would be dedicated to support Block IV software development, in accordance with the ADM signed 6 Aug 1999. The ADM authorized the Army to purchase and support with procurement funds Common Hardware/Software II computers to be used for MCS Block IV development, including participation in those aspects of the Army Experimentation Campaign Plan (AECP) that are essential to MCS development and for operational testing. Block IV software will be fielded and synchronized with ABCS spiral development efforts for FDD and FDC.

In 2000, MCS continued ABCS software integration efforts and support to the

## 7. Executive Summary (Cont'd) :

Common Tactical Picture (CTP) operations. The MCS contractor continued development of software for Build 6.1 which was delivered to the Central Technical Support Facility (CTSF) at Fort Hood, TX for integration into ABCS 6.1. The continued integration of ABCS 6.1 at the CTSF resulted in increased efforts beyond that which was originally planned for MCS 6.1 and continued to impact work scheduled for MCS 6.2. Delivery of MCS functionality fell behind schedule principally due to the difficulties associated with product stability, performance and the integration of the ABCS foundation products. It became evident that the MCS contractor (Lockheed Martin) would not be able to complete all contract requirements by the contract end date of May 2002. The Army was notified via a Program Deviation Report dated November 20, 2000, which outlined an expected baseline breach in the area of RDTE Cost and Schedule. Lockheed Martin began to work up an Estimate at Completion (EAC).

During this period, although significant enhancements were made to the Common Tactical Picture (CTP) whereby performance and stability were improved, MCS functionality delivery continued to fall behind schedule. Also, during this period, results of an Independent Development Test (IDT) and a Performance Prove out Test (PPT) indicated that MCS software required additional time to mature prior to going to its IOT&E scheduled in November 2001, and a subsequent Operational Test Readiness Review recommended that the MCS IOT&E be delayed until the following year. MCS contractor (Lockheed Martin) has submitted an Estimate to Complete. The variance at completion will be significanly greater than the current contract value and the master schedule will extend through FY04. The government PM office developed a revised Estimate at Completion (EAC) using the COCOMO Software Model, which was on target with final negotiated cost.

## 8. Threshold Breaches :

a. Acquisition Program Baseline (APB):

-		Breach	
Sched	iule	Yes	
Perfo	orma	ance	No
Cost		RDT&E	Yes
		Procurement	NO
		MILCON	No
		0&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	1	No
Average	Procurement	Unit	Cost		No

c. Explanation of Breach:

The software delivered by the contractor resulted in a delay in the IOT&E and additional contract development costs as a result of government directed changes, larger than projected discrepancy reports (DRs) and by interoperability with the ABCS family of systems. A revised APB is being processed which will correct these schedule and RDT&E breaches.

## 9. Schedule:

a. Milestones --

	Development	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
BLOCK IV			
AN/TYQ-45 (CHS)			
Award MCS Contract	N/A	SEP 1996	SEP 1996
PEO C3S target for 4ID upgrade	N/A	SEP 2000	SEP 2000
IOT&E			
Start	N/A	OCT 2001	APR 2003(Ch-1)
Complete	N/A	NOV 2001	JUN 2003(Ch-1)
Milestone III	N/A	MAY 2002	DEC 2003(Ch-1)
FUE	N/A	JUN 2002	JAN 2004 (Ch-1)
OA/OT			
Start	N/A	SEP 2002	JUL 2004
Complete	N/A	NOV 2002	SEP 2004
PEO C3S target for III Corps upgrade	N/A	APR 2004	APR 2004

MCS. Decemper R1, 2011

## 9b. Schedule (Cont'd):

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b. Current Change Explanations --

(Ch-1) The schedule and RDT&E breaches resulted from a combination of government directed changes, larger than projected discrepancy reports (DR) and by interoperability with the ABCS family of systems in the software delivered by the contractor resulting in delay in IOT&E and additional contract development costs.

TOTAE		
Start	Nov 2002	Apr 2003
Complete	Dec 2002	Jun 2003
Milestone III	May 2002	Dec 2003
FUE	Jun 2002	Jan 2004

## 10. Performance Characteristics :

a. Performance --

	Development Estimate (SAR)	A Prog Obj/	Approved Fram (APB) Threshold	Demon- strated Perf	Curront Estimate
BLOCK IV				-	
AN/TYQ-45/53 (CHS)					
100% Memory Reten-	5	N/A	/ N/A	TBD	N/A
tion during Power					
fluc/loss (at					
least xx mins)	-		( )) ( )	790	N7 / N
Purge Memory	٤	N/A	/ N/A	160	N/A
(within xx mins)	-	A1 / X	/ NT / //	TPD	NI / A
Mean Time to Repair	. 5	N/A	/ N/A	IBD	
Organizational					
(nr)					
Integrity of	N/A	100	/ 95	TBD	100
#Common			·		
Picture"					
(assumes COE					
compliant input					
input from					
external					
sources) (%)					
Between Army	N/A	8	/ 1800	TBD	8
and Joint					
Echelons(sec)					
Adjacent Army	N/A	8	/ 900	.1.BD	8
and Joint					
Echelons					
(sec)	N7 / N	0	/ 900	תפידי	8
Within Army	N/A	J	7 900	2 20 20	÷
and Joint					
ECNEIONS					
(Sec)					

# 10a. Performance Characteristics (Cont'd) :

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	Development Estimate (SAR)	A Prog Obj/	pproved ram (APB) Threshold	Demon- strated Perf	Current Estimate
Interoperability	N1 / N	1.00	( 0)		100
Direct data exchange integrity IAW DoD COE Standards (%) Continuity of Operations (hr)	N/A	100	<i>د</i> و /	191	130
Situation					
bility After:					
Planned Outage (min)	N/A	15	/ 30	TBD	15
Unplanned Outage (min)	N/A	45	/ 60	TBD	45
Operational Availability (Ao)	.80	. 88	/ .76	TBD	.88

b. Current Change Explanations -- None

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## 11. Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
a.	Cost	Estimate (SAR)	Program (APB)	Estimate
	Development (RDT&E)	50.9	101.2	150.2
	Procurement	56.0	447.4	321.2
	Flyaway	(56.0)		(175.7)
	Other Wpn System Costs			(119.7)
	Peculiar Support	(0.0)		(0.0)
	Initial Spares	(0.0)		(25.8)
	Construction (MILCON)	0.0	0.0	0.0
	Acquisition O&M	0.0	0.0	0.0
	Total FY 1980 Base-Year \$	106.9	548.6	471.4
	Escalation	125.2	729.3	567.9
	Development (RDT&E)	(55.4)	(96.1)	(149.7)
	Procurement	(69.8)	(633.2)	(416.2)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	232.1	1277.9	1039.3

The SAR baseline has been updated to exclude Block IIIb from the current SAR.

b. Quantity --

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Development	(RDT&E)	N/A	0	0
Procurement		947	5776	9724
Total		947	5776	9724

Unit of measure quantities include the MCS Notebook Computer Unit (Unix Base Lap top)(NCU V-2), Notebook Computer Unit - Lap top Rugged (NCU-R,CF72), Super MCS and ABCS Information System - Device (AIS-D) suite of computers, including peripherals and common off-the-shelf software. No LRIP approved for Block IV.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

## 12. Unit Cost Summary :

• • •

	UCR Baseline (JUN 2000 APB) (Dec	Current Estimate 2001 SAR)	Percent Change
a. Prog. Acg. Unit Cost (PAUC)			-
(1) Cost (FY 1980 BY\$)	548.6	471.4	
(2) Quantity	5776	9724	
(3) Unit Cost	0.095	0.048	-49.47
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1980 BY\$)	447.4	321.2	
(2) Quantity	5776	9724	
(3) Unit Cost	0.077	0.033	-57.14

## 13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	106.3	125.8	-	232.1
Previous Changes:				
Economic	-8.8	+41.3		+32.5
Quantity	-	+904.9		+904.9
Schedule	-	+483.3	-	+483.3
Engineering	- 1	+285.0		+285.0
Estimating	+120.6	-1193.1	-	-1072.5
Other	-	-	-	-
Support	-	+413.5		+413.5
Subtotal	+111.8	+934.9	-	+1046.7
Current Changes:				
Economic	+0.1	-36.1	- 1	-36.0
Quantity		+1427.5	-	+1427.5
Schedule	- 1	+341.1	- 1	+341.1
Engineering	-	+198.3	-	+198.3
Estimating	+81.7	-2250.9	-	-2169.2
Other	-	-	-	-
Support	-	-1.2	-	-1.2
Subtotal	+81.8	-321.3	-	-239.5
Total Changes	+193.6	+613.6	-	+807.2
Current Estimate	299.9	739.4	-	1039.3

## 13a. Cost Variance Analysis (Cont'd) :

Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

b age was a surrounded of standard as	RDT&E	PROC	MILCON	TOTAL
Development Estimate	50.9	56.0		106.9
Previous Changes:	1		199 19 19 19 19 19	
Quantity	-	+372.3	-	+372.3
Schedule	-	-23.4	-	-23.4
Engineering	- 1	+145.1	-	+145.1
Estimating	+60.3	-263.0	- 1	-202.7
Other	-		- 1	-
Support		+143.7	- ¹	+143.7
Subtotal	+60.3	+374.7		+435.0
Current Changes:			and a second sec	
Quantity	- 1	+579.8	- 1	+579.8
Schedule		-53.2	- 1	-53.2
Engineering		+217.1 i	-	+217.1
Estimating	+39.0	-854.8	-	-815.8
Other	-	- 1	- 1	-
Support	-	+1.6	-	+1.6
Subtotal	+39.0	-109.5	-	-70.5
Total Changes	+99.3	+265.2	-	+364.5
Current Estimate	150.2	321.2	•	471.4

b. Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year (1) RDT&E Revised escalation indices. (Economic) N/A +0.1 Adjustment for Current and Prior Inflation. -0.2 -0.2 (Estimating) Reprogrammed funds to Procurement to cover +39.2 +81.9 shortfalls in software development and to align with unit set fielding. (Estimating) +39.0 +81.8 RDT&E Subtotal (2) Procurement Revised escalation indices. (Economic) N/A -25.8 Economic adjustment for negative program N/A -10.3 change. (Economic) +358.2 Total Quantity Variance associated with +145.6 increase of 4059 units due to increase in MCS requrements and reprocurement quantities. +579.8 +1427.5

Quantity increase from 5776 to 9724 of which +57 4059, units are due to the addition of the re procurement quantities (3019 NCU V-2's and NCU's) and an increase in the Active Army requirements of 1040 NCU's. (Quantity)

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# 13b. Cost Variance Analysis (Cont'd) :

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b. Current Change Explanations --

	(Dollars	in Millions)
	Base-Year	Then-Year
Allocation to Schedule variance resulting	~53.2	+336.3
from Quantity Change. (QR) (Schedule)		
Allocation to Engineering variance resulting	+217.1	+198.3
from Quantity Change. (QR) (Engineering)		
Allocation to Estimating variance resulting	-558.9	-1522.0
from Quantity Change. (QR) (Estimating)		
Stretchout of annual procurement buy profile	0.0	-4.8
due to reprogramming of procurement dollars		
in Fius co RDT&E. (Schedule)	046 0	<b>61 6 6</b>
in whit costs based on fielding a loss	-240.4	-019.4
avpansive Notebook Computer Unit (up: v baca)		
in lieu of the more expensive Verestile		
Computer Unit, RAIDs are replaced with a less		
expensive large hard drives. Also a reduction		
in the number of reprocurement buys to align		
the reprocurement quantities with the		
completion of the initial fielding in FY-14.		
(Estimating)		
Reprogrammed funds to RDT&E to cover	-39.2	-81.9
shortfalls in software development and to		
align with unit set fielding. (Estimating)		
A decrease in Initial Spares are due to a	-14.9	-40.4
<pre>sparing concept change. (Support)</pre>		
An increase in weapons systems due to	+5.0	+11.6
additional requirements for fielding teams.		
(Support)		
Correction to reconcile flyaway/support.	0.0	0.0
(Support)	+11.5	+27.6
(Estimating)	-11.5	-27.6
Procurement Subtotal	-109.5	321.3
	~~~~	

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	
0.245		+0.018	+0.085	+0.050	-0.333		+0.042	-0.138	0.107

b. Procurement Unit Cost (PUC) History

Current S	SAR	Baseline	to	Current	Estimate
-----------	-----	----------	----	---------	----------

PUC Dev Est			Changes						PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.133	+0.001	+0.119	+0.085	+0.050	-0.354		+0.042	-0.057	0.076

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimato
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	DEC 2003
IOC	N/A	N/A	N/A	MAR 2004
Total Cost	N/A	232.1	N/A	1039.3
Total Quantity	N/A	4567	N/A	9724
Prog Acq Unit Cost	N/A	0.1	N/A	0.1

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E Maneuver	Control System:		Initial <u>Target</u>	Contract Pr: Ceiling	ice Qty
LOCKHEED MAR	TIN CORP, TINTO E008, CPAF	N FALLS NJ	\$63.1	\$95.1	1
Award: Septe Definitized:	mber 26, 1996 September 26,	1996			
Curren	t Contract Pric	e	Estimated P	rice At Comp	letion
Target	Ceiling	Qty	Contractor	Program	Manager
\$169.6	\$0.0	9	\$169.6	\$1	69.6

MCS, December 31, 2001

15a. Contract Information (Cont'd) :

	Cost variance Schedule Variance	5
Previous Cumulative Variances	50.0 \$0.0	**
Cumulative Variances To Date	\$0.0 \$0.0	
Net Change	\$0.0 \$0.0	

Explanation of Change:

. . . .

Contractor rebaselining in process to reflect new negotiated cost. Schedule and performance set equal to actuals. Contractor has been extended through September 2004.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY96-01)	Budget Year (FY02)	Budget Year (FY03)	Balance To Complete (FY04-14)	Total
RDT&E	146.1	39.9	44.4	69.5	299.9
Procurement	53.9	5.9	10.6	669.0	739.4
MILCON		-	-	-	
O&M	-	-	-		-
Total	200.0	45.8	55.0	738.5	1039.3

b. Annual Summary -- MCS BLOCK IV

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1980 Dollars Nonrec	Flyaway FY 1980 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year S
1996				0.9	1.7
1997				6.7	12.5
1998				7.4	13.9
1999				15.0	28.7
2000				21.7	42.2
2001			1	23.9	47.1
2002				19.9	39.9
2003				21.8	44.4
2004				15.4	32.0
2005				8.3	17.6
2006				4.8	10.3
2007				4.4	9.6
Subtotal				150.2	299.9

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16b. Program Funding Summary (Cont'd) :

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 S
1996					
2000	239		5.7	11.9	23.3
2001	246		7.6	15.4	30.6
2002			1.4	2.9	5.9
2003			1.0	5.2	10 6
2004	262		6.8	15.1	31.4
2005	786		10.3	20.1	42.7
2006	88		2.1	8.6	18.6
2007	167		4.6	12.9	28.5
2008	631		12.1	25.9	56.1
2009	705		12.7	24.1	25-3
2010	1511		23.2	35.2	62.1
2011	1353		22.6	34.8	82.7
2012	1374		22.3	35.2	85.2
2013	1212		21.9	34.6	85.5
2014	1150		21.4	39.3	98.9
Subtotal	9724		175.7	321.2	739.4

	Otv	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year 3
Grand Total	9724		175.7	471.4	1039.3

17. Delivery/Expenditure Information :

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	9724	485

Percent Total Program Quantities Delivered: 5.0%

b. Total Expenditures To Date (In Millions of Dollars): 5 200

Percent Total Program Expended: 19.2%

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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 Re-parables (spares)., and Replenishment Consumables (Repair Parts) for the HCU's, LCU's and (RAID, LSP, LSD, Printers, TCIM) once fielded. The O&S costs are supported by the ACP approved Mar 99, addendum # 3 Mar 00.

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Thousands)

Cost Element	MCS BLOCK IV Avg Annual Cost Per equipment	Antecedent None
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Personnel Support	23.8	N/A
Depot Level Reparables	25.1	N/A
Software Maintenance/Sup	18.5	N/A
Total	67.4	N/A

Total O&S Cost	MCS BLOCK IV	Antecedent
BY\$ (In Millions)	70.4	N/A
TYS (In Millions)	161.5	N/A

Report Creation Date: 03/22/2002 3:35:43 PM

SELECTED ACOUISITION REPORT (RCS: DD-A&T(O&A)823) PROGRAM: SADARM

AS OF DATE: December 31, 2001

<u>SUBJECT</u>	PAGE	
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Operating and Support Costs	12	

- (U) <u>Designation and Nomenclature (Popular Name)</u>: Sense and Destroy Armor (SADARM)
- 2. (U) DoD Component: Army

A-19 SADARM

3. (U) Responsible Office and Telephone Number:

INDEX

OFFICE OF THE PROJECT MANAGER FOR ARTILLERY MUNITIONS SYSTEMS (ARMS) PICATINNY ARSEN, NJ 07806-5000 SLEDGE@PICA.ARMY.MIL

4. (U) Program Elements/Procurement Line Items: RDT&E: (U) PE 64802 Project D369 (U) PE 64814 Project D2ST, D644 PROCUREMENT: (U) APPN 2034 ICN E66300 (Army) CLEARED PUBLICATION P. 5 FOR OPEN PUBLICATION P. 5 MAR 1 8 2002 10 (Sch MAR 1 8 2002 10 (Sch MAR 1 8 2002 10 (Sch

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5. (U) References:

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SAR Baseline (Development Estimate): (U) DAE Approved Acquisition Program Baseline, dated 24 July 1989.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated February 17, 2000.

6. (U) Mission and Description:

(U) The SADARM smart munitions will provide an enhanced counterfire capability for the 155mm Howitzer delivery system capable of attacking targets well beyond the Forward Line of Troops (FLOT) in a fire and forget mode. This indirect fire mission can be accomplished under inclement weather, degraded battlefield conditions and Nuclear, Biological, Chemical (NBC) environments, both day and night. The SADARM munition is designed for use against self-propelled howitzers, lightly armored personnel carriers and other stationary armored threat vehicles encountered in counterfire, close support, Suppression of Enemy Air Defense (SEAD) and interdiction. The SADARM Munition Need and Planned Operational Environment description is contained in the SADARM Required Operational Capability (ROC) document dated 11 March 1986 and as revised 18 June 1987, and in an Operational Requirements Document (ORD) dated 3 August 1994. The system is comprised of the following major components: multi-mode sensor with infra-red, and active and passive millimeter wave; lethal mechanism with explosively-formed penetrator; parachutes which control deceleration, spin and descent velocity; fuzing, safe and arm device; and appropriate carrier hardware.

7. (U) Executive Summary:

(0) Based on the SADARM production funding being transferred to other programs, it is anticipated that this will be the final SAR. The original SADARM design was for an 8 inch projectile. The Army decided to retire the 8 inch howitzer fleet near the end of the Advanced Technology Demonstration in 1989. The program was changed to a mix of 63,386 155mm Projectiles (2 SADARM submunitions each) and 59,110 Multiple Launch Rocket System (MLRS) Rockets (6 SADARM submunitions each). In 1991, due to a reevaluation of the European threat, the quantities were cut to 39,018 projectiles and 23,/12 rockets. In 1993, due to low reliability during technical testing, the program was suspended to determine if it was still viable. The program was reinstated in 1994 after the reliability problems were identified and fixes planned. The MLRS SADARM Rocket portion of the program was terminated, to be potentially resumed sometime in the future. To make up for the lost MLRS Rocket quantities, the 155mm SADARM Projectile quantity was increased to 73,612.

SADARM successfully completed Engineering and Manufacturing Development (EMD) during testing at Yuma Proving Ground, AZ, on April 30, 1996.

The Government began accepting SADARM production projectiles in November 1996. System level production testing continued through 1999.

SADARM, December 31, 2001

7. (U) Executive Summary (Cont'd):

A SADARM Product Improvement (PI) program was initiated in FY 1997. A sole source development contract was awarded to Aerojet, Azusa, CA, in February 1997. Because the PI SADARM will be more effective than the basic SADARM, the total procurement quantity was reduced from 73,612 projectiles to 50,000 projectiles, resulting in a savings of \$493M.

The SADARM Operational Test (OT) was completed in August 1998. A total of five missions were physically fired in an operational scenario by soldiers from the 1/377th Field Artillery Regiment over actual threat targets at Ft. Greely, Alaska. Only three of the five missions delivered the SADARM projectiles over the target threat array. The average of these three missions attained the Operational Requirements Document (ORD) requirements for unique target kills. Two of the five fire missions failed to deliver the projectiles over the target array. As a result, the Operational Test & Evaluation Command (OPTEC) System Evaluation Report (SER) indicates that the SADARM was not effective or suitable as tested. The primary contributing factors were lower than expected submunition reliability, submunition performance, and delivery inaccuracy due to wind. As a result of OT, PM ARMS restructured the basic SADARM program to include a robust reliability growth program to provide the warfighter with a needed capability.

OPM-ARMS conducted SADARM Reliability Determination and Assurance Testing from September 1999 through January 2000 at Yuma Proving Ground in Arizona. During this test, SADARM demonstrated zone 8S reliability of 77%. The ORD requirement is 80% Furthermore, SADARM had 51 target hits from 42 projectiles, signifying SADARM's capability of killing targets at a rate that exceeds the ORD effectiveness requirement. It would require firing approximately six times as many of the next most effective artillery projectiles in order to meet the SADARM effectiveness requirements, significantly reducing the survivability of our forces.

Except for \$14.9M needed to support prior year's production, all FY 2001 and beyond M898 SADARM production funding was transferred to other programs.

As a result of transferring the future procurement funding to other programs, the M898 SADARM procurement quantity was reduced from 50,000 to 1,063. This also eliminated some future schedule milestones.

The M898 SADARM production deliveries from prior year's funding continued through July 2001, having been delayed while reliability problems encountered in OT were fixed. Since SADARM production support (management, engineering & test) costs are funded annually in the years that they occur, there are no quantities associated with the FY 2000 and FY 2001 appropriations.

The APB was updated on Feb 17, 2000 to reflect these programmatic changes.

8. (U) Threshold Breaches:

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a. (U) Acquisition Program Baseline (APB):

		Item	Breach
Schee	dul	9	No
Perf	orma	ance	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) <u>Schedule</u>: a. Milestones --

	Development		Approved		Current	
	Estimat	te (SAR)	Progra	am (APB)	Esti	imate
Congressional Direction for FSD/Prod	DEC	1985	DEC	1985	DEC	1985
DA Approval SADARM (155mm & MLRS) ROC	MAR	1986	MAR	1986	MAR	1986
DA In-Process Review for Submunition FSD	SEP	1986	SEP	1986	SEP	1986
Competitive Submunition FSD Contract Award	SEP	1986	SEP	1986	SEP	1986
Milestone II (ASARC)	NOV	1987	NOV	1987	NOV	1987
Milestone II (DAB)	MAR	1988	MAR	1988	MAR	1988
Congressional Demonstration						
Start	JAN	1989	JAN	1989	JAN	1989
Complete	APR	1989	APR	1989	JUL	1989
Army Decision: keep 2 submun sizes	N/A		NOV	1990	NOV	1990
155mm SADARM Tech Tests						
Start	MAY	1990	AUG	1991	JUL	1991
Complete	JUL	1991	FEB	1996	APR	1996
155mm SADARM IOT&E						
Start	JUL	1991	JUN	1998	JUN	1998
Complete	DEC	1991	JUL	1998	JUL	1998
Submunition Design Select	JAN	1992	N/A		N/A	
Type Classification	JAN	1992	N/A		N/A	
Milestone III (ASARC)	JAN	1992	N/A		N/A	
LRP Decision	N/A		MAR	1995	MAR	1995
LRP Contract Award	N/A		APR	1995	APR	1995
LRP First Delivery	N/A		OCT	1996	NOV	1996
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SADARM, December 31, 2001

9a. (U) Schedule (Cont'd):

	Development	Approved	Current
	<u>Estimate (SAR)</u>	Program (APB)	Estimate
155mm SADARM Full Scale Production	MAY 1992	N/A	N/A
Award			
IOC/First Unit Equipped-155mm SADARM	JUL 1993	N/A	N/A
Award Product Improvement (PI) Contra	ct N/A	FEB 1997	FEB 1997
Complete PI Contract	N/A	TBD	TBD

(U) ACRONYMS:

ASARC	Army Systems Acquisition Review Council
DA	Department of the Army
DAB	Defense Acquisition Board
FSD	Full Scale Development
IOC	Initial Operational Capability
IOTE	Initial Operational Test & Evaluation
LRP	Low Rate Production

b. Current Change Explanations -- None

10. (U) Performance Characteristics: a. Performance --

		A	pproved	Demon-		
	Development	Prog	ram (APB)	strated	Current	
155 mm EK (SPH) (4	Estimate (SAR) N/A	(b)(1)		· Borf.	Fetimate	S AMENDED
1) 155mm Effectiveness 10) Submunition Pk		N/A	/ / N/A	(b)(1)		ENDED
Submunition Perforation (mm RHA)	and the state	N/A	/ N/A	1. 		AMARIA
155mm Max Range (km) (M109A1/A2/A3/A4 series bowitzers)	N/A	17.9	/ 17.9	17.9	17.9	
155mm Max Range (km) (M198 and M109A5/A6 series howitzers	N/A	22.5	/ 22.5	22.5	22.5	
155mm Max Range (km) (M109A2/A3 w/M185)	17.9	N/A	/ N/A	N/A	N/A	
155mm Max Range (km) (M198 series)	22.5	N/A	/ N/A	N/A	N/A	
155mm Max Range (km) (M109 A3/E2 H1P) (M109A6)	22.5	N/A	/ N/A	N/A	N/A	
Storage Life (all SADARM munitions) (yrs)	10	N/A	/ N/A	10	10	

10a. (U) Performance Characteristics (Cont'd):

	Development	Appr Program Obi/Thr	oved (APB)	Demon- strated	Current	
155mm Carrier	0.90	N/A /	N/A	0.98	0.98	
Reliability Submunition	0.80	N/A /	N/A	0-77	0.80	
Reliability (155mm)		,,	,			

(U) ACRONYMS:

EK	Expected number of Kills
HIP	Howitzer Improvement Program
Pk	Probability of kill
RHA	Rolled Homogeneous Armor
SPH	Self Propelled Howitzer

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions):

		Development	Approved	Current
а.	(U) Cost	Estimate (SAR)	Program (APB)	<u>Estimate</u>
	Development (RDT&E)	237.7	389.9	389.9
	Procurement	248.0	234.7	234.8
		(248.0)		(0.0)
	Total	(0.0)		(206.7)
	Nonrecurring Flyaway	(0.0)		(24.1)
	Total Flyaway	(248.0)		(230.8)
	Data	(0.0)		(4.0)
	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 1989 Base-Year \$	485.7	624.6	624.7
	Escalation	49.4	115.4	115.2
	Development (RDT&E)	(8.2)	(55.3)	(55.3)
	Procurement	(41.2)	(60.1)	(59.9)
	Construction (MILCON)	(0.0)	(0.0)	(0.0)
	Acquisition O&M	(0.0)	(0.0)	(0.0)
	Total Then Year \$	535.1	740.0	739.9

(U) In addition to the above, \$589.8M (then year) was spent on MLRS SADARM Rocket RDT&E prior to termination.

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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)	132	189	189
Procurement	10156	1063	1063
Total	10288	1252	1252

Note: Excludes 772 RDT&E prototypes from the SAR Baseline and 772 from the Current Estimate that are not considered fully configured.

(U) The Low Rate Initial Production (LRIP)quantity planned at the time of the 30 March 1995 DAB was 1287.

The LRIP quantity was decreased to 1,063 due to transfer of funding out of M898 SADARM program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

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(U) Dross Dec Unit Cost (DAUC)	UCR Baseline (FEB 2000 APB)(Dec	Current Estimate 2001 SAR)	Percent Change
 (1) Cost (FY 1989 BY\$) (2) Quantity (3) Unit Cost 	624.6 1252 0.499	624.7 1252 0.499	0.00
 b. (U) Avg. Proc. Unit Cost (APUC) (1) Cost (FY 1989 BY\$) (2) Quantity (3) Unit Cost 	234.7 1063 0.221	234.8 1063 0.221	0.00

13. (U) Cost Variance Analysis:

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	245.9	289.2	-	535.1
Previous Changes:				
Economic	-2.8	-1.6	-	-4.4
Quantity	-	-383.8	-	-383.8
Schedule	+29.8	+191.9	-	+221.7
Engineering	+62.8	+68.7	-	+131.5
Estimating	+109.5	+124.9	-	+234.4
Other	-	-	-	-
Support	-	+5.4	-	+5.4
Subtotal	+199.3	+5.5	-	+204.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	
Schedule	-	- 1	-	-
Engineering	-	-	-	-
Estimating	-	-	-	
Other	-	-	-	-
Support	-	-		-
Subtotal	-	-	-	-
Total Changes	+199.3	+5.5	-	+204.8
Current Estimate	445.2	294.7	-	739.9

(U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	237.7	248.0	-	485.7
Previous Changes:				
Quantity	-	-0.9	-	-0.9
Schedule	+23.3	+0.9	-	+24.2
Engineering	+47.8	+8.1	-	+55.9
Estimating	+81.1	-25.3		+55.8
Other	-	-	-	-
Support		+4.0	-	+4.0
Subtotal	+152.2	-13.2	-	+139.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	
Total Changes	+152.2	-13.2	-	+139.0
Current Estimate	389.9	234.8	-	624.7

b. Current Change Explanations -- None

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

Curtenc	SHK Dase	TIME CO	current	Estimate						
PAUC	Changes								PAUC	Ē
Dev Est								Cur Est		
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.052	-0.004	+0.070	+0.177	+0.105	+0.187		+0.004	+0.539	0.591	

b. (U) Procurement Unit Cost (PUC) History

Current	SAR	Baseline	to	Current	Estimate	
PUC					Changes	 _

Current	SAK Base	line to	Current	Estimate					
PUC	Changes							PUC	
Dev Est	k					Cur Est			
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.028	-0.002	-0.117	+0.181	+0.065	+0.117		+0.005	+0.249	0.277

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate (PdE)	Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAR 1988	N/A	MAR 1988
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	JUL 1993	N/A	N/A
, Total Cost	N/A	535.1	N/A	739.9
Total Quantity	N/A	10288	N/A	1252
Prog Acg Unit Cost	N/A	0.1	N/A	0.6

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E (U) <u>SADARM Product Imprymnt</u>	<u>:</u>	Initial <u>Target</u>	Contract Ceiling	Price Qty
Aerojet, Azusa, CA DAAE30-97-C-1017, CPAF Award: February 24, 1997 Definitized: February 24, 1997		\$46.7	N/A	
Current Contract Price Target <u>Ceiling</u> \$45.9 N/A	Qty	Estimated Pr Contractor \$45.9	rice At C <u>Prog</u>	Completion <u>fram M</u> anager \$45.9

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SADARM, December 31, 2001

15a. (U) Contract Information (Cont'd):

Previous Cumulative Variances Cumulative Variances To Date (12/31/99) Net Change	<u>Cost Variance</u> \$0.8 <u>\$0.8</u> \$0.0	<u>Schedule Variance</u> \$-0.5 <u></u>
Explanation of Change:		
(U) Variances are insignificant.		
 b. Procurement (U) <u>SADARM LRP2 BASIC:</u> Aerojet, Azusa, CA DAAE30-97-C-1005, FFP Award: February 6, 1997 Definitized: February 6, 1997 	Initial <u>Target</u> \$81.6	Contract Price <u>Ceiling Oty</u> N/A 600
Current Contract Price Target <u>Ceiling</u> Qty \$127.8 N/A 800	Estimated Pr <u>Contractor</u> \$127.8	tice At Completion Program Manager \$127.8

Explanation of Change:

None.

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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)

Appropriation	Prior <u>Years</u> (FY86-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u>	Total
RDT&E	442.3	2.9	_	en	445.2
Procurement	294.7	_	-	-	294.7
MILCON	-	-	***	-	-
O&M		-	_	-	-
Total	737.0	2.9	-	-	739.9

16b. (U) Program Funding Summary (Cont'd):

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b. Annual Summary -- 155mm SADARM Projectile

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1989 Dollars Nonrec	Flyaway FY 1989 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				2.7	2.5
1987				14.9	14.2
1988				24.2	24.0
1989				37.8	39.0
1990				48.3	51.7
1991				28.6	31.8
1992				55.3	62.9
1993				19.3	22.5
1994			1	35.1	41.6
1995				33.5	40.5
1996				12.8	15.8
1997				7.8	9.7
1998				8.4	10.5
1999			_	23.9	30.3
2000		-		18,6	24.1
2001				16.3	21.2
2002				2.2	2.9
Subtotal	189			389.9	445.2

(U) Due to commonality, the RDT&E costs for submunitions for the 155mm Projectile and MLRS Rocket have been allocated to each system based on the total quantity of submunitions to be procured for each end item. All MLRS SADARM Rocket efforts have been terminated. The following table shows the sunk RDT&E costs allocated to the MLRS SADARM Rocket: FY BY89 \$M TY \$M

4 A	DICT AN	
1986	34.3	31.7
1987	60.1	57.3
1988	76.7	76.1
1989	101.9	105.2
1990	77.6	83.1
1991	68.0	75.6
1992	74.9	85.2
1993	64.6	75.2
1994	0.3	0.4
TOTAL	558.4	589.8

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2034 - Procurement of Ammunition, Army

Fiscal Year	Qty	Flyaway FY 1989 Dollars Nonrec	Flyaway FY 1989 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	110	6.3	18.7	24.5	29.8
1996	123	6.7	32.9	36.4	44.9
1997	600	2.2	85.0	74.8	93.6
1998	200	3.9	50.4	51.7	65.3
1999	30	5.0	19.7	24.6	31.3
2000				11.5	14.9
2001	1			11.3	14.9
Subtotal	1063	24.1	206.7	234.8	294.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1252	24.1	206.7	624.7	739.9

17. (U) Delivery/Expenditure Information:

a.	(U) Deliveries To Date	Plan	Actual
	RDT&E	166	166
	Procurement	1033	1033

(U) Percent Total Program Quantities Delivered: 95.8%

- b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 685.9
 - (U) Percent Total Program Expended: 92.7%
- (U) RDT&E quantity excludes units that are not fully configured.

Expenditures to date exclude \$589.8M spent on MLRS SADARM Rocket.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --The 155mm SADARM munitions are considered "wooden rounds" and have no operational costs. The only O&S costs are for depot storage and stockpile testing. O&S costs are less than \$15 (BY89) per round per year. There is no antecedent.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

	155mm SADARM Projectile	Avg Annual Cost Per
	Avg Annual Cost Per	Antecedent
Cost Element	155mm SADARM/year	
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	0.0	0.0

Total O&S Cost	155mm SADARM Projectile	Avg Annual Cost Per
BY\$ (In Millions)	N/A	N/A
TY\$ (In Millions)	N/A	N/A

Report Creation Date: 03/22/2002 11:53:48 AM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: FMTV

AS OF DATE: December 31, 2001

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INDEX



 Designation and Nomenclature (Popular Name) : Family of Medium Tactical Vehicles (FMTV)

2. DoD Component : Army

3. Responsible Office and Telephone Number : PEO, Combat Spt & Combat Service Spt COL Robert B. Lees, Jr. PM, Medium Tactical Vehicles Assigned: July 30, 1999 ATTN: SFAE-GCS-W-MTV DSN 786-5332; COMM (586) 574-5332 Warren, MI 48397-5000 leesrob@tacom.army.mil

4. Program Elements/Procurement Line Items :

RDT&E: PE 0604604A (Shared) Item H07 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) : AAE Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program :

AAE Approved Acquisition Program Baseline (APB) dated October 6, 1999.

6. Mission and Description :

The Family of Medium Tactical Vehicles (FMTV) is a complete series of trucks based on a common chassis, varied by payload and mission. The Light Medium Tactical Vehicle (LMTV) has a 2-1/2 ton capacity consisting of cargo and van models. The Medium Tactical Vehicle (MTV) has a 5-ton capacity and consists of cargo, tractor, van, wrecker, tanker and dump truck models. Subvariants provide Air Drop capability for contingency and rapid deployment operations. Over 80% commonality of parts between variants significantly reduces operational and support costs. FMTV, intended to replace obsolete and maintenance-intensive trucks currently in the fleet, performs local and line haul, unit mobility, unit resupply, and other missions in combat, combat support, and combat service support units. The system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain, in all climatic conditions. The Project Manager has taken special interest in correcting field interface problems for older trailers that use FMTV as the prime mover. The FMTV Al is the configuration currently in production.

7. Executive Summary :

The FMTV program was initiated in 1984. The FMTV Army Systems Acquisition Review Council (ASARC) approval was obtained in August 1987, with further program approval from the Defense Acquisition Board (DAB) in May 1988, which led to the prototype contracts being awarded in October 1988.

The FMTV ASARC IIIA milestone review was completed in September 1991, granting approval to proceed to Low Rate Initial Production. The FMTV initial production contract was awarded to Stewart & Stevenson Services Inc. of Houston, TX on October 11, 1991. The production facility is located in Sealy, TX.

The ASARC IIIB for Full Rate Production and Type Classification Standard was approved in August 1995, and the production APB was approved on September 11, 1995. First Unit Equipped (FUE) occurred in January 1996 at Ft. Bragg, NC. Production under this contract was completed in November 1998.

In September 1997, the Army Acquisition Executive approved a two-phase acquisition strategy for FMTV that would have resulted in a second-source production program. Implementation began with contract awards to AM General and Oshkosh Truck Corporation in October 1998. However, the FY00 DOD Authorization Act directed the SECARMY to terminate the second source strategy and develop an acquisition strategy using competitive procedures. The FY00 Appropriation

7. Executive Summary (Cont'd) :

Conference Report provided additional guidance. As a result, the new acquisition strategy, the FMTV Al Competitive Rebuy, was approved by the Army Acquisition Executive on January 22, 2000, and is being implemented using full and open competition. Phase I, the Competitive Evaluation Phase, to select competitors for production began, in FY01, with contracts awarded in April 2001 to Stewart & Stevenson and Oshkosh Truck Corporation. Phase II, the award of a multiyear production contract, is scheduled for March 2003.

In March 1998, a safety of use message was issued to units with FMTV AOs in their fleets concerning the vehicle driveline. A combined government, contractor, scientific and academic group evaluated the problem and developed a joint, final solution. Retrofit of all trucks was completed in 2000, with the exception of a few trucks deployed overseas, which were completed in early 2001. The contractor's claim for the driveline was settled in December 2001 using the Alternative Disputes Resolution process.

The negotiated, sole-source, four-year, multiyear rebuy contract with Stewart & Stevenson was awarded on October 14, 1998. Vehicle production of the FMTV Al series began in September 1999, and vehicles produced under this contract have the improved driveline components. First Unit Equipped occurred in July 2000 at Ft. Carson, CO. LMTV and MTV trailers procured under this contract completed air-drop certification during the year and received Full Materiel Release in September and December 2001, respectively.

As of December 31, 2001, a total of 13,370 FMTV vehicles have been fielded to units.

8. Threshold Breaches :

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	No
MILCON	No
0&M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

8. Threshold Breaches (Cont'd) :

b. Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

9. <u>Schedule</u>: a. Milestones --

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a. http://doi.org			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	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 1986	OCT 1988
First Prototype Delivery	J AN 1990	JAN 1990	JAN 1990
FSD Development Testing	N/A	N/A	
Start	JAN 1990	N/A	JAN 1990
Complete	DEC 1990	N/A	DEC 1990
Early User Test and Evaluation	N/A	N/A	
Start	MAY 1990	N/A	MAY 1990
Complete	OCT 1990	N/A	OCT 1990
ASARC IIIA	SEP 1991	SEP 1991	SEP 1991
Production Award (MYP)	OCT 1991	OCT 1991	OCT 1991
Call up 2nd Year of MYP	AUG 1992	N/A	AUG 1992
Production Qualification Test (PQT)	N/A	N/A	
Start	MAY 1992	N/A	MAY 1992
Complete	NOV 1992	N/A	NOV 1992
First Production Delivery	MAY 1993	MAY 1993	MAY 1993
Initial Production Test (IPT)	N/A	N/A	
Start	MAY 1993	N/A	MAY 1993
Complete	JUL 1995	N/A	JUL 1995
IOTEE	N/A	N/A	
Start	APR 1995	N/A	APR 1995
Complete	JUL 1995	N/A	JUL 1995
Call Up 3rd Year of MYP Increment 1	SEP 1993	N/A	SEP 1993
ASARC IIIB	AUG 1995	AUG 1995	AUG 1995
Call Up 3rd Year of MYP Increment 2	JUL 1995	N/A	JUL 1995
Organic Support Capability	DEC 1995	DEC 1995	DEC 19 9 5
First Unit Equipped (FUE)/Initial	DEC 1995	DEC 1995	JAN 1996
Operational Capability (IOC)-FMTV			
Call up 4th Year of MYP Increment 1	JUL 1995	N/A	JUL 1995
Call up 4th Year of MYP Increment 2	SEP 1995	N/A	SEP 1995
Call Up 5th Year of MYP	JUL 1996	N/A	AUG 1996
Production Decision Review Van, Tanke	r, JUN 1996	N/A	NOV 1996
£ Trailer			
POT Van & Tanker	N/A	N/A	
Start	NOV 1999	N/A	N/A
Complete	DEC 1999	N/A	NZA
IPT. Van & Tanker	N/A	N/A	
Start	FEB 2000	N/A	N/A

9a. Schedule (Cont'd) :

	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Complete	OCT 2000	N/A	N/A
IOT&E, Van & Tanker	N/A	N/A	
Start	APR 2000	N/A	N/A
Complete	AUG 2000	N/A	N/A
PQT, Trailer	N/A	N/A	
Start	NOV 1999	N/A	N/A
Complete	DEC 1999	N/A	N/A
1PT Trailer	N/A	N/A	
Start	FEB 2000	N/A	N/A
Complete	OCT 2000	N/A	N/A
IOT&E, Trailer	N/A	N/A	
Start	APR 2000	N/A	N/A
Complete	AUG 2000	N/A	N/A
JSOR Amendment	N/A	MAY 1997	MAY 1997
Rebuy Contract Award	N/A	OCT 1998	OCT 1998
2nd Source Phase I Awards	N/A	OCT 1998	OCT 1998
Van Award	N/A	JAN 2000	N/A
2nd Source Phase II	N/A	JUN 2000	N/A
FUE Rebuy Contract	N/A	MAR 2000	JUL 2000(Ch-1)
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(Ch-2)

ASARC - Army Systems Acquisition Review Council DAB - Defense Acquisition Board FSD - Full Scale Development FUE - First Unit Equipped IOC - Initial Operational Capability IPT - Initial Production Test IOT&E - Initial Operational Test & Evaluation JSOR - Joint Service Operational Requirement MYP - Multiyear Procurement PQT - Production Qualification Test

b. Current Change Explanations --(Ch-1) First Unit Equipped (FUE) date changed from May 2000 to July 2000 to reflect actual date of the ceremony at Ft. Carson, CO on July 7, 2000.

(Ch-2) Follow-on Contracts changed from November 2001 to April 2001, reflecting the award of the Competitive Rebuy Phase I contracts in April 2001, in accordance with the implementation of the approved acquistion strategy.

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10. Performance Characteristics : a. Performance --

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	Production	Aj Progi	pproved ram (APB)	Demon- strated	Current
Wishung Grand on 25	ESCIMALE (SAR)		/ 55	EA D	Eartware
Highway Speed on 24	22	22	/ 55	34.0	22
Grade at GVW (mpn)	A E	4 5	/ 45	10 7	A 5
Highway Speed on 34	40	M D	/ 40	40.7	91 D
Grade at Gvw (mpn)	4.0	4.0	1 40	45 5	4.0
Algaway Speed on 24	40	40	/ 40	40.0	
Grade at GCW (hiph)	30	30	/ 30	35 8	24
Angrway Speed on 3%	30	30	/ 30	0.0	
IMMU Daviord (tops)	2 5	2 5	125	2.5	2 5
MTU Dayload (tong)	5	<u>z</u> .j	/ 5	5	5
INTY Towed Load (lbs)	7500	12000	/ 12000	7500	12000
MTV Towed Load (158)	21000	21000	/ 21000	21000	23000
Jongitudinal Grade	50	60	/ 60	60	60
Operation (%)		00	,	•••	
Slide Slope Operation	30	30	/ 30	30	30
(%)			-		
Fording Without Kit	30	30	/ 30	30	30
(inches)					
Fording With Kit	60	N/A	/ N/A	N/A	N/A
(inches)					
Operating Range on	300	300	/ 300	300	300
Integral Fuel at					
GCW (miles)					
Reliability:					
MMBHMF (miles)			1	10000	FF 0.0
Truck, Cargo	3000	5500	/ 5500	12000	5500
(LMTV)			1 5500	12000	5500
Truck, Cargo (MTV)	2700	5500	/ 3800	12000	3800
Tractor	3300	3800	/ 3800	4800	2800
Wrecker	2300	2800	/ 2800	5000	2800
Trailer (LMTV)	2800	2600	/ 2600	5000	2600
Trailer (MTV)	2600	2000	/ 2000	2000	2000
MMBOMF (miles)	2228	2228	/ 2228	>8279	2228
(Truck, Cargo	2220	2220	/ 1220		
	2035	2035	/ 2035	6386	2035
Truck, cargo (MIV)	2035	2480	/ 2480	3606	2480
Tractor	1975	1875	/ 1875	4720	1875
WIECKEI Trailor (IMTV)	2056	2056	/ 2056	5000	2056
Trailer (LMIV)	1913	1913	/ 1913	5000	1913
MANDON	1713		/		
marvar Cargo	.01	.0044	/ .0044	.0037	.0044
(IMTV)			,		
Truck, Cargo (MTV)	.011	.0055	/ .0055	.0048	.0055
Tractor	.012	.0065	/ .0065	.0062	.0065
Wrecker	.015	.0064	/ .0064	.0069	.0064
Trailer (LMTV)	.003	.0017	/ .0017	.0003	.0017

10a. Performance Characteristics (Cont'd) :

		Approved	Demon-
	Production Estimate (SAR)	Program (APB) Obj/Threshold	strated Current Perf Estimate
Trailer (MTV)	.003	.0017 / .0017	.0006 .0017
Transportability:			
Surface	H, S&R	H, S&R / H, S&R	H,S&R H,S&R
Transportation			
(Highway, Ship &			
Rail)			
Surface	H, S&R	H, S&R / H, S&R	H,S&R H,S&R
Transportation			
(Highway, Ship &			
Rail)			
Air Transportation	C-141	C-141 / C-141	C-141 C-141
Air Transportation	N/A	C-130 / C-130	C-130 C-130
Mobility: (vehicle			
cone index)			
Truck Cargo	25	25 / 25	25 25
Truck & Trailer	35	35 / 35	30 35
Combination			

GVW - Gross Vehicle Weight
 GCW - Gross Combined Weight
 MMBHMF - Mean Miles Between Hardware Mission Failure
 MMBOMF - Mean Miles Between Operational Mission Failure
 MMHPOM - Maintenance Man hours/Operating Mile (Unit Level)

b. Current Change Explanations -- None

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11. Total Program Cost and Quantity (Dollars in Millions):

e Geet		Production	Approved	Current
a. COBC		Escimate (SAR)	Program (APB)	<u>Estimate</u>
Devel	opment (RDT&E)	121.8	120.5	132.8
Procu	rement	11472.4	14156.4	14119.1
Rol	laway	(10677.1)		(13576.0)
Oth	er Wpn Systems Cost	(777.3)		(542.9)
Pec	uliar Support	(0.0)		(0.0)
Ini	tial Spares	(18.0)		(0.2)
Const	ruction (MILCON)	0.0	0.0	0.0
Acqui	sition O&M	0.0	0.0	0.0
Total	FY 1996 Base-Year \$	11594.2	14276.9	14251.9
Escala	ation	7327.1	4106.7	3822.5
Deve	elopment (RDT&E)	(-6.2)	(-7,7)	(-4.6)
Pro	curement	(7333.3)	(4114.4)	(3827.1)
Con	struction (MILCON)	(0.0)	(0.0)	(0.0)
Acq	uisition O&M	(0.0)	(0,0)	(0,0)
Total	Then Year \$	18921.3	18383.6	18074.4
b. Quant:	ity			
Develo	pment (RDT&E)	0	O	0
Procure	ement	85488	86916	83185

Note: Excludes 51 RDT&E prototypes from the SAR Baseline and 51 from the Current Estimate that are not considered fully configured.

85488

86916

83185

Low Rate Initial Production (LRIP) quantities produced prior to Milestone III, Full Rate Production Decision, 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, 2001:

Country	Quantity	Estimated Cost
Saudi Arabia	99	\$13.5M
Taiwan	3	. 4 M
Thailand	117	22.BM
Greece	4	. 6M
Macedonia	5	. 7M

d. Nuclear Costs -- None.

Total

12. Unit Cost Summary :

.

UCR	Current	
Baseline	Estimate	Percent
(OCT 1999 APB) (De	c 2001 SAR)	Change
14276.9	14251 9	
86916	83185	
0.164	0.171	+4.27
14156.4	14119.1	
86916	83185	
0.163	0.170	+4.29
	UCR Baseline (OCT_1999_APB)_(De 14276.9 86916 0.164 14156.4 86916 0.163	!JCR Current Baseline Estimate (OCT 1999 APB) (Dec 2001 SAR) 14276.9 14251 9 86916 83185 0.164 0.171 14156.4 14119.1 86916 83185 0.163 0.170

13. Cost Variance Analysis :

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	115.6	18805.7	-	18921.3
Previous Changes:				
Economic	-2.5	-3268.3	-	-3270.8
Quantity	-	-597.8	-	-597.8
Schedule	+1.5	-463.7	-	-462 2
Engineering	'	+975.1	- !	+975.1
Estimating	-2.1	+2730.8	-	+2728.7
Other	-	-	_	-
Support	-	-504.9	-	-504.9
Subtotal	-3.1	-1128.8	-	-1131.9
Current Changes:				
Economic	+0.1	-117.8	_ !	-117.7
Quantity	-	-		-
Schedule	-	+28.9	-	+28.9
Engineering	-	+73.6	-	+73.6
Estimating	+15.6	+192.9	-	+208.5
Other	-	-	-	-
Support	-	+91.7	-	+91.7
Subtotal	+15.7	+269.3	-	+285.0
Total Changes	+12.6	-859.5	-	-846.9
Current Estimate	128.2	17946.2	1	18074.4

13a. Cost Variance Analysis (Cont'd) :

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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	- 1	-97.2
Schedule	+0.2	+42.6	- [+42.8
Engineering	- 1	+728.6	- 1	+728.6
Estimating	-1.7	+2048.7	- !	+2047.0
Other	-	-	-	-
Support		-320.8		-320.8
Subtotal	-1.5	+2401.9	-	+2400.4
Current Changes:				
Quantity	-	-	- 1	-
Schedule	-	-	-	-
Engineering	- !	+52.9	-	+52.9
Estimating	+12.5	+123.3	- 1	+135.8
Other	-	-	- 1	-
Support	-	+68.6		+68.6
Subtotal	+12.5	+244.8		+257.3
Total Changes	+11.0	+2646.7	-	+2657.7
Current Estimate	132.8	14119.1		14251.9

b. Current Change Explanations --

		(Dollars in Base-Year T	Millions) <u>hen-Year</u>
(1)	RDT&E		
	Revised escalation indices (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
	Additional funding for future vehicle changes/improvements (Estimating)	+10.7	+13.5
	User Testing for New Vehicle Models (Estimating)	+1.9	+2-2
	RDT&E Subtotal	+ 12.5	+ 15.7
(2)	Procurement		
, - ,	Revised escalation indices. (Economic)	N/A	-117.8
	Adjustment for Current and Prior Inflation. (Estimating)	-10.2	-11.0
	Stretch out of annual procurement buy profile. (Schedule)	0.0	+28.9
	Increase in Federal Retail Excise Tax due to Long Wheel Base Cargo w/o Winch weight increase. (Engineering)	+52.9	+73.6

13b. Cost Variance Analysis (Cont'd) :

b. Current Change Explanations --

2 .	(Dollars i Base-Year	n Millions) Then-Year
Change in non-recurring costs (engineering, testing, in-house program management, etc.) to reflect actual versus prior estimates extrapolated over the progrms life. (Estimating)	+144.5	+198.0
CONUS fielding changes affecting FRET costs. (Estimating)	+34.9	+40.4
Change in Hardware Unit Prices to incorporate actual prices. (Estimating)	-70.1	-90.4
Change in Arctic Kit requirement. (Estimating)	-4.3	-5.5
Model mix changes. (OR) (Estimating)	+28.5	+51.4
Adjustment for Current and Prior Inflation. (Support)	- 0 . 3	-03
Change in Other Weapon Systems Cost (i.e. vehicle deprocessing, new equipment training, first destination transportation). (Support)	+68.9	+92 .0
Procurement Subtotal	+244.8	+269.3

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		Changes							
Init Est		P							Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.072	-0.001	+0.037	+0.035	+0.004	+0.066		+0.008	+0.149	0.221

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC			~ <u> </u>	Chan	iges				PAUC
Prod Est			_						Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.221	-0.041	-0.001	-0.005	+0.013	+0.035		-0.005	-0.004	0.217

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14b. Unit Cost and Other History (Cont'd) :

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC				Chan	iges				DUG
Init Est									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

Current	SAR Bas	eline t	o current	Estimate					
PUC				Chan	ges				PUC
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.220	-0.041	-0.0	01 -0.005	+0.013	+0.035		-0.005	-0.004	0.216

c. Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
1	Estimate(PE)	Estimate(DE)	Estimate(PdE) :	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	18074.4
Total Quantity	0	119542	85488	83185
Prog Acg Unit Cost	0.0	0.1	0.2	0.2

In the Development Estimate, the unit of measure for the PAUC and APUC included truck and trailer quantities. The unit of measure was changed to only truck quantities in the December 1993 SAR. This unit of measure continues to be used in the Production Estimate and Current Estimate cost columns.

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FMTV, December 31, 2001

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --Initial Contract Price FMTV: Target Ceiling Qty Stewart & Stevenson Serv., Houston TX DAAE07-92-C-R001, FFP \$1196.2 N/A 10843 Award: October 11, 1991 Definitized: October 11, 1991 Current Contract Price Estimated Price At Completion Ceiling Target Qty Contractor Program Manager \$1479.8 N/A 11345 \$1479.8 \$1479.8 Explanation of Change: None. Cost and Schedule variance reporting is not required on this FFP contract. Contract Comments: Total quantity procured on the on contract -R001 is: 10,741 Direct Army Air Force 194 National Guard 180 FMS 223 Other 7 TOTAL 11,345 Initial Contract Price FMTV : Ceiling Target Qty Stewart & Stevenson Serv, Houston TX DAAE07-98-C-M005, FFP \$1016.8 N/A 5390 Award: October 14, 1998 Definitized: October 14, 1998 Current Contract Price Estimated Price At Completion Contractor Target Ceiling Qty Program Manager \$1508.1 \$1508.1 \$1508.1 N/A 8432 Explanation of Change: None. Cost and Schedule variance reporting is not required on this FFP contract. Contract Comments: Total quantity procured to date on contract -M005 is:

FMTV, December 31, 2001

15. Contract Information (Cont'd) :

DA	8152
Air Force	48
National Guard	107
Army Reserve	102
FMS	5
Other	18
TOTAL	8432

To maintain consistency with the official unit of measure for FMTV - trucks only - the truck quantity is shown in this section, although this contract includes both trucks and trailers.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY88-01)	Budget Year (FY02)	Budget <u>Year</u> (FY03)	Balance To Complete (FY04-23)	Total
RDT&E	94.6	2.0	2.0	29.6	128.2
Procurement	2762.8	464.1	681.4	14017.9	17946.2
MILCON	-	-	-	•	-
O&M	-	-	-	-	-
Total	2877.4	466.1	683.4	14047.5	18074.4

b. Annual Summary -- FMTV

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal		Rollaway FY 1996 Dollars	Rollaway FY 1996 Dollars	Total Program	Total Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
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

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 S
2001				1.9	2.0
2002			1	1.8	2.0
2003			1	1.8	
2004			T	2.6	3 0
2005				2 6	
2006			s and a man	1.7	2.0
2007				1.7	2.0
2008				1.6	2.0
2009				1.6	2.0
2010				1.7	2.1
2011				1.6	2.1
2012				1.7	2.2
2013			1	1.6	2.2
2014	and a second sec			1.7	2.3
2015				1.6	2.3
2016				1.7	2.4
Subtotal				132.8	128.2

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 S
1991	394	20.1	55.4	81.1	76.2
1992	1301	9.8	153.9	187.6	180 1
1993	2008	12.2	239.1	262.7	257.3
1994	183	2.7	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	212.6	230.3	238.2
1998	1267	46.0	150.8	206.3	215.6
1999	1439	26.7	281.5	317.5	335.6
2000	1930	26.4	347.8	396.5	424.7
2001	2288	38.3	381.2	429.9	467.9
2002	2464	35.8	367.3	420.2	464.1
2003	3574	44.6	545.1,	608.0	681.4
2004	1990	28.8	329.0	379.1,	432.5
2005	3350	26.3	557.4	599.6	696.9
2006	3847	37.4	596.4	654.8	775.5
2007	6790	35.5	1002.7	1061.5	1281.0
2008	2961	30.4	486.9	549.2	675.3
2009	2961	26.6	477.8	522.7	655.0
2010	2962	25.0	469.0	512.2	654.0

16b. Program Funding Summary (Cont'd) :

Appropriation: 2035 - Other Procurement, Army

		Ballaurau	Dellerer		r ·
		ROTTAWAY	Rollaway		[
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year S
2011	2962	35.7	460.2	514.2	669.1
2012	2961	33.8	453.0	505.1	669.7
2013	2959	29.1	483.7	531.1	717.6.
2014	2959	25.5	474.7	517.7	712.7
2015	2959	23.8	465.8	507 0	711.3
2016	2959	34.6	457.1	509.2	727.9
2017	2956	32.6	448.1	498.1	725.6
2018	2956	28.0	478.6	524.1,	778.0
2019	2953	24.3	469.1	510.0	771.5
2020	2953	22.6	460.5	499.8	770.3
2021	2953	22.6	451.9	491.1	771.4
2022	2949	22.4	442.8	481.7	771.0
2023		15.0		31.6	51.6
Subtotal	83185	886.9	12689.1	14119.1	17946.2

The FMTV Revised AAO is 83,170 trucks. The total quantity of 83,185 includes 15 chassis which are not part of the AAO.

		Rollaway	Rollaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	83185	886.9	12689.1	14251.9	18074.4

17. Delivery/Expenditure Information :

a.	Deliveries To Date	Plan	Actual
	RDT&E	0	0
	Procurement	15392	15392

Percent Total Program Quantities Delivered: 18.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2624.8

Percent Total Program Expended: 14.5%

Delivery refers to the number of Army trucks accepted or conditionally accepted to date as of 31 January 2002.

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18. Operating and Support Costs :

a. Assumptions and Ground Rules --

The average miles/vehicle/year is 2,901 miles for the LMTV truck and 2,968 miles for the MTV truck. The average years of operation (useful life) is 20 years. There are 36,347 Operating LMTVs and 42,796 Operating MTVs.

The standard unit of measure for this program - the quantity of trucks only, with trailer costs amortized proportionally against the truck quantities - has been used in developing the O&S costs reported below. These costs are based on a validated cost estimate dated April 23, 2001.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

	FMTV	FMTV
	Avg Annual Cost Per	Avg Annual Cost Per
Cost Element	LMTV	MTV
Mission Pay & Allowances	0.4	7.2
Unit Level Consumption	1.6	2.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.2	0.3
Indirect Costs	0.1	1.7
Total	2.3	11.2

1			_ · · •
Total O&S Cost	EMTV	FMTV	-1
BY\$ (In Millions)	1672.0	9586.3	1
TY\$ (In Millions)	2544.3	14636.2	

Report Creation Date: 3/25/2002 4:15:15 PM



SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: JSOW

AS OF DATE: December 31, 2001

SUBJECT	PAGE
Cover Sheet Information	1
Mission and Description	2
Executive Summary	3
Threshold Breaches	3
Schedule	4
Performance Characteristics	6
Total Program Cost and Quantity	8
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INDEX

- 1. (U) Designation and Nomenclature (Popular Name): Joint Standoff Weapon Program (JSOW)
- 2. (U) DoD Component: Navy

N-12 JSOW

Joint Participants: Air Force

3. (U) Responsible Office and Telephone Number:

(U) Responsible Office and referenceConventional Strike Weapons, PMA 201 CAPT R.O. Wirt, Jr., USNBldg 2272Assigned: April 23, 199947123 Buse Road Unit #IPTDSN 757-7477; COMM (301)/757-7477 , Patuxent River, MD 20670-1547 Wirtro@navair.navy.mil

4. (U) Program Elements/Procurement Line Items: RDT&E: AS AMENDER AS P PE 0604727F (U) (U) PE 0604727N Dist. PROCUREMENT : APPN 1507 ICN 223000 (Navy) (U) APPN 3020 ICN JSOW00 (Air Force) (U) Derived IIO DNAV C5513 curity Classification Guide Downgrade instructi Declassif Χ. (THIS PAGE IS UNCLASSIFIED) - 1 -

02-0-0647

JSOW, December 31, 2001

5. (U) References:

Baseline/BLU-108

SAR Baseline (Production Estimate):

(U) SAR Baseline (Production Estimate): Acquisition Decision Memorandum (ADM) dated 30 October 1998, subject: Authorization for JSOW Baseline variant Full Rate Production(FRP) and LRIP for JSOW BLU-108 variant.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated September 29, 2001.

Unitary

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SAR Baseline (Development Estimate): (U) Acquisition Decision Memorandum (ADM) dated June 23, 1992, subject: Authorization for Milestone II.

Approved Program: (U) DAE Approved Acquisition Program Baseline (APB) dated November 29, 2001.

6. (U) Mission and Description:

(U) The JSOW is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW enhances aircraft survivability by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW launch-and-leave capability allows several target kills per aircraft sortie. The common JSOW variant nomenclature is JSOW-A (Baseline), JSOW-B (BLU-108), and JSOW-C (Unitary).

The JSOW program developed a Baseline weapon for use against fixed area targets. The JSOW Baseline variant includes a kinematically efficient airframe and integrated Global Positioning System (GPS)/Inertial Navigation System (INS) navigation capability, and a BLU-97/B submunition payload. This weapon is designed to allow for pre-planned product improvements. The JSOW/BLU-108 variant incorporates the Sensor Fuzed Weapon submunition (BLU-108) into the baseline vehicle. The JSOW/BLU-108 variant provides a standoff delivery capability against massed armor and land combat vehicles.

The Unitary BROACH lethal package incorporates a multi-stage warhead which allows the warfighter to attack blast/frag sensitive and hardened point targets. Unitary 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 joint Navy/Air Force program.

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7. (U) Executive Summary:

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(U) Since the last SAR, the JSOW Dispenser program has resumed delivering combat-ready JSOW A's to deployed warfighters. Raytheon is performing to schedule for retrofitting the Full Rate Production-1 (FRP) weapons at McAlester Army Ammunition Plant and for deliveries of FRP-2 new production. As of January 25, 2002, there are 365 FRP JSOW weapons ready for service use.

An anomalous test in early December, however, suspended planned test demonstrations until cause of the anomaly could be determined. Preliminary investigation results indicated no basis to suspend operational use of JSOWs.

An Engineering Change Proposal effort to modify the Low Cost Control Section (LCCS) to withstand the more harsh vibration environment of the F-16 during high speed, low altitude flight is continuing and is on track to complete a Critical Design Review (CDR) on schedule in April 2002. This CDR supports a Multi-Operational Test and Evaluation (MOT&E) period for the JSOW B variant scheduled to begin in December 2002.

The Unitary program began free flight testing to demonstrate seeker/ATA performance. The first JSOW Unitary free flight was successfully completed in December 2001. The revised JSOW Unitary APB was released November 2001 changing the OPEVAL Start, MS III and IOC dates to support the schedule for the Broach warhead insertion.

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
0&M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

8. (U) Threshold Breaches (Cont'd):

Unitary

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost RDT&E	No
Procurement	NO
MILCON	No
O&M	No
Program Acquisition Unit Cost (PAUC)	No
Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

9. (U) <u>Schedule</u>:

Baseline/BLU-108

a. Milestones --

	Production	Approved	Current
	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Milestone I	JUN 1989	JUN 1989	JUN 1989
DEMVAL Contract Award	JUN 1989	JUN 1989	JUN 1989
Early Operational Assessment			
(OT-I)			
Start	MAR 1991	MAR 1991	MAR 1991
Complete (Report)	OCT 1991	OCT 1991	OCT 1991
Milestone II	APR 1992	APR 1992	JUN 1992
E&MD Contract Award	MAY 1992	MAY 1992	JUN 1992
Preliminary Design Review	NOV 1992	NOV 1992	JAN 1993
Critical Design Review	DEC 1994	DEC 1994	APR 1995
IOT&E (OT-IIA)			
Start	DEC 1995	DEC 1995	FEB 1996
Complete (Report)	JUL 1996	JUL 1996	DEC 1996
TECHEVAL (DT-IIC)			
Start	NOV 1995	NOV 1995	FEB 1996
Complete (Report)	JUL 1996	JUL 1996	DEC 1996
Functional Configuration Audit	OCT 1995	OCT 1995	DEC 1995
Production Verification Review	APR 1996	APR 1996	JAN 1996
Production Readiness Review	JUN 1996	JUN 1996	OCT 1996
LRIP Contract Option Exercised	OCT 1996	OCT 1996	FEB 1997

9a. (U) <u>Schedule (Cont'd)</u>: Baseline/BLU-108

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	Production	Approved	Current
	Estimate (SAR)	Program (APB)	<u>Estimate</u>
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	_ JUI, 2000 _	SEP 2000
Milestone III			
ANTOC	JUL 1998	JUL 1998	JAN 1999
ALU-108 SYSTEM			
Bro-FIMD Contract Award	MAY 1993	MAY 1993	MAY 1993
Proliminary Fit Checks	JUN 1993	JUN 1993	JUN 1993
Eng Dow Test Vehicle Delivery	FEB 1994	FEB 1994	FEB 1994
Eng Dev lest vehicle belivery	MAR 1994	MAR 1994	MAR 1994
F-10 Flight Tests	MAY 1994	MAY 1994	MAY 1994
Eviter Design Review	APR 1995	APR 1995	JUN 1994
Nilestone II	APR 1995	APR 1995	APR 1995
FILESCORE II EIMD Contract Mod	JUN 1995	JUN 1995	JUN 1995
Exemp Concract Nod Decliminary Decign Review	OCT 1995	OCT 1995	OCT 1995
Crisical Design Review	OCT 1996	OCT 1996	APR 1997
Critical Design Review	00. 1990	001 1770	
	DEC 1995	DEC 1995	FEB 1996
Start Complete (Deport)	JUN 1998	JUN 1998	SEP 1998
Complete (Keport)	000 1990	000 1990	.
Operational Assessment	DEC 1995	DEC 1995	APR 1996
Start (Beport)	SED 1996	SEP 1996	FEB 1997
Complete (Repoil)	JAN 2000	.TAN 2000	DEC 1998
LRIP Contract Option Exercised	101 2000	.111. 2001	JUL 2000
LRIP First Delivery	OCT 2001	SED 2001	SEP 2003
Milestone III			
Initial Operational Capability			
IOTEE	11/11 2000	N/A	N/A
Start	MAR 2000	N/A	N/A
Complete (report)	MAR 2001	14 / 43	
MOTEE	N (7)	DEC 2002	DEC 2002
Start	N/A		

b. Current Change Explanations -- None

Unitary

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*** CONFERENCES ***

9a. (U) Schedule (Cont'd): Unitary

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a. Milestones --

Development		Approved	Current	
	Estimate (SAR)	Program (APB)	Estimate	
Milestone II	APR 1995	APR 1995	APR 1995	
EAMD 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	MAR 2003	
Complete (Report)	MAY 2002	N/A	N/A	
Milestone III	SEP 2002	DEC 2003	_DEC 2003_	
Initial Operational Capability	(b)(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	

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

Baseline/BLU-108

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Launch Envelope Airspeed (IMN/KCAS)	(b)(1)			
Off Axis Launch		- 4 A. A		2.5
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) (ft) (ft) Reliability System Mission	(b)(1)			

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10a. (U) Performance Characteristics (Cont'd): Baseline/BLU-108

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b. Current Change Explanations -- None

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a. Performance --



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10a. (U) Performance Characteristics (Cont'd):
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b. Current Change Explanations -- None

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11. (U) Total Program Cost and Quantity (Dollars in Millions): Baseline/BLU-108

		Production	Approved	Current
a. (U) (Cost -~	<u>Estimate (SAR)</u>	Program (APB)	Estimate
Deve.	lopment (RDT&E)	554.0	561.1	563.9
Proc	urement	2990.5	3417.5	3567.7
l	Recurring	(2876.7)		(3306.9)
1	Nonrecurring	(78.7)		(230.0)
To	tal Flyaway	(2955.4)		(3536.9)
Flo	eet Support	(34.2)		(30.0)
Pe	culiar Support	(0.0)		(0.0)
In	itial Spares	(0.9)		(0.8)
Cons	truction (MILCON)	21.8	21.8	0.0
Acqu.	isition O&M	0.0	0.4	0.0
Tota	l FY 1990 Base-Year S	3566.3	4000.8	4131.6
Escal	lation	1332.4	1600.9	1686.7
De	velopment (RDT&E)	(91.0)	(78.4)	(79.5)
Pro	ocurement	(1234.6)	(1515.6)	(1607.2)
Coi	nstruction (MILCON)	(6.8)	(6.8)	(0.0)
Ac	quisition O&M	(0.0)	(0.1)	(0.0)
Tota	l Then Year \$	4898.7	5601.7	5818.3
ъ. (U) (Quantity			
Devel	opment (RDT&E)	N/A	N/A	0
Procu	rement	16124	16114	16114
Total		16124	16114	16114

Note: Excludes 69 RDT&E prototypes from the SAR Baseline and 69 from the Current Estimate that are not considered fully configured.

(U) Note: 16,114 procurement units includes 8800 Navy Baselines, 1200 Navy BLU-108's, 3,000 Air Force Baselines, and 3,114 Air Force BLU-108's.

Note: The Program Manager plans to procure less than 329 BLU-108s during LRIP. This does not represent 10% or more of the planned buy quantities.

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11c. (U) Total Program Cost and Quantity (Cont'd):
Baseline/BLU-108

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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	Development	Approved	Current
a. (U) Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	257.2	239,9	246.4
Procurement	3103.7	634.1	644.4
Recurring Flyaway	(2825.2)		(632.3)
Nonrecurring Flyaway	(102.1)		(10.7)
Total Flyaway	(2927.3)		(643.0)
Fleet Support	(35.5)		(1.4)
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	1,8	0.0
Total FY 1990 Base-Year	3360.9	875.8	890.8
Escalation	2946.3	387.2	364.1
Development (RDT&E)	(79.1)	(50.3)	(53.1)
Procurement	(2867.2)	(336.4)	(311.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0,0)	(0,5)	(0.0)
Total Then Year \$	6307.2	1263.0	1254.9
b. (U) Quantity			
Development (RDT&E)	0	0	0
Procurement	<u>7800</u>	3000	3000
Total	7800	3000	3000

Note: Excludes 7 RDT&E prototypes from the SAR Baseline and 7 from the Current Estimate that are not considered fully configured.

(U) Note: LRIP quantities approved at Milestone II are 75 for Unitary. This does not represent 10% or more of the planned buy quantities.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

Baseline/BLU-108

	UCR	Current	
	Baseline	Estimate	Percent
	(SEP 2001 APB) (Dec	2001 SAR)	Change
a. (U) Prog. Acg. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	4000.8	4131.6	
(2) Quantity	16114	16114	
(3) Unit Cost	0.248	0.256	+3.23
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 1990 BY\$)	3417.5	3567.7	
(2) Quantity	16114	16114	
(3) Unit Cost	0.212	0.221	+4.25
Unitary			
	UCR	Current	
	Baseline	Estimate	Percent
	(SEP 2001 APB) (Dec	2001 SAR)	Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 1990 BY\$)	875.8	890.8	
(2) Quantity	3000	3000	
(3) Unit Cost	0.292	0.297	+1.71
D. (U) AVG. Proc. Unit Cost (APUC)			
(1) COSt (FY 1990 BY\$)	634.1	644.4	
(2) Quantity	3000	3000	
(3) Unit Cost	0.211	0.215	+1.90

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13. (U) <u>Cost Variance Analysis</u>: Baseline/BLU-108

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a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	645.0	4225.1	28.6	4898.7
Previous Changes:				
Economic	+0.2	-21.2		-21.0
Quantity	-	-271.5	-	-271.5
Schedule	-	+108.4	+0.4	+108.8
Engineering	-	-	-	
Estimating	-5.1	-67.5	-29.0	-101.6
Other	_ →	-	-	-
Support	[-]	-6.5	- 1	-6.5
Subtotal	-4.9	-258.3	-28.6	-291.8
Current Changes:				
Economic	-	-49.1	- 1	-49.1
Quantity	_	241.5		+241.5
Schedule	-	+94.3	-	+94.3
Engineering		+28.5	-	+28.5
Estimating	+3.3	+892.9	-	+896.2
Other		→	-	-
Support	-	-		
Subtotal	+3.3	+1208.1	-	+1211.4
Total Changes	-1.6	+949.8	-28.6	+919.6
Current Estimate	643.4	5174.9	-	5818.3

(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	-	-166.6	-	-166.6
Schedule	! _		-	-
Engineering	i –	~	-	-
Estimating	+7.5	~8.6	~21.8	-22.9
Other] _	-	-	-
Support	-	-4.2	-	-4.2
Subtotal	+7.5	-179.4	-21.8	-193.7
Current Changes:				
Quantity	-	+142.5	-	+142.5
Schedule	- '	-		-
Engineering		+22.3		+22.3
Estimating	+2.4	+591.9	-	+594.3
Other	-			-
Support		-0.1	-	-0.1
Subtotal	+2.4	+756.6		+759.0
Total Changes	+9.9	+577.2	-21.8	+565.3
Current Estimate	563.9	3567.7	-	4131.6

13b. (U) <u>Cost Variance Analysis (Cont'd)</u>: Baseline/BLU-108

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b. (U) Current Change Explanations		
	(Dollars in <u>Base-Year</u> 1	n Millions) <u>Chen-Year</u>
 (1) <u>RDT&E</u> Estimating change reflects incorporation of JMPS migration (\$2.3M TY) and MOT&E (\$1M TY) (Estimating) 	+2.4	+3.3
RDT&E Subtotal	+2.4	+3.3
(2) Procurement		
Revised escalation indices. (Economic) Estimating revisions due to Raytheon Tucson rate original savings not realized relating	N/A +271.9	-49.1 +408.0
to facility relocation. (Estimating) Estimating revisions to accommodate the Low Cost Control Section (LCCS)	+79.6	+119.4
Modification of LCCS to achieve full envelope for F-16. (Engineering)	+22.3	+28.5
Reduction of costs based on actuals. (Support)	-0.1	0.0
Procurement increase of 1,139 from 14,975 to 16,114 from previous SAR Estimate (see 13B note). (Ouantity)	+142.5	+241.5
Stretchout of annual procurement buy profile for Navy due to zero funding in FY 02. (Schedule)	0.0	+96.5
Acceleration of annual procurement buy	0.0	-2.2
Estimating revisions to accommodate increased unit cost for BLU-108 enhancements (Estimating)	+88.3	+132.4
Adjustment for Current and Prior Inflation (Air Force) (Estimating)	-0.1	-0.1
Estimating revisions to reflect higher than expected negotiated contract costs relating to less than anticipated vendor savings. (Estimating)	+46.4	+69.6
Estimating revisions associated with the establishment of a more realistic production profile since the previous President's budget. (Estimating)	+105.8	+163.6
Procurement Subtotal	+756.6	+1208.1

(U) The September 2001 SAR reflected the FY 2001 President's Budget (December 1999

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13a. (U) Cost Variance Analysis (Cont'd): Baseline/BLU-108

SAR) for FY 2003 and beyond costs, and the FY 2002 President's Budget for FY 2002 and prior costs. Consequently, the total costs and quantities did not necessarily reflect current requirements. As a result the cost variance analysis reported here reflects changes from the previous September 2001 SAR submission to the current program requirements as submitted in the FY 2003 President's Budget.

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â.	(U)	Summary	(Current	(Then-Year)	Dollars	ín	Millions)	ł

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	336.3	5970.9	-	6307.2
Previous Changes:				
Economic	-20.2	-345.2		~365.4
Quantity		-1326.3	_	-1326.3
Schedule	-	-98.1	-	-98.1
Engineering	-	-	-	-
Estimating	-36.3	-3034.6	_	-3070.9
Other	-	-	_	-
Support	-	-304.1	_	-304.1
Subtotal	-56.5	-5108.3	-	-5164.8
Current Changes:				
Economic	-	-13.3	~	-13.3
Quantity	-	+3.8	-	+3.8
Schedule	-	+21.4	-	+21.4
Engineering	-	-	-	-
Estimating	+19.7	+89.8		+109.5
Other	-	-	-	-
Support	-	-8.9		-8.9
Subtotal	+19.7	+92.8	_	+112.5
Total Changes	-36.8	-5015.5	-	-5052.3
Current Estimate	299.5	955.4		1254.9

13a. (U) <u>Cost Variance Analysis (Cont'd)</u>: Unitary

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(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	-	-784.2	-	-784.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-26.0	-1560.2	*****	-1586.2
Other		-	-	-
Support	-	-169.8	-	-169.8
Subtotal	-26.0	-2514.2	-	-2540.2
Current Changes:				
Quantity	-	+2.4	-	+2.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+15.2	+57.7	-	+72.9
Other	-	-	-	-
Support	-	-5.2		-5.2
Subtotal	+15.2	+54.9	-	+70.1
Total Changes	-10.8	-2459.3	_	-2470.1
Current Estimate	246.4	644.4		890.8

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year

		Dage rour	TIPCH ICHT
(1)	Reflects incorporation of budget increase for BROACH integration. (Estimating)	+15.2	+19.7
	RDT&E Subtotal	+15.2	+19.7
(2)	Procurement Revised escalation indices. (Economic) Reflects variance of combination quantity profile (PB01) shown at September 2001 SAR to current PB03 SAR. No change in total program	N/A +2.4	-13.3 +3.8
	Stretchout of annual procurement buy profile to FY13. (Schedule)	0.0	+21.4
	Reflects incorporation of BROACH warhead.	+57.7	+89.8
	Reduction of cost estimate based on actuals. (Support)	-5.2	-8.9
	Procurement Subtotal	+54.9	+92.8

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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				Char	iges				PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.340	-0.030	-0.060			+0.060		-0.010	-0.040	0.300

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est				Chan	Changes				PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.304	-0.004	-0.003	+0.013	+0.002	+0.049			+0.057	0.361

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC				Chan	ges				PUC
Init Est	1								Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.290	-0.030	-0.040			+0.050		-0.010	-0.030	0.260

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est		Changes								
1100 201	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
0.262	-0.004	-0.003	+0.013	+0.002	+0.051			+0.059	0.321	

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_	,TUT. 1998	OCT 2001	SEP 2003
IOC	(b)(1)	(0)(1)	(b)(1)	
Total Cost	260.0	2969.2	4898.7	5818.3
Total Quantity	0	8800	16124	16114
Prog Acg Unit Cost	0.0	0.3	0.3	0.4

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14a. (U) Unit Cost and Other History (Cont'd):

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a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC		Changes							PAUC
Init Est									Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC	Changes						PAUC		
Dev Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.809	-0.126	+0.853	-0.026		-0.987		-0.104	-0.390	0.418

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC	Changes						PU	IC		
Init Est									Dev	Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	PUC Changes							PUC	
Dev Est	i				-				Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.766	-0.120	+0.785	-0.026	~~	-0.982		-0.104	-0.447	0.318

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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 1	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	DEC 2003
IOC	N/A	(b)(1)	N/A	(b)(1)
Total Cost	0.0	0307.Z	0.0	1254.9
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			Initial	Contract Pri	ce
(U) JSOW U	NITARY EAMD:		Target	Ceiling	Oty
Raytheon Syst	ems, Tucson,	AZ			
N00019-95-C-C	120, CPFF		\$211.5	N/A	0
Award: August	30, 1995				
Definitized:	August 30, 19	95			
Current	Contract Pri	ce	Estimated Pr.	ice At Compl	etion
Target	Ceiling	Otv	Contractor	Program	Manager
\$225.6	N/A	0	\$225.6	\$23	1.6
			Cost Variance	Schedule Va	riance
Previous Cumu	lative Varian	ces	\$-3.5	\$-2.0	
Cumulative Va	riances To Da	te (12/31/01)	\$-5.7	\$-1.1	
Net Chang	je		\$-2.2	\$0.9	

Explanation of Change:

(U) Cost Variance: The net positive change for cost variance is due to the additional effort and resolution of technical issues to integrate and accomplish new hardware and software design required to implement Unitary CAIV seeker configuration.

Schedule Variance: The net positive change for schedule variance is due to the additional effort and resolution of technical issues to integrate and accomplish new hardware and software design required to implement Unitary CAIV seeker configuration.

There is no impact to the contract or JSOW program for these variances.

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15b. (U) Contract Information (Cont'd):

b. Procure (U) <u>JSOW B</u>	ASELINE FRP:		Initial <u>Target</u>	Contract Pr. <u>Ceiling</u>	ice <u>Oty</u>
Raytheon Systems, Tucson, A2 N00019-99-C-1014, FFP Award: December 30, 1998 Definitized: N/A			\$133.9	N/A	427
Current <u>Target</u> \$327.8	Contract Price <u>Ceiling</u> N/A	<u>Qty</u> 942	Estimated P <u>Contractor</u> \$327.8	rice At Comp <u>Program</u>	letion <u>Manager</u> N/A

Explanation of Change:

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY87-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	<u>Total</u>
RDT&E	897.5	26.6	16.7	2.1	942.9
Procurement	673.5	28.4	195.3	5233.1	6130.3
MILCON	-	-	-	-	-
0&M	-	-	-	-	-
Total	1571.0	55.0	212.0	5235.2	7073.2

Baseline/BLU-108

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY87-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-17)	<u>Total</u>
RDŤ&E	640.1	-	1.2	2.1	643.4
Procurement	669.3	28.4	160.8	4316.4	5174.9
MILCON	-	-		-	-
O&M	-	-	-	-	-
Total	1309.4	28.4	162.0	4318.5	5818.3

(U) Funding does not include Seek Eagle or BRU-57 funds which are included in the P-1 documentation.

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16. (U) Program Funding Summary (Cont'd): Baseline/BLU-108

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Unitary a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY92-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-13)	<u>Total</u>
RDT&E	257.4	26.6	15.5	1840-	299.5
Procurement	4.2	-	34.5	916.7	955.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	261.6	26.6	50.0	916.7	1254.9

b. Annual Summary -- Baseline/BLU-108

Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1987				1.1	1.0
1988				20.3	19.2
1989				13.7	13.5
1990				7.8	8.0
1991				15.6	16.5
1992				42.0	45.8
1993				52.6	58.7
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				0.6	0.7
2001					
2002					
2003				0.9	1.2
2004				0.6	0.8
2005				0.4	0.6
2006				0.3	0.4
2007				0.2	0.3
Subtotal				397.7	447.6

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16b. (U) <u>Program Funding Summary (Cont'd)</u>: Baseline/BLU-108

Appropriation: 3600 - Research, Development, Test + Eval, AF

	a marine provide the second	Flyaway FY 1990	Flyaway FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1993				4.8	5.4
1994				20.3	23.1
1995				45.8	53.1
1996				35.5	41.8
1997				18.4	22.0
1998				17.9	21.5
1999				14.1	17.2
2000				8.2	10.2
2001				1.2	1.5
Subtotal				166.2	195.8

Appropriation: 1507 - Weapons Procurement, Na	v٧
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	11 10 10 10 10 10 10 10 10 10 10 10 10 1	Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1996		21.1		21.1	25.2
1997	100	11.4	41.5	54.2	65.4
1998	135	4.6	52.5	63.0	76.9
1999	328	4.5	87.0	95.4	118.1
2000	454	2.9	86.7	90.5	113.8
2001	29	30.5	89.8	123.0	157.1
2002					
2003	288	3.0	76.3	79.6	105.0
2004	455	2.8	109.3	112.4	151.0
2005	372	3.4	81.5	85.2	116.7
2006	252	3.0	62.4	65.8	91.8
2007	174	2.5	49.8	52.7	74.9
2008	572	2.9	107.7	111.0	160.8
2009	448	2.4	91.4	94.2	139.1
2010	445	2.8	97.3	100.7	151.4
2011	773	2.4	160.2	163.0	249.8
2012	601	2.5	88.2	91.1	142.3
2013	1050	2.0	148.7	151.1	240.4
2014	1050	11.3	154.0	165.7	268.7
2015	1050	10.8	152.2	163.4	270.1
2016	1050	11.1	142.2	163.7	275.6
2017	374	6.0	64.0	70.4	120.8
Subtotal	10000	143.9	1942.7	2117.2	3114.9

16b. (U) Program Funding Summary (Cont'd): Baseline/BLU-108

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Appropriation: 3020 - Missile Procurement, Air Force

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1998	45	1.4	15.1	16.5	20.2
1999	86	2.2	25.4	27.6	34.2
2000	74	1.6	20.1	21.7	27.3
2001		24.3		24.3	31.1
2002	35	1.4	20.5	21.9	28.4
2003	113	3.6	38.7	42.3	55.8
2004	302	5.7	88.7	94.4	126.9
2005	632	10.6	166.9	177.5	243.0
2006	647	10.8	169.8	180.6	252.0
2007	599	10.3	162.6	173.0	245.9
2008	957	12.3	192.8	205.1	297.1
2009	977	12.5	195.7	208.2	307.3
2010	800	9.7	152.9	162.7	244.7
2011	454	1.4	55.8	57.2	87.6
2012	393	0.4	37.1	37.5	58.5
Subtotal	6114	108.2	1342.1	1450.5	2060.0

(U) Funding does not include Seek Eagle or BRU-57 funds which are include in the P-1 documentation.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
Service	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Navy	10000	143.9	1942.7	2514.9	3562.5
USAF	6114	108.2	1342.1	1616.7	2255.8
Grand Total	16114	252.1	3284.8	4131.6	5818.3

b. Annual Summary -- Unitary

Appropriation: 1319 - Research, Development, Test + Eval, Navy

Fiscal Year	Otv	Flyaway FY 1990 Dollars Nonrec	Flyaway FY 1990 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				1.7	1.9
1993	<u> </u>			4.1	4.6
1994				2.1	2.4
1995				8.9	10.3
1996				26.2	

16b. (U) Program Funding Summary (Cont'd):

Unitary

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Appropriation: 1319 - Research, Development, Test + Eval, Navy

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1997				39.4	47.0
1998				54.8	65.9
1999				32.4	39.5
2000				22.8	28.2
2001				21.2	26.7
2002				20.8	26.6
2003				12.0	15.5
Subtotal				246.4	299.5

Appropriation: 1507 - Weapons Procurement, Navy

		Flyaway	Flyaway		
		FY 1990	FY 1990	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
2001		3.0		3.3	4.2
2002					
2003	75		25.2	26.1	34.5
2004	100		28.0	28.2	37.9
2005	150,		36.9	36.9	50.5
2006	250		53.7	53.7	74.9
2007	250		52.7	52.7	74.9
2008	250	1.0	60.7	61.7	89.4
2009	250	1.0	50.1	51.1	75.5
2010	250	0.9	49.8	50.7	76.3
2011	460	1.6	90.2	91.8	140.7
2012	515	1.6	98.8	100.4	156.8
2013	450	1.6	86.2	87.8	139.8
Subtotal	3000	10.7	632.3	644.4	955.4

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	3000	10.7	632.3	890.8	1254.9

Actual

0

17. (U) Delivery/Expenditure Information:

Baseline/BLU-108

a. (U) Deliveries To Date

RDT&E	0	0
Procurement	1239	1239

<u>Plan</u>

0

(U) Percent Total Program Quantities Delivered: 7.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 769.5

(U) Percent Total Program Expended: 13.2%

Procurement

Unitary

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a.	(U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
	RDT&E	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 235.8

(U) Percent Total Program Expended: 18.8%

18. (U) Operating and Support Costs: Baseline/BLU-108

a. (U) Assumptions and Ground Rules --SOURCE: Operations and Support requirements analysis dated December 1996.

NOTE: JSOW O&S cost estimate is being updated for LRIP decision.

ASSUMPTIONS: There is no antecedent system. No additional operational/maintenance personnel at O-Level. No I-Level Maintenance. 60 JSOW expenditures per year. Deployed aboard 10 CVBG each year - 100 JSOW per CV. 20 year missile life.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

	Baseline/BLU-108	Avg Annual Cost Per
	Avg Annual Cost	ANTECEDENT
Cost Element	per JSOW	
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.4	0.0

18b. (U) Operating and Support Costs (Cont'd): Baseline/BLU-108

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Baseline/BLU-108 Avg Annual Cost per JSOW	Avg Annual Cost Per ANTECEDENT
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.1	0.0
Indirect Costs	0.0	0.0
Total	0.5	0.0

Total O&S Cost	Baseline/BLU-108	Avg Annual Cost Per
BY\$ (In Millions)	9.1	0.0
TYS (In Millions)	12.8	0.0

Unitary

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a. (U) Assumptions and Ground Rules - SOURCE: Operations and Support requirements analysis dated April 1995.

NOTE: JSOW OLS cost estimate is being updated for LRIP decision.

ASSUMPTIONS: There is no antecedent system. Unitary will be integrated with the established Baseline program. 10 Unitary expenditures per year. Deployed aboard 10 CVBG each year, 50 JSOW Unitary per CV. Twenty year missile operating life. No addditional operational/maintenance personnel at O-Level. No I-Level Maintenance Contractor Depot Component Repair Program.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Unitary Avg Annual Cost Per	Avg Annual Cost Per Antecedent	
Mission Pay & Allowances	0.0	0.0	
Unit Level Consumption	0.3	0.0	
Intermediate Maintenance	0.1	0.0	
Depot Maintenance	0.0	0.0	
Contractor Support	0.0	0.0	

18b. (U) Operating and Support Costs (Cont'd): Unitary

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

	Unitary Avg Annual Cost Per	Avg Annual Cost Per Antecedent
Cost Element		
Sustaining Support	0.3	0.0
Indirect Costs	0.0	0.0
Total	0.7	0.0

Total OFS Cost	Initary	Aug Annual Cost Day
IOCAL ORS COSC	Unitary	Avg Annual Cost Per
BY\$ (In Millions)	2.1	0.0
TY\$ (In Millions)	3.0	0.0

Report Creation Date: 03/26/2002 9:02:22 AM

A-14 LONGBOW APACHE

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SELECTED ACOUISITION REPORT (RCS: DD-A&T (O&A) 823) PROGRAM: LONGBOW APACHE

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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:

APACHE ATTACK HELICOPTER ATTN: SFAE-AV-AAH BLDG 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:

PE 23744 Project D423 (U) PE 63776 Project D472 (U) PE 64816 Project D2DT, DC27, DC31, DC87 (U) PROCUREMENT: APPN 2031 ICN AA0978 (Army) (U) (U) APPN 2031 ICN AA6605 (Army) APPN 2031 ICN AA6607 (Army) (U) (U) APPN 2031 ICN AA6608 (Army)

CLEARED AS AMENDED -FOR OPEN PUBLICATION MAR 2 0 2002 10 8/607

DIRECTORATE FOR FREEDOM OF INFORMATION AND SELEPTIC REVEW DEPARTMENT OF DEPENSE

Dated 24 Feb 97

Classified by: Downgrade instructions: Apache

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LONGBOW APACHE, December 31, 2001

5. (U) References:

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Airframe Modifications

SAR Baseline (Production Estimate): (U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated May 18, 2001.

FCR MISSION KIT

SAR Baseline (Production Estimate): (U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program: (U) AAE Approved Acquisition Program Baseline (APB) dated May 18, 2001.

6. (U) Mission and Description:

(U) The Longbow consists of a mast-mounted Fire Control Radar (FCR) that will be integrated into the AH-64 airframe and a Radio Frequency (RF) autonomous seeker in an upgraded Hellfire missile (Longbow Hellfire). Longbow will provide the AH-64 with a true fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable day or night, in adverse weather and in obscurants. Hellfire must effectively engage and destroy advanced threat armor on the Air-Land Battlefield. To be effective and survive on this future battlefield, the attack helicopter team must rapidly engage multiple targets with minimum exposure time and deploy a system that is inherently resistant to threat countermeasures. A total of 227 aircraft will be modified with all of the Longbow improvements including the FCR and the 701-C engine integrated onto an AH-64 airframe. An additional 274 aircraft will be modified to incorporate all of the Longbow improvements except the FCR and the 701-C engines.

7. (U) Executive Summary:

(U) On August 16, 1996, the Apache Project Manager signed a multiyear Firm Fixed Price (FFP) contract with McDonnell Douglas Helicopter Systems, now the Boeing Company. This contract, currently priced at \$2.1B provides for the production of 232 aircraft over five years. As of December 31, 2001, 223 production aircraft have been delivered.

The Apache Project Manager awarded a second multi-year contract to McDonnell Douglas Helicopter Company on September 20, 2000, for the production of 269 aircraft. This Multiyear II FFP production contract is priced at \$2.3B, with deliveries scheduled to begin March 2002.

LONGBOW APACHE, December 31, 2001

7. (U) Executive Summary (Cont'd):

Multiyear contracts for Lots 3 - 7, for both the Fire Control Radar (FCR) and the Radar Frequency Interferometer (RFI) were awarded November 26, 1997. As of December 31, 2001, 120 FCRs and 119 RFIs have been delivered.

The Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) contract was awarded to Team Apache Systems (Lockheed Martin/Boeing Limited Liability Company) on October 26, 2000. This Engineering Manufacturing Development (EMD) contract is for the purpose of developing and testing the second generation Forward Looking Infrared Radar (FLIR) on the Apache. This phase is scheduled to last 30 months with production of the systems to follow.

The following significant tests were performed during calendar year 2000 and 2001: Longbow Lot 6 line replaceable unit (LRU) Obsolescence testing, 130 gallon internal fuel tank integration, Boeing cost reduction program (CRP) M299 Launcher qualification, Lockheed Martin CRP M299 Launcher qualification, TADS Electronic Display and Control (TEDAC) integration tests, Lot 4/Lot 5 communication survey, Digital Engine Control Unit (DECU) 2000 integration, Suite of Integrated RF Countermeasures (SIRFC) and Suite of Integrated Infrared Countermeasures (SIIRCM) development tests, RF missile Lock-on-before-Launch (LOBL) inhibit test completion and gun accuracy.

The December 1999 SAR reflected a unit cost breach to the previously approved March 1998 Acquisition Program Baseline (APB). This deviation resulted primarily from a reduction in total program quantity and an increase in crew trainers. A new APB was signed on May 18, 2001, which reflected the new Program Office Estimate (POE) based on reduced program quantities.

8. (U) Threshold Breaches:

Airframe Modifications

a. (U) Acquisition Program Baseline (APB):

	Item	Breach
Schedu	le	No
Perfor	mance	No
Cost -	- RDT&E	No
-	- Procurement	No
-	- MILCON	No
-	- O&M	No
-	 Program Acquisition Unit Cost (PAUC) 	No
-	- Average Procurement Unit Cost (APUC)	No

LONGBOW APACHE, December 31, 2001

8. (U) Threshold Breaches (Cont'd):

b. (U) Nunn-McCurdy Unit Cost:

	Item			Breach
Program	Acquisition	Unit	Cost	No
Average	Procurement	Unit	Cost	No

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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	Approved	Current	
	Estimate (SAR)	Program (APB)	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 Fixe	8			

9a. (U) <u>Schedule (Cont'd)</u>: Airframe Modifications

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	Production	Approved	Current
,	Estimate (SAR)	Drogram (ADB)	Estimate
Start	APR 1991	APR 1991	APP 1991
Complete	JUL 1991	.ππ. 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	JIIN 1993
LBA Initial Prod Readiness Rev	TUL 1992	ли, 1992	JUL 1992
First Flight w/ Longbow	AUG 1993	AUG 1993	AUG 1993
Component Qualification	JUN 1994	JUN 1994	DEC 1993
LBA Long Lead IPR	OCT 1994	OCT 1994	OCT 1994
First Flight (AH-64D w/o FCR)	JAN 1994	JAN 1994	JAN 1994
Long Lead Time Items Contract Award	DEC 1994	DEC 1994	DEC 1994
Development Test			
Start	JUL 1994	JUL 1994	JUL 1994
Complete	SEP 1994	SEP 1994	SEP 1994
Force Dev Test and Experimentation			
Start	OCT 1994	OCT 1994	OCT 1994
Complete	NOV 1994	NOV 1994	NOV 1994
Production Readiness Review	JUN 1995	JUN 1995	JUN 1995
IOT&E			
Start	JAN 1995	JAN 1995	JAN 1995
Complete	MAR 1995	MAR 1995	MAR 1995
Milestone III (DAB)	OCT 1995	OCT 1995	OCT 1995
Lot 1 Contract Award	NOV 1995	NOV 1995	DEC 1995
First Production Delivery (LBA & FCR)	MAR 1997	MAR 1997	MAR 1997
First Unit Equipped	OCT 1997	JUL 1998	JUL 1998
IOC	SEP 1998	SEP 1998	NOV 1998

- b. Current Change Explanations -- None
- FCR MISSION KIT

a. Milestones --

a. Milescones			
	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
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

LONGBOW APACHE, December 31, 2001

9a. (U) <u>Schedule (Cont'd)</u>: FCR MISSION KIT

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	Production	Approved	Current
	Estimate (SAR)	Program (APB)	Estimate
Lot 1 Contract Award	NOV 1995	NOV 1995	MAR 1996
First Production Delivery	FEB 1997	FEB 1997	MAR 1997

(U) Acronyms used in Schedule Milestones

DAB - Defense Acquisition Board FCR - Fire Control Radar IDP - Initial Design Phase IOC - Initial Operational Capability IOT&E - Initial Operational Test & Evaluation IPR - In process review LBA - Longbow Apache

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

Airframe Modifications

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a. Performance --
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	Production Estimate (SAR)	App Progra <u>Obj/Th</u>	roved m (APB) <u>reshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Vertical Rate of Cli for AH-64D with FCR Mission Kit (ft/min	mb 450	450	/ 450	705	450
Ordnance Load (primary mission config)					
Hellfire (no.)	16	16	/ 12	8	12
Target Handover	No degrada-	No degrada- tion	/ 15% / degada- / tion	13% Degrada- tiōn	No degrada- tion
RF (RF Hellfire) in	(b)(1)			1	AMENDED
Ao, Operational Availability (%) of AH-64D w/FCR Kit	79	79	/ 75	91.4	79

(U) The objective for Ordnance Load (primary mission configuration) refers to AH-64A goal. The Longbow primary mission configuration is 8 Longbow Hellfire missiles, and 320 30mm rounds.

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10b. (U) <u>Performance Characteristics (Cont'd)</u>: Airframe Modifications

b. Current Change Explanations -- None

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a. Performance --

Probability of	Production Estimate (SAR)	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Detection Ground Targets, Benign Conditions Stationary @6KM /2/3 Moving @6KM /2/3	·)(1)			AS ALTENDED
		TEN		

b. Current Change Explanations -- None

11. (U) Total Program Cost and Quantity (Dollars in Millions): Airframe Modifications

	Production	Approved	Current
a. (U) Cost	<u>Estimate (SAR)</u>	Program (APB)	<u>Estimate</u>
Development (RDT&E)	638.4	761.3	758.5
Procurement	5052.2	5829.5	5886.7
Flyaway	(4161.5)		(4527.8)
Non recurring Flyaway	,		(240.2)
Unknown			(240.2)
Total Flyaway	(4161.5)		(5008.2)
Other Weapon System	(737.4)		(1053.5)
Peculiar Support	(42.6)		(18.9)
Initial Spares	(110.7)		(46.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year Ş	5690.6	6590.B	6885.4
Escalation	1337.2	533.3	567.7
Development (RDT&E)	(-46.1)	(-28.1)	(-26.6)
Procurement	(1383.3)	(561.4)	(594.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year Ş	7027.8	7124.1	7212.9
b. (U) Quantity			
Development (RDT&E)	N/A	0	0
Procurement	<u>758</u>	<u> 501 </u>	501
Total	758	501	501

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 6

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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 Net estimated cost - \$649M

Singapore

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Effective Date - February 26, 1999 Quantity - 8 Net estimated cost - \$399M

Singapore

Effective Date - Sept 05, 2001 Quantity - 12 Net estimated cost - \$352M

Israel

Effective date - February 17, 2000 Quantity - 8 New Build, 1 Remanufactured Net estimated cost - \$322M

Egypt

Effective date - September 12, 2000 Quantity - 35 Remanufactured Net estimated cost \$440M

d. Nuclear Costs -- None.

11a. (U) Total Program Cost and Quantity (Cont'd):

FCR MISSION KIT

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	Production	Approved	Current
a. (U) Cost	Estimate (SAR)	Program (APB)	Estimate
Development (RDT&E)	685.2	885.2	863.6
Procurement	813.9	813.9	825.9
Flyaway	(741.3)		(741.7)
Non recurring Flyaway			(33.8)
Total Flyaway	(741.3)		(775.5)
Other Weapon System	(22.2)		(16.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(50.4)		(33.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 1996 Base-Year \$	1699.1	1699.1	1689.5
Escalation	2.3	2.3	-51.0
Development (RDT&E)	(-117.5)	(-117.5)	(-101.7)
Procurement	(119.8)	(119.8)	(50.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1701.4	1701.4	1638.5
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 -- None.

d. (U) Nuclear Costs --None.

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12. (U) Unit Cost Summary:

Airframe Modifications

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			UCR	Current	
			Baseline	Estimate	Percent
		(MAY	2001 APB) (De	ec 2001 SAR)	Change
	a. (U) Prog. Acq. Unit Cost (PAUC)				
	(1) Cost (FY 1996 BY\$)		6590.8	6645.2	
	(2) Quantity		501	501	
	(3) Unit Cost		13.155	13.264	+0 83
					.0.05
	b. (U) Avg. Proc. Unit Cost (APUC)				
	(1) Cost (FY 1996 BYS)		5829.5	5886 7	
	(2) Quantity		501	501	
	(3) Unit Cost		11.636	11 750	+0 00
			11.000	11.730	+0.90
FCR	MISSION KIT				
			UCR	Current	
			Baseline	Estimate	Dercent
		(MAY	2001 APR) (De	2001 (AP)	Change
	a. (U) Prog. Acg. Unit Cost (PAUC)	(1.41.6.4	2001 ALD/ (DC	C 2001 3AR)	<u> </u>
	(1) Cost (FY 1996 BYS)		1698 1	1600 5	
	(2) Quantity		2022.1	1009.7	
	(3) Unit Cost		7 495	227	0.50
	(), onic cose		1.405	1.443	-0.56
	b. (U) Avg. Proc. Unit Cost (APUC)				
	(1) Cost (FY 1996 BY\$)		813.9	825.9	
	(2) Quantity		227	227	
	(3) Unit Cost		3.585	3.638	+1 48
	–			2.020	,

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13. (U) Cost Variance Analysis:

Airframe Modifications

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	592.3	6435.5	-	7027.8
Previous Changes:		1		
Economic	-1.0	-363.1		-364.1
Quantity		-1822.0	-	-1822.0
Schedule		+10.7		+10.7
Engineering	+134.9	+621.8	-	+756.7
Estimating	+5.0	+460.0	_	+465.0
Other		-	-	-
Support	-	+388.7	<u> </u>	+388.7
Subtotal	+138.9	-703.9	-	-565.0
Current Changes:				
Economic	+0.9	+63.6	-	+64.5
Quantity	-	-181.6		-181.6
Schedule	-	+6.8		+6.8
Engineering	-	+1088.3	-	+1088.3
Estimating	-0.2	-49.7	-	-49.9
Other		-	-	-
Support	-	-177.9	-	-177.9
Subtotal	+0.7	+749.5	-	+750.2
Total Changes	+139.6	+45.6	-	+185.2
Current Estimate	731.9	6481.1	-	7213.0

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	638.4	5052.2	-	5690.6
Previous Changes:				
Quantity	- 1	-1464.6	- (-1464.6
Schedule	-	-	-	~
Engineering	+123.7	+519.1	-	+642.8
Estimating	-3.1	+785.6	-	+782.5
Other		- 1	-	-
Support	-	+372.1	-	+372.1
Subtotal	+120.6	+212.2	-	+332.8
Current Changes:				
Quantity) - !	-135.4		-135.4
Schedule) -	- 1	-	-
Engineering		+958.9	—	+958.9
Estimating	-0.5	-57.1	-	-57.6
Other	1	-	-	
Support		-144.1	-	-144.1
Subtotal	-0.5	+622.3	-	+621.8
Total Changes	+120.1	+834.5	-	+954.6
Current Estimate	758.5	5886.7	-	6645.2

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13b. (U) Cost Variance Analysis (Cont'd): Airframe Modifications

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b. (U) Current Change Explanations --

		(Dollars : <u>Base-Year</u>	in Millions) <u>Then-Year</u>
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+0.9
	Adjustment for Current and Prior Inflation. (Estimating)	-0.6	-0.6
	Revised estimate reflects cost of	+0.1	+0.4
	negotiated contract. (Estimating)		
	RDT&E Subtotal	-0.5	+0.7
(2)	Procurement		
	Revised escalation indices. (Economic)	N/A	+25.7
	Economic adjustment for negative program change. (Economic)	N/A	+37.9
	Adjustment for Current and Prior Inflation. (Estimating)	-12.5	-13.4
	Total Quantity Variance associated with decrease of 29 units from 530 to 501.	-209.5	-267.8
	Allocation to Schedule variance resulting from Quantity Change, (OR) (Schedule)	0.0	-0.8
	Allocation to Engineering variance resulting	-29.5	-49.1
	Allocation to Estimating variance resulting	~44.6	-36.3
	Quantity decreased from 530 to 501 units.	-135.4	-181.6
	Stretchout of annual procurement buy profile.	0.0	+7.6
	Reliability and safety program caused the redesign of 27 existing subsystems to improv- system performance and maintainability.	+193.1 e	+208.6
	(Engineering) Longbow scope was expanded to include the redesign effort of the Modernized TADS/PNVS	+559.1	+661.1
	Longbow program scope was expanded to include Focused Recapitalization which calls for zero time/zero hour overhaul specifications	+236.2	+267.7
	for critical dynamic parts. (Engineering) Adjustment for Current and Prior Inflation.	-4.2	-4.9
	Projected cost of spares has been reduced due to benefits of reliability and sustainment (R&S) fixes. (Support)	-20.1	~24.5

13b. (U) <u>Cost Variance Analysis (Cont'd)</u>: Airframe Modifications

b. (U) Current Change Explanations --

(Dollars in Millions) <u>Base-Year Then-Year</u> Army transformation changed the aviation -10.4 -12.8 force structure and requirement for Longbow peculiar ground support equipment. (Support) MYII contract incorporated many of the items -109.4 -135.7 into flyaway costs previously carried as support. Also reduction of crew trainers reduced support costs. Contractor Logistics Support was reprogrammed as O&S funding. (Support)

Procurement Subtotal

+622.3 +749.5

QR = Quantity related changes.

FCR MISSION KIT

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	767.7	933.7	-	1701.4
Previous Changes:				
Economic	-	-43.9	-	-43.9
Quantity	-	+395.4		+395.4
Schedule	-	+26.2	-	+26.2
Engineering	-	+39.0	-	+39.0
Estimating	-5.8	+82.1		+76.3
Other	-	-	-	-
Support	-	+98.5	_	+98.5
Subtotal	-5.8	+597.3	-	+591.5
Current Changes:				
Economic	-	+30.9	-	+30.9
Quantity	-	-268.4		-268.4
Schedule	-	-9.9	-	-9.9
Engineering	-	-2.2	-	-2.2
Estimating	-	-277.1	-	-277.1
Other	-		-	
Support	-	-127.7	-	-127.7
Subtotal	-	-654.4		-654.4
Total Changes	-5.8	-57.1		-62.9
Current Estimate	761.9	876.6		1638.5

13a. (U) Cost Variance Analysis (Cont'd): FCR MISSION KIT

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(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	885.2	813.9	-	1699.1
Previous Changes:				
Quantity	-	+328.9	-	+328.9
Schedule	_	-	-	-
Engineering	-	+34.5	-	+34.5
Estimating	-21.6	+118.7	-	+97.1
Other	-	-	-	-
Support	-	+87.7	-	+87.7
Subtotal	-21.6	+569.8	-	+548.2
Current Changes:				
Quantity	' –	-214.1	-	-214.1
Schedule	-	-	-	
Engineering	-	+0.9	-	+0.9
Estimating	-	-234.7	-	-234.7
Other	-	-	-	-
Support	-	-109.9	-	-109.9
Subtotal	-	-557.8		-557.8
Total Changes	-21.6	+12.0		-9.6
Current Estimate	863.6	825.9	-	1689.5

b. (U) Current Change Explanations --

(Dollars in Millions) Base-Year Then-Year (1) Procurement +4.8 Revised escalation indices. (Economic) N/A Economic adjustment for negative program N/A +26.1 change. (Economic) Adjustment for Current and Prior Inflation. -3.0 ~3.4 (Estimating) -261.0 -324.3Total Quantity Variance associated with decrease of 93 units from 320 to 227. Quantity decreased from 320 to 227 units. -214.1-268.4 (Quantity) Allocation to Schedule variance resulting 0.0 -9.9 from Quantity Change. (QR) (Schedule) Allocation to Engineering variance resulting -10.6 -14.8 from Quantity Change. (QR) (Engineering) -31.2-36.3 Allocation to Estimating variance resulting from Quantity Change. (QR) (Estimating) +12.6 Spare purchase requirement to support +11.5 redesign for obsolescence (Engineering) Reclassification of Flyaway advanced +26.9 +27.9 procurement dollars to correct posting in prior SAR's support dollars (Estimating)

13b. (U) <u>Cost Variance Analysis (Cont'd)</u>: FCR MISSION KIT

b. (U) Current Change Explanations		
• •	(Dollars in	Millions)
	<u>Base-Year</u> T	<u>hen-Year</u>
Elimination of FCRs to be purchased after the production break eliminated the associated increased unit costs. (Estimating)	-144.5	-181.6
Elimination of production break in FY 04 and FY05 eliminated the shutdown, caretaker and restart of costs for production line. (Estimating)	-77.8	-88.8
Adjustment for Current and Prior Inflation. (Support)	-0.4	-0.4
Elimination of FCR purchases after current multiyear contract eliminated the need for initial spares for previously planned FCR procurements after the production break. (Support)	-82.6	-99.4
Reclassification of Flyaway advanced procurement dollars from the support dollar incorrectly posted in prior SARs. (Support)	-26.9	27.9
Procurement Subtotal	-557.8	-654.4

QR = Quantity related changes.

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions): Airframe Modifications

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current E	istimate
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PAUC	Changes							PAUC	
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
9.27	-0.598	+0.759	+0.035	+3.68	+0.829		+0.421	+5.13	14.40

b. (U) Procurement Unit Cost (PUC) History

Current	SAR	Baseline	to	Current	Estimate
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PUC		Changes							PUC
Prod Est		k							Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.49	-0.598	+0.359	+0.035	+3.41	+0.819		+0.421	+4.45	12.94

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LONGBOW APACHE, December 31, 2001

14c. (U) Unit Cost and Other Mistory (Cont'd): Airframe Modifications

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
۱ ۸	Estimate(PE)	Estimate(DE)	Estimate(PdE)	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	7212.9
Total Quantity	N/A	758	758	501
Prog Acq Unit Cost	N/A	7.3	9.3	14.4

FCR MISSION KIT

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseli	ne to	Current	Estimate
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PAUC		-		Chan	ges				PAUC
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.50	-0.057	+0.560	+0.072	+0.162	-0.885		-0.129	-0.277	7.22

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC	Changes								PUC
Prod Est		(Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.11	-0.057	+0.559	+0.072	+0.162	-0.859		-0.129	-0.252	3.86

c. (U) Schedule, Cost, and Quantity History

	SAR	SAR	SAR	
Item/Event	Planning	Development	Production	Current
	Estimate(PE)	Estimate(DE)	Estimate(PdE)	Estimate
Milestone I	N/A	JUL 1989	JUL 1989	JUL 1989
Milestone II	N/A	DEC 1990	DEC 1990	DEC 1990
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	1442.6	1701.4	1638.5
Total Quantity	N/A	227	227	227
Prog Acg Unit Cost	N/A	6.4	7.5	7.2

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E (U) <u>Modernized TADS/PNVS:</u>		Initial <u>Target</u>	Contract P Ceiling	rice Oty
Team Apache Systems, Orlando, H	ГL			
DAA-H23-00-C0174, CPIF Award: October 26, 2000		\$78.5	N/A	
Definitized: October 26, 2000				
Current Contract Price		Estimated P	rice At Com	pletion
<u>Target Ceiling</u> (<u>)ty</u>	Contractor	Progra	m <u>Manager</u>
\$78.5 N/A		\$118.0	\$	118.0
	2	Cost Variance	e <u>Schedule</u>	Variance
Previous Cumulative Variances		\$	\$	
Cumulative Variances To Date		<u>\$-15.0</u>	<u>\$-8</u>	.7
Net Change		\$-15.0	\$-8	.7

Explanation of Change:

(U) This is the first time this contract has appeared in the SAR. The cumulative variances to date are as of December 31, 2001. The net changes reported are not a computation from the previous SAR.

ь.	Procurement		Initia	1 Cont	ract Pri	ice
(U)	AH64D Multiyr Productio	on:	<u>Target</u>	Ceil	ing	Oty
Boeing	Company, Mesa, AZ					
DAAJ09-	95-C-A001, FFP		\$1690.3		N/A	232
Award:	December 12, 1994					
Definit	ized: August 16, 1996					
c	Current Contract Price		Estimated	Price	At Compl	letion
Taro	<u>ret Ceiling</u>	Oty	<u>Contractor</u>		Program	Manager
\$2077	1.5 N/A	232	\$2078.8		\$207	78.8

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) Contract Comments: This contract is more than 90% delivered and will not appear in subsequent SARs.

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15. (U) Contract Information (Cont'd):

(U) AH-64D RFI Multivr Prod:			Initial <u>Target</u>	Contract P: <u>Ceiling</u>	rice <u>Oty</u>
DAAJ09-97-C-0124, FFP Award: November 26, 1997			\$92.3	N/A	207
Definitized:	November 26, 1	997			
Curren	t Contract Pric	e	Estimated Pr	ice At Com	pletion
<u>Target</u>	Ceiling	Oty	Contractor	Program	n <u>Manager</u>
\$94.5	N/A	207	\$94.5	1	\$94.5

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

			Initial	Contract Pr	rice
(U) <u>AH-64</u> I) FCR Multivr H	Prod:	Target	Ceiling	Oty
Longbow LLC,	Orlando, FL				
DAAH23-98-C-0	0008, FFP		\$565.3	N/A	207
Award: Novemb	per 11, 1997				
Definitized:	November 11, 1	L9 97			
•				ine Nr. Com	
Current	Contract Pric	ce	Estimated Pr	ice At Comp	pretion
Target	<u>Ceiling</u>	OLY	Contractor	Program	<u>Manager</u>
\$565.9	N/A	207	\$565.9	\$5	565.9

Explanation of Change:

None.

Cost and Schedule variance reporting is not required on this FFP contract.

(U) <u>AH-64D Multívear II:</u> McDonnell Douglas, Mesa, AL DAAH23-00-C-0001, FFP Award: September 20, 2000 Definitized: N/A			Initial <u>Target</u>	Contract P: <u>Ceiling</u>	rice <u>Oty</u>
			\$2329.7	N/A 269	
Current <u>Target</u> \$2329.7	Contract Price <u>Ceiling</u> N/A	<u>Otv</u> 269	Estimated P <u>Contractor</u> \$2329.7	rice At Com <u>Progra</u> \$2	pletion <u>Manager</u> 329.7

Explanation of Change:

LONGBOW APACHE, December 31, 2001

15. (U) Contract Information (Cont'd):

None.

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Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY85-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Total</u>
RDT&E	1407.8	39.8	46.2	-	1493.8
Procurement	3640.8	912.2	894.2	1910.4	7357.6
MILCON	_	-	~	-	-
O&M	-	-	-	-	_
Total	5048.6	952.0	940.4	1910.4	8851.4

Airframe Modifications

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY88-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Total</u>
RDT&E	645.9	39.8	46.2	_	731.9
Procurement	2916.1	800.4	872.3	1892.2	6481.0
MILCON	-	-	-	-	
O&M	~	-	-	-	-
Total	3562.0	840.2	918.5	1892.2	7212.9

FCR MISSION KIT

a. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior <u>Years</u> (FY85-01)	Budget <u>Year</u> (FY02)	Budget <u>Year</u> (FY03)	Balance To <u>Complete</u> (FY04-08)	<u>Total</u>
RDT&E	761.9	-	-	-	761.9
Procurement	724.7	111.8	21.9	18.2	876.6
MILCON		-	-	-	
0&M	-	-	-	-	-
Total	1486.6	111.8	21.9	18.2	1638.5

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Airframe Modifications

Appropriation: 2040 - Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY 1996 Dollars Nonrec	Flyaway FY 1996 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				22.9	18.7
1989				55.3	47.0
1990				78.1	68.9
1991				62.0	56.8
1992				78.1	73.2
1993				105.2	100.9
1994				89.0	86.9
1995				112.5	112.0
1996				21.7	22.0
1997				10.4	10.7
1998					
1999					
2000				29.9	31.8
2001				15.7	17.0
2002				36.3	39.8
2003				41.4	46.2
Subtotal				758.5	731.9

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		39.5		74.9	75.6
1996	24	118.0	163.3	331.3	338.9
1997	24	67.3	195.6	304.0	314.5
1998	44	11.4	266.2	375.4	392.3
1999	66	3.5	402.1	488.0	513.6
2000	74	0.5	472.0	607.9	649.8
2001	52		440.4	581.3	631.4
2002	60		588.6	725.3	800.4
2003	74		644.1	776.9	872.3
2004	64		556.6	654.4	748.1
2005	19		319.2	405.5	472.2
2006			291.3	341.1	404.8
2007			184.8	216.2	261.5
2008			3.6	4.5	5.6
2009					
Subtotal	501	240.2	4527.8	5886.7	6481.0

(U) Fiscal years 2006 through 2008 contain recurring flyaway costs with no

LONGBOW APACHE, December 31, 2001

16b. (U) Program Funding Summary (Cont'd): Airframe Modifications

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associated end item quantities. These funds are programmed for the Modernized TADS program. The M-TADS is an integral component of the AH-64 weapon system. FY06 and FY07 also include residual costs for the Reliability and Safety program as well as Focused Recapitalization program.

Currently the Longbow Budget lines have funds programmed through FY13. All dollars associated with the Longbow Modernization Program, a program that takes the aircraft beyond the current ORD technical requirements, have been excluded.

		Flyaway	Flyaway	Total	Total
		Dollars	Dollars	Program	Program
	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
Grand Total	501	240.2	4527.8	6645.2	7212.9

b. Annual Summary -- FCR MISSION KIT

Appropriation: 2040 - Research, Development, Test + Eval, Army

		Flyaway FY 1996	Flyaway FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1985				19.9	14.7
1986				39.7	30.2
1987				98.8	77.6
1988				101.6	83.0
1989				100.7	85.6
1990				106.0	93.5
1991			-	86.3	79.0
1992			1	82.2	77.0
1993		1	•	124.0	118.9
1994	1			82.2	80.3
1995	1			22.2	22.1
Subtotal			i	863.6	761.9

Appropriation: 2031 - Aircraft Procurement, Army

		Flyaway	Flyaway		
		FY 1996	FY 1996	Total	Total
Fiscal		Dollars	Dollars	Program	Program
Year	Qty	Nonrec	Rec	Base-Year \$	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	92.4	95.6
1998	21		95.7	108.3	113.2

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16b. (U) Program Funding Summary (Cont'd):

FCR MISSION KIT

Appropriation: 2031 - Aircraft Procurement, Army

Fiscal		Flyaway FY 1996 Dollars	Flyaway FY 1996	Total	Total
Very	0.5.1	Dollars	DUIIdis	Program	Program
iear	Qty	Nonrec	Rec	Base-Year \$	Then-Year \$
1999	40		101.9	113.5	119.5
2000	45		119.3	123.4	131.9
2001	44		118.5	115.8	126.9
2002	57		108.5	101.3	111.8
2003			16.6	19.5	21.9
2004			7.8	10.5	12.0
2005				1.3	1.5
2006				1.6	1.9
2007				1.0	1.2
2008				1.3	1.6
2009					
Subtotal	227	33.8	741.7	825.9	876.6

(U) FCR recurring flyaway dollars without associated quantities beyond FY02 are programmed to install and integrate FCRs on the FY03 and FY04 aircraft deliveries.

Flyaway Flyaway Total Total Dollars Dollars Program Program Base-Year \$ Then-Year \$ <u>Qty</u> Nonrec Rec 741.7 227 Grand Total 33.8 1689.5 1638.5

17. (U) Delivery/Excenditure Information:

Airframe Modifications

a.	(U)	Deliveries To Date	Plan	Actual
		RDT&E	0	0
		Procurement	220	223

(U) Percent Total Program Quantities Delivered: 44.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2700.5

(U) Percent Total Program Expended: 37.4%

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<u>Actual</u>

17b. (U) <u>Delivery/Expenditure Information (Cont'd)</u>: FCR MISSION KIT

FCR MISSION KIT

a	(11)	Deliveries	ΤO	Date
а.	(0)	Dellagties	10	Date

RDT&E	0	0
Procurement	120	120

<u>Plan</u>

(U) Percent Total Program Quantities Delivered: 52.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1141.7

(U) Percent Total Program Expended: 69.7%

18. (U) Operating and Support Costs: Airframe Modifications

a. (U) Assumptions and Ground Rules --Assumes 498 fielded operational aircraft each flying 18.0 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. The airframe Mean Time Between Failure (MTBF) goal is 19.5 hours at Maturity (50,000 flight hours). Source: Current Jan 01 proposed Army Cost Position. The Longbow aircraft system has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

	Airframe Modifications	Antecedent System
\$	Avg Annual Cost Per	Avg Annual Cost Per
Cost Element	Longbow aircraft	antecedent system
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	2.4	0.0
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Replenishment	726.8	0.0
Military Personnel	591.6	0.0
Other	103.7	0.0
Total	1424.5	0.0

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Total O&S Cost	Airframe Modifications	Antecedent System
BY\$ (In Millions)	8330.4	N/A
TY\$ (In Millions)	11139.4	N/A

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LONGBOW APACHE, December 31, 2001

18a. (U) Operating and Support Costs (Cont'd):

FCR MISSION KIT

a. (U) Assumptions and Ground Rules --

Assumes 227 fielded operational Fire Control Radars each flying 18.0 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. At maturity (50,000 flight hours), the Fire Control Radar Mean Time Between Failure (MTBF) goal is 150 hours. Source: Army Cost Position Update (Jan 01). The Longbow Fire Control Radar system has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

	FCR MISSION KIT	Antecedent System
	Avg Annual Cost Per	Avg Annual Cost Per
Cost Element	Fire Control Radar	antecedent system
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	0.0	0.0
Contractor Support	N/A	N/A
Sustaining Support	N/A_	N/A
Indirect Costs	N/A	N/A
Replenishment	56.4	0.0
Other	9.7	0.0
Total	66.1	0.0

Total O&S Cost	FCR MISSION KIT	Antecedent System
BY\$ (In Millions)	302.3	N/A
TY\$ (In Millions)	403.9	N/A

Report Creation Date: 03/29/2002 4:54:53 PM

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